ACADEMY HILL

Est. 1986 PreK-8

Curriculum Guide

2020-2021 Revision

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Overview

We are pleased to share the Academy Hill Curriculum Guide. For each content area, appropriate faculty worked cooperatively to outline what a student at Academy Hill should be able to do by the conclusion of a course of study. This work was completed using the Massachusetts Curriculum Frameworks, national standards from content councils, past and current local best practices and best practices in education. Our curricula and instruction are responsive to each group of students from year to year. Therefore, this guide should be viewed as a living document that responds to Academy Hill's flexible and differentiated learning environment.

This version of the guide includes unit lesson plans or daily plans shared at faculty professional development days. The sharing of instructional best practices was the result of year-long professional learning community collaborations in the areas of lesson planning and interdisciplinary instruction.

Pre-Kindergarten Curriculum

Children enrolled in Pre-Kindergarten at Academy Hill School explore the following concepts, but are not required to master them before entering Kindergarten. Students learn at their own pace through guided discovery, exploration and practice. Much of what we do includes interdisciplinary projects that introduce early literacy and numeracy as we explore social skills together. We incorporate a wide variety of manipulatives and strategies to encourage growth and spark a lifelong love of learning.

Math

- Understand number order
- Count objects to 20
- Demonstrate one-to-one correspondence of objects
- Correlate number meaning with numeral
- Count and identify one more than and less than
- Identify, sort and classify objects by common attributes (appearance, color, shape, size)
- Identify, create and predict patterns: AB, AABB, ABC
- Differentiate by size: small, medium, large
- Identify and describe 2-dimensional shapes: square, rectangle, circle, triangle
- Understand sequence of events
- Demonstrate an understanding of time (morning, afternoon, yesterday, today, week, year)
- Name the days of the week and months of the year
- Compare and measure length, weight and capacity by making direct comparisons with reference objects and nonstandard units

Literacy

- Distinguish between print and picture
- Understand the purpose of print in reading and writing
- Understand that words are made up of letters and differentiate between “letter” and “word”
- Understand that one spoken word matches one group of letters
- Recognize, spell and write one’s name
- Identify and segment onsets and rimes
- Hold a pencil, marker, crayon correctly
- Retell familiar stories
- Draw pictures and dictate sentences about stories and experiences
- Repeat simple nursery rhymes and fingerplays
- Practice concepts of print: left to right direction, holding a book right-side-up
- Develop fine motor skills: play dough, scissors, writing utensils, Legos, etc.

Science

- Explore science tools: magnets, prisms, magnifying glasses, etc.
- Experience the world through nature walks, gardening, and outside exploration
- Observe insect life

- Observe plant growth
- Observe weather and plant life during each season
- Measure and mix ingredients in cooking activities
- Identify basic colors and explore color mixing
- Make observational drawings and dictation
- Explore the world with the five senses
- Investigate animals, the homes they live in, the food they eat

Please see the appendix for a sample unit lesson plan for Pre-Kindergarten Science.

Creative Arts and Movement

- Explore a variety of art processes including: painting, drawing, sculpture, weaving, collage
- Use a variety of art materials including: crayons, paint, markers, chalk, clay
- Experiment with mixing paint colors
- Sing traditional songs and songs that enhance the curriculum
- Participate in movement songs and dances
- Use a variety of children's instruments
- Participate in dramatic play
- Dramatize familiar stories
- Act out movements and sounds (animals, occupations, weather)
- Spend free time outside exploring and playing games
- Participate in Physical Education, Art and Music classes

Social Skills

- Practice problem-solving skills in social situations
- Work in flexible groups or with a partner on a variety of projects
- Share classroom materials with the group
- Practice using manners: please, thank you, excuse me, table manners
- Communicate needs respectfully
- Take care of own basic needs: clean up, fasten clothing, etc.
- State personal information: first and last name, age, school name, city, state, country
- Learn and practice relaxation techniques for rest and conflict resolution
- Learn about other cultures and traditions around the world
- Explore our community during field trips and other activities
- Participate in service projects to make a positive impact on our community

Good Morning Show
Grades K-5

Meeting Times: Daily for 30 minutes.
Resources: Interactive whiteboard, bulletin board, computer, table, etc.

Good Morning Show:
The Good Morning Show serves as both as a community meeting and a vehicle for student presentations. From 8:30 – 9:00 students in Kindergarten through grade five and any interested parties assemble in the Community Room to watch students present on independently selected topics and the Collaborative Learning Topic of the Year, and to hear the morning message. During this time, we pledge allegiance to the flag and sing a song. This music is frequently connected to the music curriculum.

Individual Presentations:
Students present during The Good Morning Show several times a year. Students in Kindergarten and grade one make 2 to 3 minute presentations. Grade two and three students create 3 to 4 minute presentations, and students in grade four create 4 to 6 minute presentations. Kindergarten students present once each trimester. Grade one and grade two students present four times over the course of the year. Students in grade two prepare the first presentation of the year, which is linked to the curriculum, in class with teacher supervision to ensure alignment with goals and expectations and to appropriately develop research skills, sequencing, creativity, and introduction to technology. Grade three students present twice per trimester, or six times per year, and three of these presentations are loosely linked through a common topic. Grade four students present six times, with four presentations linked through Bloom's Taxonomy. Grade five students make four total presentations, each 4-6 minutes in length, each followed by a student-led audience discussion. The last presentation uses creative expression to summarize student learning. For both grade four and five there are increased expectations for advanced planning and higher-order thinking.

Homeroom teachers complete an evaluation on student presentations following a rubric created by the teachers. Written evaluations are sent home after a presentation, and information on the student presentation and suggestions for future presentations are written up in progress reports. In grades two through five, students also complete a self-evaluation to reflect on their learning and set goals for future presentations.

After The Good Morning Show, grades three through five meet in their respective homerooms to discuss the presentations, including strengths and areas for future improvement. Grades Kindergarten through second grade meet periodically to discuss presentations.

Standards for Independent Presentations

With increasing independence, students will be able to:

Kindergarten and Grade One
- Sit still and show active listening techniques during presentations
- Reflect on audience while developing presentation
- Describe information in age-appropriate language
- Demonstrate clear understanding of topic through paraphrasing and using their own words
- Prepare for presentation through practice

- Speak audibly and express thoughts, feelings, and ideas clearly to describe a familiar topic within 2-3 minute oral presentation
- Maintain eye contact with audience
- Show enthusiasm for topic and confidence in knowledge
- Include an audio and/or visual display to enhance presentation
- Participate in class conversations about daily presentations, ask and answer questions to gather additional information, clarify what they heard, and deepen understanding

Grades Two and Three

- Continue to fulfill expectations from Kindergarten and Grade One Standards.
- Complete independent research using age-appropriate materials
- Report on topic or text with appropriate facts, relevant descriptive details, speaking clearly at an understandable pace
- Cite sources appropriately
- Integrate use of technology into presentations following guidelines
- Show evidence of higher-level thinking and creativity
- Complete a self-evaluation after presentation

Grade Four

- Continue to fulfill expectations from Kindergarten through Grade Three Standards.
- Understand the difference between a source and a search engine

Grade Five

- Continue to fulfill expectations from Kindergarten through Grade Four Standards.
- Complete presentations of increased length
- Demonstrate an understanding of the increasing complexity of the revised Bloom's Taxonomy by creating a series of four presentations.
- Levels one and two of the Taxonomy are combined; levels three and four are combined; levels five and six are stand alone.
- Prepare four presentations that are linked to an umbrella topic.
- Formulate relevant questions for discussion.
- Lead a group discussion based on these questions

Collaborative Learning Topic of the Year:

The school rotates through five overarching themes: World Wonders, People, Animals, States, and Countries, with a specific focus that changes to reflect relevant world events and student interest. After choosing a topic and focus, the staff creates a PowerPoint slideshow to be used over the course of the year that includes the information needed for the students to present. This slideshow and information are developed with a clear focus on integrating timelines, geography, cause and effect, and making comparisons. Each grade from Kindergarten through grade four present information daily, and students rotate through being the presenter for their class. Students complete additional research both independently and with support of teachers.

Morning Message:
Students prepare and deliver the Morning Message to the school each morning. The message includes special announcements, a historical fact of the day, and birthdays of community members. Different years may also include a riddle or an inspirational quote. The information is researched by the students.

Forum
Grades 6-8

Class Meetings: Multiple times each week for 30 minutes
Resources: Interactive whiteboard, student-constructed materials

Forum is an integral part of the middle school curriculum at Academy Hill School. Twice each week, the entire Middle School and members of the wider community gather to watch student presentations and participate in discussions that relate to a semester-long umbrella theme. Past themes have included exploration, leadership and mystery. Each student selects a theme-related topic of special interest to him or her, and designs a presentation once each semester. The four main goals of Forum are to help students learn research skills; apply higher-level thinking; acquire deeper knowledge in an area of interest to them; and become confident and competent public speakers.

Initially, each student completes a Forum planning sheet in which he or she describes the topic, lists research questions and defines types of higher-level thinking (i.e. comparison, analysis and evaluation) that will be included in the presentation. A Middle School teacher reviews the planning sheet and may require further development or adaptation of the topic and questions.

Next, the student independently researches the topic and uses the information to write a script and design an audio-visual presentation. As the students' progress through the Middle School program, the depth of higher-level thinking is expected to complexify. For example, a student researching the New Deal might examine economic data from the time period in order to evaluate the effectiveness of this legislation. Another important aspect of Forum is the development of discussion questions that generate meaningful conversation about the topic after each presentation. In order to be prepared for the presentation, each student is expected to prepare note cards and practice the presentation to the extent that he or she can deliver the script fluently and confidently.

Each student is expected to meet the standards for public speaking that are encouraged through Forum. Appropriate speed, volume, body posture and eye contact with the audience are required. Awareness of the audience as learners should be evident in the pacing, physical and verbal reference to images and inclusion of a variety of media. The length of each presentation depends on grade level: sixth grade presentations run from four to six minutes, while seventh and eighth grade presentations run six to eight minutes. Following the presentation, the presenter leads a discussion based on his or her material. It is the presenter's responsibility to facilitate a Middle School-wide conversation by calling on volunteers, asking follow-up questions and adding supplemental information as appropriate.

Forum presentations are evaluated using a variety of criteria. Each student is expected to meet specific grade-appropriate deadlines. Students must submit planning sheets at least two weeks in advance. Drafts of the audio-visual presentation and the script are due one week prior to the presentation date. The final draft must be submitted the day before the presentation. Each student is also assessed on his or her personal affect during Forum in regard to pacing, volume, eye contact and body posture. Furthermore, presentations must fall within the time limits.

Other criteria include organization of ideas, creativity, flow of the script and whether or not technical terms have been defined. Multiple and varied sources are expected to be used and properly cited. Students are also expected to put information in their own words and to be well informed on the topic. The audio-visual component is also evaluated. The slides are expected to be attractive, readable and uncluttered, with appropriate contrast, font size and discretionary use of animation.

In grades 7 and 8, the final Forum of the year is a Capstone project. The Capstone project requires students to design an experiment and method for collecting data in an attempt to answer an inquiry. Capstone projects may focus on natural or social sciences. The project and methodology must be approved in advance.

Classics
Grades Four and Five

Year A Theme: Rome and Home

Class meetings: Classes meet five times in a two-week cycle for approximately 45 minutes of instructional time each meeting.
Textbook: *Minimus Pupil's Book: Starting out in Latin*

Goals:

- Learn about important aspects of Roman life, with focus on home
- Learn Latin pronunciation and basic grammar
- Develop familiarity with some Latin vocabulary
- Learn characters and concepts of Classical mythology
- Explore ways that Greeks and Romans have added to our culture

Summary of Content and Activities:
Class usually begins with an essential question, to draw out students' curiosity and prior knowledge. Then students read aloud and interpret one of the episodes of *Minimus,* which is structured as a Latin "graphic novel". Illustrating story scenes, making predictions about future *Minimus* episodes, and learning from 2,000-year-old artifacts are frequent lesson components. Vocabulary review with flashcards or a game occurs every week or so. Classics sessions often end with a myth in English that relates to a current *Minimus* plot point. Fourth-grade Classics topics include: Roman alphabet, pronunciation, Latin names, parts of speech, Latin word order, literacy among the Romans, Classical history timeline, basic Roman Empire

geography, parts of speech, family and animals vocabulary, personal endings of Latin verbs (present tense), noun/adjective agreement, commands, ancient

Mediterranean food, enslaved people, derivatives (English and Spanish), Roman conquest and assimilation, Romance languages development, ancient hygiene and medicine, and Roman numerals.

Year B theme: The larger world

Class meetings: Classes meet five times in a two-week cycle for approximately 45 minutes of instructional time each meeting.
Textbook: *Minimus II*

Goals:

- Learn about various aspects of Roman life, with focus on travel and Empire
- Develop Latin pronunciation and oral expression skills
- Develop familiarity with some Latin vocabulary
- Learn characters and concepts of Classical mythology
- Explore ways that Greeks and Romans have added to our culture

Summary of Content and Activities:
Each class begins with a *dictum* (proverb or other Latin phrase), to be translated literally and sometimes metaphorically by the students. Then students read aloud and interpret one of the ongoing "graphic novel" episodes in *Minimus.* Illustrating story scenes, making predictions about future *Minimus* episodes, and learning from 2,000-year-old artifacts are frequent lesson components. Vocabulary review with flashcards or a game occurs every week or so. Classics sessions often end with a myth in English that relates to a current *Minimus* plot point. Fifth-grade Classics topics include: Latin pronunciation, parts of speech, literacy among the Romans, Classical history timeline, Roman Empire geography, travel, the Greek alphabet, Latin verb inflections (present and imperfect tenses; imperatives), noun/adjective agreement, ancient Mediterranean food, coins and monuments as evidence, seasons and holidays, derivatives (English and Spanish), Roman conquest and assimilation, and Romance languages development.

Latin - Grade Six

Textbook: Goldman, Norma, and Jacob E. Nyenhuis. *Latin via Ovid: A First Course*. Detroit: Wayne State UP, 1982. Print.
Class meetings: Classes meet five times in a two-week cycle for approximately 45 minutes of instructional time each meeting.

Goals:

- Translate short Latin sentences and passages
- Lay a firm foundation in the basics of the Latin verb and noun systems
- Prepare topics as covered in the Introductory National Latin Exam and beyond
- Develop an understanding of important Roman myths as presented by Ovid

End of Year Outcome:
Students Will Be Able To (based on National Latin Exam):

- Comprehend and translate short Latin prose passages
- Recognize, translate, and decline Latin 1st and 2nd declension nouns and adjectives, with understanding of the most common uses of each case
- Recognize and translate common Latin adverbs, conjunctions, and enclitics
- Recognize, translate, and conjugate Latin verbs in the present, imperfect, and future tenses (active voice), with understanding of uses of each tense
- Recognize and translate verb infinitives and imperatives, with understanding of their uses

Sequence:
Over the course of the year, students' progress through the beginning of the *Latin Via Ovid* textbook at the rate of five class sessions per chapter, with a test at the end of each chapter. The number of chapters covered varies depending on the exact schedule of the year, but is usually seven or eight. Earlier chapters may be covered at a faster rate because the concepts presented are less complicated. Each chapter usually has a couple of quizzes on vocabulary, grammar, and oral interpretation. Later chapters that introduce multiple grammatical concepts have more quizzes.

Latin – Grade Seven

Textbook: Goldman, Norma, and Jacob E. Nyenhuis. *Latin via Ovid: A First Course*. Detroit: Wayne State UP, 1982. Print.
Class meetings: Classes meet five times in a two-week cycle for approximately 45 minutes of instructional time each meeting.

Goals:

- Comprehend and translate Latin sentences and passages
- Build on their foundation in the Latin verb and noun systems
- Prepare topics as covered in the Level I National Latin Exam
- Develop understanding of important Roman myths as presented by Ovid
- Understand some of the poetic choices made by Ovid

End of Year Outcome:
Students Will Be Able To (based on National Latin Exam):

- Comprehend and translate Latin prose passages
- Decline and translate Latin nouns and adjectives in all cases in the 1st, 2nd, and 3rd declensions, with understanding of common uses of each case
- Decline and translate personal pronouns
- Recognize and translate common adverbs, conjunctions, and enclitics
- Recognize, translate, and conjugate Latin verbs in all six tenses (active voice), with understanding of uses of each tense

Sequence:
Students begin this year where they ended in Grade 6 Latin, which is usually around Chapter 8 or 9 of *Latin via Ovid*. The chapter completion rate slows in Grade 7, since the stories are now longer and there is more complex grammar is to be mastered. Each chapter takes between ten and fourteen class days. Because this year's myth stories contain more of Ovid's original language, students now have the opportunity to discuss expressive choices that Ovid made and the effects those have. Each chapter usually has a couple of quizzes on vocabulary, grammar, and oral interpretation. Chapters that introduce multiple grammatical concepts have more quizzes. Chapter tests occur every one or two chapters.
Students prepare for and take the National Latin Exam in March. They also participate in Pioneer Valley Classics Day (usually in January), doing a project on Roman culture and/or preparing to compete in *certāmen* and/or the costume contest.

Latin II - Grade Eight

Textbook: Goldman, Norma, and Jacob E. Nyenhuis. *Latin via Ovid: A First Course*. Detroit: Wayne State UP, 1982. Print.
Class meetings: Classes meet five times in a two-week cycle for approximately 45 minutes of instructional time each meeting.

Thematic Goals:
- Translate Latin sentences and passages
- Learn grammatical structures that build on the basis of the noun and verb systems they have learned
- Learn history and cultural topics on the National Latin Exam syllabus and beyond
- Understand some poetic choices that Ovid made

End of Year Outcome:
Students Will Be Able To (based on National Latin Exam):
- Comprehend and translate short Latin passages
- Decline and translate nouns of all five declensions, with understanding of common uses of each case
- Decline and translate personal, demonstrative, and relative pronouns
- Recognize and translate common adverbs, conjunctions, and enclitics
- Recognize, translate, and conjugate Latin verbs in all six tenses (active and passive), with understanding of uses of each tense and voice
- Recognize and translate Latin verb infinitives, imperatives, and participles (active and passive)

Sequence:
During this year students' progress deliberately through *Latin via Ovid* Chapters 16 - 21, and sometimes beyond. There are more supplemental readings to help reinforce concepts that students have met earlier. Language topics include questions about how language choices (*e.g.*, passive vs. active voice) help us to express ourselves. Culture topics include analysis of modern "re-makes" of Classical myths, such as the Broadway show "Hadestown". This year there is more emphasis on how Roman language, law, and cultural practices have influenced our culture.

The pace of Grade 8 Latin varies, depending on the length of readings and how long students need to become familiar with more difficult concepts.

Students prepare for and take the National Latin Exam in March. They also participate in Pioneer Valley Classics Day (usually in January), doing a project on Roman culture and/or preparing to compete in *certāmen* and/or the costume contest.

Mathematics

Academy Hill School's math curriculum is derived from the Massachusetts Math Curriculum Frameworks, the National Council of Teachers of Mathematics Principles and Standards, and adapted to meet the needs of a gifted and talented population. Our students engage in hands- on and abstract problem-solving activities that consistently challenge them to apply what they know to increasingly complex situations.

We use a variety of assessments to inform student placement within the curriculum. Instruction is often divided between large groups and flexible, small groups to work on skills and challenging problem-solving activities. Progress through the math curriculum continues each year, with the children picking up in September where they left off in June. Throughout the course of a math class children may also work on small group problem solving, computation activities to build quick recall of basic facts, computer games and drills, learning centers, teacher-created games, and math projects.

The following pages list our learning objectives: number sense, patterns, relations and algebra, geometry, measurement, data analysis, statistics and probability.

Mathematics - Kindergarten

Class Meetings: Daily for 45 minutes
Resources Used:

- *Singapore Math Primary Math Kindergarten A Workbook U.S. Edition*
- *Singapore Math Primary Math Kindergarten B Workbook U.S. Edition*
- Counting Chips
- Unifix Cubes
- Dice
- Flash Cards Clocks Money
- Pattern Blocks

Students will be able to:
Numeracy:

- Identify one more and one less for numbers 1-20.
- Make and use estimates.
- Compare groups of objects by number, size, and other attributes.
- Match quantities with numerals and words.
- Show one to one correspondence

Counting and Cardinality:

- Count to 100 by ones, fives, and tens.
- Understand how numbers are created with groups of 10s, 5s and 1s.
- Model numbers and math problems with manipulatives.
- Explain thinking process in solving problems.
- Identify even and odd numbers and explain patterns.
- Put objects in order by number or size.
- Identify how grouping by tens or fives can help in counting.
- Understand part and whole and identify ½, ⅓, and ¼.

Operations:

- Compare Numbers, identify larger and smaller numbers, and difference between a pair of numbers.
- Use number bonds to understand math fact families.
- Know addition facts to 10 without using fingers.
- Recognize patterns and build on to pattern.
- Understand difference between addition and subtraction.
- Identify if a word problem calls for addition or subtraction.
- Use number bonds to understand word problems and solve addition and subtraction problems.
- Add and subtract fluently within 10.
- Write math equations vertically and horizontally.
- Use and describe a variety of strategies to add and subtract.
- Understanding place value and applying place value knowledge to identify objects

Time, Money, Measurement, Geometry and Data

- Tell time to the hour and half hour.
- Identify morning and evening times.
- Identify coins and know value of each U.S. coin.
- Add values of 2 coins and understand concepts of value in money.
- Measure objects with standard and non-standard methods of measurement.
- Use non-standard units of measure for length, area, weight, capacity.
- Identify and describe attributes of 2 dimensional shapes.
- Sort objects by shapes and attributes.
- Collect, display, and discuss simple data from the world around them.

Mathematics - Grade One

Class Meetings: Daily for 60 minutes
Resources Used:

- *Singapore Math Primary Math Workbook 1A U.S. Edition*
- *Singapore Math Primary Math Workbook 1B U.S. Edition*

- *Singapore Math Primary Math Teacher's Guide 1A U.S. Edition Singapore Math Primary Math Teacher's Guide 1B U.S. Edition Singapore Math Math Sprints Blackline Master 1*
- *Singapore Math Primary Math Intensive Practice 1A U.S. Edition Singapore Math Primary Math Intensive Practice 1B U.S. Edition Singapore Math Process Skills in Problem Solving Level 1*
- *Singapore Math Visible Thinking in Mathematics 1A*
- *Singapore Math Visible Thinking in Mathematics 1B Singapore Math Primary Mathematics Tests 1A Singapore Math Primary Mathematics Tests 1B* Counting Chips
- Unifix Cubes Dice
- Flash Cards Clocks Money

Students will be able to:

Numbers through 100

A. Numbers to 10
- Count.
- Identify numbers by shapes, words, numbers.

B. Numbers to 20 to 40
- Add and Subtract without renaming
- Write and solve Word Problems
- Identify numbers
- Identify greater than/less than values
- Construct number bonds: part/part/whole
- Construct bar models

C. Numbers to 100
- Use Mental math strategies to solve problems
- Write and solve word problems
- Solving word problems
- Understand Place value
- Add and subtract *with* renaming

Ordinal numbers

A. Shapes
- Identify 2-d: Rectangle, triangle, square, circle, oval, rhombus, parallelogram, hexagon, octagon
- Identify 3-d: cylinder, rectangular prism, triangular prism, pyramid
- Compare shapes (Size, attributes)
- Build shapes (which shapes together make other shapes)

B. Length and Weight
- Measure in non-standard and standard units (cm, in, ft, yd)
- Weigh in non-standard and standard units (kg, g, oz, lb)

C. Graphs
- Identify Picture and Bar graphs
- Identify Survey

- Create a graph

D. Multiplication and Division
- Define basic meaning and vocabulary
- Use 2, 3, 5, 10 tables (patterns, games with the facts)
- Complete Word problems

E. Fractions
- Identify Halves, Quarters, Thirds
- Understand that 3 thirds = one whole, 2 halves…
- Understand that a fraction is part of a whole

F. Time
- Identify time to the hour, half hour
- Identify Half- time to the minute/quarter hour
- Define Vocabulary (o'clock, half past, quarter after…)
- Understand elapsed time (How long something takes)
- Understand the meaning of the hands on the clock and the numbers

G. Money
- Identify coins and bills by shape, color, symbol, president, and value
- Add coins and bills
- Compute how much things cost

Mathematics - Grade Two

Class Meetings: Daily for 55 minutes
Resources used:
- *Books: Singapore Math Primary Math Textbook 2A U.S. Edition Singapore Math Primary Math Textbook 2B U.S. Edition Singapore Math Primary Math Teacher's Guide 2A U.S. Edition Singapore Math Primary Math Teacher's Guide 2B U.S. Edition Singapore Math Math Sprints Blackline Master 2*
- *Singapore Math Primary Math Intensive Practice 2A U.S. Edition Singapore Math Primary Math Intensive Practice 2B U.S. Edition Singapore Math Process Skill*
- Various internet resources
- Number Disks
- Place Value Charts
- Hundreds Charts
- Counters
- Cards
- Money
- Dice
- Meter Sticks
- Rulers
- Balance Scales
- Various games
- Clocks
- Tangrams

Students will be able to:

Numbers to 1000

- Compare numbers
- Understand place value (ones, tens, hundred)

Addition and Subtraction

- State meanings of addition and subtraction
- Add with and without renaming
- Subtract with and without renaming (2 and 3 digit numbers)
- Complete simple algebra problems
- Use mental math to solve problems

Multiplication and Division

- Define meaning of multiplication and division
- Recite 2, 3, 4, 5, 10 tables

Measurement

A. Length

- Use a ruler to measure objects in meters, centimeter, inches, feet, yards
- Estimate length in meters, centimeter, inches, feet, yards
- Find the area and perimeter of standard and non-standard shapes

B. Weight

- Use a scale to weigh objects in kilograms, grams, pounds, ounces
- Estimate and compare weight of different objects

C. Capacity

- Compare the capacity of different objects
- Measure capacity using liters, gallons, pints, cups

Money

- Identify dollars and cents
- Trade money to make an equal amount
- Add and subtract money

Fractions

- Define meaning of fractions
- Understand halves and quarters
- Write fractions

Time

- Use time in comparison to fractions
- Tell time in five-minute, quarter, and half intervals

Graphs

- Construct and interpret picture and bar graphs

Geometry

- Identify differences 2D/3D objects
- Identify the edge/vertex/curves/flat
- Create lines of symmetry
- Create shapes using other shapes (i.e. 2 trapezoids make a hexagon)

Mathematics - Grade Three

Class Meetings: Daily for 60 minutes
Materials Used:

- *Primary Math textbooks 3A & 3B*
- *Primary Math workbooks 3A & 3B*
- *Primary Math intensive practice workbooks 3A & 3B*
- *Visual Thinking in Mathematics 3A & 3B*
- Process Skills level 3
- Math Sprints 3
- Singapore Math extra practice level 3
- Primary Math Standards Edition tests
- Number Disks
- Place Value Charts
- Hundreds Charts
- Counters
- Math Fact Flash Cards
- Money
- Fraction Bars
- Square Inch Tiles
- Graph Paper
- Meter Sticks
- Rulers
- Balance Scales
- Beakers
- Geared Clocks
- Calendars

Students will be able to:
Numbers to 10,000

- Read and write 4 digit numbers
- State the value of each digit in a 4 digit number
- Compare and order 4 digit numbers
- Count on, back, and recognize patterns with 4 digit numbers

Addition and Subtraction

- Understand the terms sum and difference

- Solve 1 and 2 step problems involving addition and subtraction
- Use part- whole and comparison models to represent word problems
- Add numbers up to 10,000
- Subtract numbers from 10,000

Multiplication and Division

- Review multiplication and division facts for 2,3,4,5, and 10
- Multiply a number by 0
- Solve 1 step and 2 step problems involving multiplication and division
- Use part whole and comparison models to represent word problems
- Understand the terms product, quotient, and remainder
- Learn the multiplication/ division facts for 6,7,8, and 9
- Multiply and divide numbers within 1000 by 1, 2, 3, 4, 5, 7, 8, 9 or 10 using the formal algorithm

Money

- Read and write decimal notation for money
- Count money in a set of bills and coins
- Convert dollars and cents to cents
- Convert cents to dollars and cents
- Make change for bills up to $100
- Write money amounts in words and figures

Mental Calculation

- Mentally add or subtract a number close to 10 or 100
- Use strategies to mentally calculate a sum or difference by making 10 or 100
- Learn strategies to calculate products mentally

Measurement

- Estimate and measure lengths in meters and centimeters
- Convert between meters and centimeters
- Estimate distances with kilometers
- Convert between kilometers and meters
- Add and subtract lengths in kilometers, meters and centimeters
- Estimate and measure lengths in yards, feet, and inches
- Convert between yards, feet, and inches
- Estimate distances using miles
- Add and subtract lengths in miles, yards, feet, and inches
- Estimate and weigh objects using kilograms and grams
- Convert between kilograms and grams
- Read scales
- Convert between pounds and ounces
- Add and subtract weights in kilograms and grams, or pounds and ounces
- Estimate and measure capacity in liters and milliliters
- Convert between liters and milliliters

- Estimate capacity using gallons, quarts, pints, and cups
- Convert between kilometers and meters, or gallons, quarts, pints, and cups
- Add and subtract lengths in liters and milliliters, or gallons, quarts, pints, and cups
- Solve word problems using measurement

Graphs
- Interpret and construct bar graphs

Fractions
- Recognize and name fractions of a whole
- Make a whole with a fraction
- Compare and order fractions with and without a common numerator or denominator
- Name equivalent fractions using multiplication and division
- Find the simplest form of a fraction

Time
- Read and write time from an analog clock to 1 minute
- Measure time in seconds
- Convert between different units of time
- Add and subtract time in hours and minutes
- Solve word problems involving elapsed time

Geometry
- Identify angles
- Relate the size of the angle to the degree of turning
- Count the angles in polygonal shapes

Area and Perimeter
- Find the area of figures in square units, square centimeters, and square inches
- Compare square units
- Measure the perimeter of a figure
- Compare the area and perimeter of figures
- Find the area of a rectangle given its length and width
- Solve problems involving area and perimeter

Mathematics - Grade Four

Class meetings: Daily for 75 minutes
Materials used:
- *Primary Math textbooks 4A & 4B*
- *Primary Math workbooks 4A & 4B*
- *Primary Math intensive practice workbooks 4A & 4B*
- *Visual Thinking in Mathematics 4A & 4B*
- Process Skills level 4

- Math Sprints 4
- Singapore Math extra practice level 4
- Primary Math Standards Edition tests
- SMART Board lessons, enrichment, extra practice
- Mad Minute
- Problem of the Week
- Singapore Math 4 Word Problems
- Teacher made games from Teachers Pay Teachers and other sources

Students will be Able to:
Numbers and Operations

- Represent numbers to 100,000
- Count by thousands and ten thousands
- Compare and order whole numbers to 100,000
- Recognize, write, name, and illustrate mixed numbers and improper fractions
- Find a fraction of a set
- Generate equivalent fractions
- Convert among mixed numbers and improper fractions
- Model decimals using tenths and hundredths
- Understand decimal notation through hundredths as an extension of the base-ten system
- Read and write decimals that are greater than or less than 1
- Compare and order decimals
- Identify equivalent decimals
- Connect equivalent fractions and decimals
- Apply understanding of models for multiplication and division
- Represent sharing equally and making equal groups
- Represent division as repeated subtraction.
- Recall multiplication facts and related division facts
- Develop fluency in multiplying multi-digit numbers
- Divide by a 1-digit number, with a remainder
- Solve multi-digit multiplication and division problems
- Add and subtract unlike fractions
- Add and subtract decimals
- Solve problems with addition and subtraction of decimals
- Use mental math and estimation strategies to find sums, differences, products, and quotients
- Decide whether an estimate or exact answer is needed
- Use estimation in determining relative sizes of amounts or distances
- Round and estimate with decimals

Algebra

- Identify, describe, and extend numeric and nonnumeric patterns.
- Use a rule to describe a sequence of numbers or objects.
- Represent division as the inverse of multiplication.

- Find the greatest common factor and least common multiple.
- Identify prime and composite numbers.
- Understand the relationships between the numbers and symbols in formulas for area and perimeter.
- Describe number relationships in context.
- Use a variety of concrete, pictorial, and symbolic models for multiplication and division; and addition and subtraction with fractions and decimals.
- Write and solve number sentences for one-, two-, and three-step real-world problems.
- Use bar models and number sentences for one-, two-, and three-step real-world problems
- Understand equality and inequality

Geometry

- Draw perpendicular and parallel lines
- Construct and measure angles
- Apply the properties of squares and rectangles
- Find unknown angle measures and side lengths of squares and rectangles
- Identify figures that form tessellations
- Understand the relationships between the numbers and symbols in formulas for area and perimeter
- Identify line and rotational symmetry
- Relate rotational symmetry to turns and congruency
- Use transformations to form tessellations
- Develop coordinate readiness with tables and line graphs

Measurement

- Estimate and measure angles with a protractor
- Classify angles by angle measure
- Relate 1/4-, 1/2-, 3/4-, and full turns to the number of right angles
- Find the perimeter of composite figures
- Solve problems involving the perimeter of squares, rectangles, and composite figures
- Explain area as an attribute of two-dimensional figures
- Connect area measure to the area model for multiplication; use it to justify the formula for the area of a rectangle
- Estimate and measure area in square units
- Select appropriate units, strategies, and tools to solve area problems

Data Analysis

- Construct line plots, stem and- leaf plots, tables, and line graphs
- Interpret tally charts, bar graphs, picture graphs, tables, and line graphs
- Find the mean (average), median, mode, and range of a data set

Probability

- Decide whether an outcome is certain, more likely, equally likely, less likely, or impossible

- Express the probability of an event as a fraction

Problem Solving

- Solve real-world problems involving multiplication, division, fraction concepts, data analysis, and measurement
- Use appropriate strategies to solve real-world problems
- Apply and explain problem solving processes in Put on Your Thinking Cap! And other activities
- Explore concepts more deeply and justify reasoning in Let's Explore and Hands- On activities
- Explore concepts more deeply and justify reasoning in Let's Explore and Hands- On activities
- Further investigate mathematical ideas by completing critical thinking skills activities.
- Show that some figures can be turned and not change shape or size (rotational symmetry)
- Analyze a data set by finding its mean, median, mode, and range
- Identify, describe, and extend numeric and nonnumeric patterns
- Use properties of squares and rectangles to solve problems about area and perimeter
- Use estimation to check reasonableness (whole-number addition, subtraction, multiplication and division)

Communication

- Present mathematical thinking through Math Journal activities
- Discuss mathematical ideas in Let's Explore activities
- Work together in pairs or groups in Let's Explore, Games, and other activities
- Share mathematical ideas with others during Let's Explore and Hands-On activities
- Express ideas in Math Journal activities, using lesson vocabulary
- Use chapter and lesson vocabulary correctly

Connections

- Demonstrate that decimal notation is an extension of the base-ten system
- Examine the relationship between fractions and decimals
- Make connections among multiplication, division, factors, and multiples
- Convert among mixed numbers and improper fractions
- Describe number relationships in context
- Connect equivalent fractions and decimals
- Make connections among the greatest common factor, least common multiple, and operations with fractions
- Solve real-world problems involving multiplication, division, fraction concepts, data analysis, and measurement

Representation

- Represent numbers to 100,000 in various contexts
- Express numbers to 100,000 in standard, expanded, and word forms
- Model decimals to tenths and hundredths

- Write addition and subtraction number sentences for real-world problems with fractions and decimals
- Use models to show relationships between improper fractions and mixed numbers
- Apply understanding of models for multiplication and division.
- Write addition and subtraction number sentences for real-world problems with fractions and decimals
- Use a rule to describe a sequence of numbers or objects
- Translate between equivalent improper fractions and mixed numbers
- Use a variety of models for multi-digit multiplication and division of whole numbers
- Use a variety of models for addition and subtraction of fractions and decimals
- Measure perimeter and area in customary and metric units
- Measure perimeter and area in customary and metric units
- Create a line graph from data in a table
- Use measures of central tendency to describe typical values of data sets (social)
- Solve real-world problems involving multiplication, division, fraction concepts, data analysis, and measurement
- Use technology (virtual manipulatives and computers) to model and draw

Sequence:

Trimester One

Chapter One
- Place Value of Whole Numbers
- Operations and Algebraic Thinking
- Numbers and Operations in Base 10
- Problem Solving

Chapter Two
- Estimation and Number Theory
- Operations and Algebraic Thinking
- Numbers and Operations in Base 10
- Problem Solving Chapter Three
- Whole Number Multiplication and Division
- Operations and Algebraic Thinking
- Numbers and Operations in Base 10
- Problem Solving Chapter Four
- Skip- materials are covered in science class Chapter Five
- Data and Probability
- Operations and Algebraic Thinking
- Numbers and Operations in Base 10
- Numbers and Operations: Fractions
- Problem Solving

Trimester Two

Chapter Six

- Fractions and Mixed Numbers
- Operations and Algebraic Thinking
- Numbers and Operations: Fractions
- Measurement and Data
- Problem Solving Chapter 7
- Decimals
- Operations and Algebraic Thinking
- Numbers and Operations in Base 10
- Numbers and Operations: Fractions
- Measurement and Data
- Problem Solving Chapter Eight
- Adding and Subtracting Decimals
- Operations and Algebraic Thinking
- Numbers and Operations in Base 10
- Numbers and Operations: Fractions
- Measurement and Data
- Problem Solving

Trimester Three

Chapter Nine

- Angles
- Measurement and Data
- Geometry
- Problem Solving Chapter Ten
- Perpendicular and Parallel Line Segments
- Operations and Algebraic Thinking
- Numbers and Operations in Base 10
- Measurement and Data
- Geometry
- Problem Solving Chapter Eleven
- Squares and Rectangles
- Operations and Algebraic Thinking
- Numbers and Operations in Base 10
- Measurement and Data
- Geometry
- Problem Solving Chapter Twelve
- Area and Perimeter
- Operations and Algebraic Thinking
- Numbers and Operations in Base 10

- Numbers and Operations: Fractions
- Problem Solving Chapter Thirteen
- Symmetry
- Operations and Algebraic Thinking
- Numbers and Operations in Base 10
- Numbers and Operations: Fractions
- Geometry
- Problem Solving Chapter Fourteen
- Tessellations
- Operations and Algebraic Thinking
- Numbers and Operations in Base 10
- Numbers and Operations: Fractions
- Geometry
- Problem Solve

Mathematics - Grade Five

Class Meetings: Once daily for 75 minutes
Materials Used:

- Primary Math textbooks 5A & 5B
- Primary Math workbooks 5A & 5B
- Primary Math Intensive Practice workbooks 5A & 5B
- Visual Thinking in Mathematics 4A & 4B
- Process Skills level 4 (grade five)
- Math Sprints 5
- Singapore Math extra practice level 5
- SMART Board lessons, enrichment, extra practice
- Problem of the Week - linked to real world scenarios
- Singapore Math 5 Word Problems
- Teacher made games from Teachers Pay Teachers and other sources
- Mathematical Olympiad for Elementary Schools- selected problems

Students will be able to:
Numbers and Operations

- Understand place value concepts through millions
- Count by hundred thousands and millions
- Compare and order whole numbers to 10,000,000
- Express numbers to 10,000,000 in various forms
- Convert fractions to decimals
- Relate fractions and division expressions
- Model decimals using thousandths
- Understand place value concepts through thousandths
- Apply the correct order of operations
- Convert decimals to fractions

- Use ratios to solve problems
- Find equivalent ratios
- Solve problems with percent
- Convert fractions to percents
- Find a percent of a number
- Multiply multi-digit numbers
- Find quotients involving multi-digit dividends
- Solve multiplication and division problems
- Select the most useful form of the quotient and interpret the remainder
- Add and subtract unlike fractions and mixed numbers
- Multiply proper fractions, improper fractions, mixed numbers, and whole numbers
- Divide fractions by whole numbers
- Solve word problems with addition, subtraction, multiplication, and division of fractions
- Add and subtract decimals
- Multiply and divide decimals by whole numbers
- Solve problems with multiplication and division of decimals
- Use estimation and mental math to estimate sums, differences, products, and quotients
- Estimate sums and differences with fractions and decimals
- Estimate products and quotients with decimals
- Understand rate to solve problem

Geometry

- Work with angles on a straight line
- Work with angles at a point
- Apply the properties of right, isosceles, and equilateral triangles
- Apply the sum of the angle measures of a triangle
- Apply the properties of a parallelogram, rhombus, and trapezoid
- Demonstrate that the sum of any two side lengths of a triangle is greater than the length of the third side
- Find the area of a triangle
- Identify and classify prisms and pyramids
- Understand that three dimensional shapes are made up of two-dimensional shapes
- Identify two-dimensional shapes in three-dimensional shapes
- Identify, describe, sort, and classify three-dimensional shapes
- Identify the solid that can be made from a net
- Identify cylinders, spheres, and cones
- Recognize shapes from different perspectives
- Describe cylinders, spheres, and cones by the number of and types of faces, and the number of edges and vertices
- Compose and decompose three-dimensional shapes
- Build solids using unit cubes
- Plot points on a coordinate grid

Measurement

- Apply the idea that the sum of angles on a straight line is 180°
- Apply the idea that vertical angles are equal in measure
- Apply the idea that the sum of angles at a point is 360°
- Find the area of triangles

Data Analysis and Display

- Calculate mean, mode, median, range
- Solve word problems using a data set
- Identify data in the world and relate that data to problems
- Represent data in a double bar graph
- Represent data in other forms such as infographic or creative writing
- Analyze data in a double bar graph

Probability

- Determine experimental probability of an outcome
- Compare the results of an experiment with theoretical probability
- Find all possible combinations by listing, making a tree diagram, and multiplying

Problem Solving

- Demonstrate and reiterate a clear approach to all mathematical problems using logic towards a solution (read and digest units, use proper operation, estimate solution, check work)
- Build skills in multiplication; division; fraction concepts, decimals, ratios, and percents; data analysis; and measurement through problem solving
- Solve real-world problems involving multiplication; division; concepts with fractions, decimals, ratios, and percents; data analysis; and measurement
- Use appropriate strategies to solve real-world problems
- Further investigate mathematical ideas by completing critical thinking skills activities
- Apply the idea that the sum of angles on a straight line is 180°
- Apply the idea that the sum of angles at a point is 360°
- Compare the results of an experiment to validate the use of theoretical probability
- Identify, describe, and extend numeric patterns involving all operations
- Explore the relationship among lists, tree diagrams, and multiplication to calculate combinations
- Use properties of multiplication (including the Distributive Property) in estimation and mental math

Communication

- Present mathematical thinking through Math Journal
- Use chapter and lesson vocabulary when writing in journal
- Use proper mathematical terminology (solution vs answer, mean vs average)
- Use multimedia sources to present concepts (slides, animation, etc.)
- Discuss mathematical ideas in activities
- Work together in pairs or groups in mathematical challenges and games

- Identify mathematics and value in real world situations
- Explore careers and identify diversity in Mathematics

Connections
- Relate fractions and division
- Understand the connection among fractions, decimals, ratios, and percents as ways to represent parts of a whole
- Examine the relationships between three-dimensional figures and the two-dimensional figures that form them
- Relate fractions and division
- Explain the relationships among area formulas of different polygons
- Connect equivalent fractions, decimals, and percents
- Understand how monetary operations use decimals
- Solve real-world problems involving multiplication; division; fraction, decimal, ratio, and percent concepts; data analysis; and measurement
- Compare experimental results and theoretical probability

Representation
- Express numbers to 10,000,000 in various forms
- Find equivalent ratios
- Convert fractions and decimals to percents
- Represent combinations with lists, tree diagrams, and multiplication
- Write and solve targeted equations
- Find rules to complete number patterns
- Translate between fractions and percents
- Select the most useful form of the quotient
- Measure volume of a rectangular prism
- Represent data in a double bar graph
- Solve real-world math problems involving social situations
- Use technology (virtual manipulatives and computers) to model and draw

Sequence Trimester One Book 5A

Unit 1- Whole numbers
- Place Value
- Multiply and divide by 10, 100, 1000
- Estimation and Approximation
- Order of Operations

Unit 2- Multiplication and Division by 2-digit number
- Multiplication
- Division
- Word Problems

Unit 3- Fractions

- Division of Fractions
- Addition and subtraction of like and unlike fractions
- Product of Fractions
- Fractions operations and whole numbers

Unit 4 Area of Triangles
- Recognize different kinds of triangles
- Word problem

Unit 5- Ratio
- Finding ratios
- Equivalent ratios
- Comparing multiple quantities

Unit 6- Angles
- Measure angles
- Finding unknown angle
- Navigation with angles

Trimester Review

Sequence Trimester Two Book 5B

Unit 1 Decimals
- Multiply by 10, 100, 1000
- Division by 10, 100, 1000
- Multiply by 2-digit whole number
- Conversion of measurements

Unit 2 - Percentages
- Write and convert fractions to percentages
- Find the Percentage of a quantity
- Understand and apply percentage discounts, simple and compound interest

Unit 3 - Average
- Find average
- Calculate mean, median and mode

Unit 4 - Rate
- Find solution to scenarios using rate
- Use time, distance, output or other rate measures in problem solving

Unit 5 - Graphs
- Create and understand line graphs
- Create and understand pie charts and other forms of data display

Trimester Review

Sequence Trimester Three Book 5B

Unit 6 Triangles

- Find the sum of angles in a triangle
- Identify Isosceles and Equilateral Triangles
- Draw and measuring triangles

Unit 7 4-Sided Figures

- Identify Parallelograms, Rhombuses and Trapezoids
- Draw Parallelograms, Rhombuses and Trapezoids
- Apply knowledge of triangles to real world scenarios

Unit 8 Tessellations

- Identify tiling patterns
- Drawing tiling patterns
- Identify art forms and artists using tessellations

Unit 9 Volume

- Identify cubes and cuboids
- Find the volume of a solid
- Express volume in standard and metric forms

Trimester and year-end review to include mathematics notebook and final student assessment and/or project to summarize learning.

Pre-Algebra – Grade Six

Class Meetings: once daily for 50 minutes
Materials:

- Prentice Hall's Pre-Algebra
- Teacher-created games and activities

Students will be able to:

Algebraic Expressions and Integers

- Identify variables and variable expressions
- Use order of operations to solve multi-step problems
- Write and evaluate expressions
- Plot integers on a number line and find the absolute value of integers
- Add, subtract, multiply and divide integers
- Use inductive reasoning to find the next item in a sequence
- Plot points on the coordinate plane

Solving One-Step Equations and Inequalities

- Apply the properties of numbers, including the distributive property
- Simplify variable expressions
- Solve equations and one-step inequalities by adding, subtracting, multiplying or dividing
- Graph inequalities

Decimals and Equations

- Round and estimate decimal products and quotients
- Calculate the mean, median and mode
- Use formulas
- Solve equations by adding, subtracting, multiplying or dividing decimals
- Use the metric system

Factors, Fractions and Exponents

- Understand divisibility rules and factors
- Write exponents
- Use prime factorization to find the greatest common factor or two or more numbers
- Simplify fractions
- Multiply and divide with exponents
- Write large and small numbers using scientific notation

Operations with Fractions

- Compare and order rational numbers
- Add, subtract, multiply and divide fractions
- Use customary units of measurement
- Solve equations by adding, subtracting and multiplying fractions
- Understand powers and products of fractions

Ratios, Proportions and Percents

- Write ratios and unit rates
- Use proportions to solve problems
- Make a scaled drawing using properties of similar figures
- Calculate probability
- Relate proportions and percents
- Use equations to find the percentage of a number
- Calculate percent of change
- Calculate markup and discount

Solving Equations and Inequalities

- Solve two-step equations
- Solve multi-step equations
- Solve multi-step equations with fractions and decimals
- Write equations

- Solve equations with variables on both sides
- Solve two-step inequalities
- Transform formulas
- Calculate simple and compound interest

Linear Functions and Graphing

- Write functions
- Find the slope and y-intercept of linear functions
- Write rules for linear functions
- Write functions from scatter plots
- Solve by graphing
- Solve systems of linear equations
- Graph linear equalities

Spatial Thinking

- Identify points, lines and planes
- Use the properties of transversals to find the measures of angles
- Classify polygons
- Understand properties of congruence
- Define the properties of circles
- Construct triangles, quadrilaterals and circles with a straight edge and a compass
- Translate geometric figures on a coordinate grid
- Understand symmetry and reflections
- Rotate figures about a point

Area and Volume

- Calculate the area of parallelograms, triangles, trapezoids and circles
- Calculate the surface area of prisms, cylinders, pyramids, cones and spheres
- Calculate the volume of prisms, cylinders, pyramids, cones and spheres

Right Triangles in Algebra

- Understand square roots and irrational numbers
- Use the Pythagorean Theorem
- Use the distance and midpoint formulas
- Learn and apply the properties of special right triangles
- Write and use sine, cosine and tangent ratios
- Use angles of elevation and depression in problem solving

Data Analysis and Probability

- Create frequency tables, line plots and histograms
- Create box-and-whisker plots
- Use graphs to persuade
- Count outcomes and use theoretical probability
- Understand independent and dependent events

- Use permutations and combinations
- Find the experimental probability
- Use random samples and surveys

Sequence:

Trimester One

Chapter One -- Algebraic Expressions and Integers Variables and Expressions

- Order of Operations
- Writing and evaluating expressions
- Integers and absolute value
- Adding, subtracting, multiplying and dividing integers
- Inductive reasoning
- The coordinate plane

Chapter 2 -- Solving One-Step Equations and Inequalities Properties of numbers, including the distributive property

- Simplifying variable expressions
- Solving equations and one-step inequalities by adding, subtracting, multiplying or dividing
- Inequalities and their graphs

Chapter 3 -- Decimals and Equations

- Rounding and estimating decimal products and quotients
- Calculating mean, median and mode
- Using formulas
- Solving equations by adding, subtracting, multiplying or dividing decimals
- Using the metric system

Chapter 4 -- Factors, Fractions and Exponents Divisibility and factors

- Exponents
- Prime factorization and greatest common factor
- Simplifying fractions
- Rational numbers
- Exponents with multiplication and division
- Scientific notation

Trimester Two

Chapter 5 -- Operations with Fractions Comparing and ordering rational numbers

- Adding, subtracting, multiplying and dividing fractions
- Using customary units of measurement
- Solving equations by adding, subtracting and multiplying fractions
- Powers and products of fractions

Chapter 6 -- Ratios, Proportions and Percents Ratios and unit rates

- Proportions
- Similar figures and scale drawings
- Calculating probability
- Proportions and percents
- Percents and equations
- Calculating percent of change
- Calculating markup and discount

Chapter 7 -- Solving Equations and Inequalities Solving two-step equations

- Solving multi-step equations
- Multi-step equations with fractions and decimals
- Writing equations
- Solving equations with variables on both sides
- Solving two-step inequalities
- Transforming formulas
- Calculating simple and compound interest

Chapter 8 -- Linear Functions and Graphing Relations and functions

- Slope and y-intercept
- Writing rules for linear functions
- Scatter plots
- Solving by graphing
- Solving systems of linear equations
- Graphing linear equalities

Trimester 3

Chapter 9 -- Spatial Thinking Points, lines and planes

- Angle relationships and parallel lines
- Classifying polygons
- Congruence
- Circles
- Constructions
- Translations
- Symmetry and reflections
- Rotations

Chapter 10 -- Area and Volume

- Area of parallelograms, triangles, trapezoids and circles
- Surface area of prisms, cylinders, pyramids, cones and spheres
- Volume of prisms, cylinders, pyramids, cones and spheres

Chapter 11 -- Right Triangles in Algebra Square roots and irrational numbers

- The Pythagorean Theorem
- Distance and midpoint formulas
- Special right triangles
- Sine, cosine and tangent ratios
- Angles of elevation and depression

Chapter 12 -- Data Analysis and Probability Frequency tables, line plots and histograms

- Box-and-whisker plots
- Using graphs to persuade
- Counting outcomes and theoretical probability
- Independent and dependent events
- Permutations and combinations
- Experimental probability
- Random samples and surveys

Algebra I – Grade Seven

Class Meetings: once daily for 50 minutes
Materials:

- Prentice Hall's Algebra 1
- Algebra tiles
- Teacher-created games and activities

Students will be able to:

Sequence:

Trimester One

Chapter One -- Algebraic Expressions and Integers Variables and Expressions

- Order of Operations
- Writing and evaluating expressions
- Integers and absolute value
- Adding, subtracting, multiplying and dividing integers
- Properties of numbers including the distributive property
- The coordinate plane

Chapter 2 -- Solving Equations

- Simplifying variable expressions
- Solving equations by adding, subtracting, multiplying or dividing
- Solving multi-step equations
- Using and transforming formulas

Chapter 3 -- Solving Inequalities

- Solving and graphing inequalities
- Using formulas
- Solving compound inequalities
- Absolute value equations and inequalities

Chapter 4 -- Solving proportions

- Solving proportions
- Similar figures
- Solving percent equations
- Percent of change equations
- Applying ratios to probability
- Probability of compound events

Trimester Two

Chapter 5 -- Graphs and functions

- Relating graphs to events
- Introduction to functions
- Function rules
- Direct variations

Chapter 6 -- Linear equations and their graphs

- Rate of change/ slope
- Slope intercept equations
- Point slope form equations
- Parallel and perpendicular lines
- Scatter plots and trend lines
- Absolute value functions and their graphs

Chapter 7 -- Systems of Equations and Inequalities

- Solving systems by graphing
- Solving systems using substitution
- Solving systems using elimination
- Applications of linear systems
- Linear inequalities
- Solving systems of linear inequalities

Chapter 8 -- Exponents and exponential functions

- Zero and negative exponents
- Scientific notation
- Multiplication properties of exponents
- Division properties of exponents
- Geometric sequences

- Exponential functions including growth and decay

Trimester 3

Chapter 9 -- Polynomials and Factoring
- Adding and subtracting polynomials
- Multiplying and factoring expressions
- Multiplying binomials
- Perfect square trinomials and difference of squares
- Factoring trinomials
- Factoring by grouping

Chapter 10 -- Quadratic Equations and graphs
- Quadratic functions and graphs
- Finding and estimating square roots
- Solving quadratic equations
- Factoring to solve quadratic equations
- Completing the square
- Quadratic formula

Chapter 11 -- Radical expressions and equations
- Simplifying radicals
- The Pythagorean Theorem
- Distance and midpoint formulas
- Operations with radical expressions
- Graphing square root functions
- Solving radical equations
- Special right triangles
- Sine, cosine and tangent ratios
- Angles of elevation and depression

Chapter 12 -- Rational expressions and functions
- Inverse variation
- Graphing rational functions
- Simplifying rational expressions
- Multiplying and dividing rational expressions
- Dividing polynomials
- Adding and subtracting rational expressions
- Solving rational equations
- Counting methods and permutations

Geometry – Grade Eight

Class Meetings: once daily for 50 minutes

Materials:

- Prentice Hall's Geometry
- Teacher-created games and activities

Students will be able to:

Tools of Geometry

Learn the basic elements and nomenclature of geometry

- Patterns and inductive reasoning
- Points, lines, and planes
- Segments, rays, parallel lines and planes
- Measuring segments and angles
- Basic constructions
- The coordinate plane
- Perimeter, circumference, and area

Reasoning and Proof

Establish the rudimentary logic and vocabulary used in geometric proof

- Conditional statements
- Biconditionals and definitions
- Deductive reasoning
- Reasoning in algebra
- Proving angles congruent

Parallel and Perpendicular Lines

Establish the relationships formed by parallel and perpendicular lines and the essentials of construction

- Properties of parallel lines
- Proving lines parallel
- Parallel lines and the Triangle Angle-Sum Theorem
- The Polygon Angle-Sum Theorem
- Lines in the coordinate plane
- Slopes of parallel and perpendicular lines
- Constructing parallel and perpendicular lines

Congruent Triangles

Introduce triangle congruency and the use of CPCTC in proof

- Congruent figures
- Triangle congruence by SSS and SAS
- Triangle congruence by ASA and AAS
- Using congruent triangles: CPCTC
- Isosceles and equilateral triangles
- Congruence in right triangles
- Using corresponding parts of congruent triangles

Relationships Within Triangles
Study concepts relating to concurrent lines and the logical basis for indirect reasoning

- Midsegments of triangles
- Bisectors in triangles
- Concurrent lines, medians, and altitudes
- Inverses, contrapositives, and indirect reasoning
- Inequalities in triangles

Quadrilaterals
Learn to classify quadrilaterals and incorporate properties into proof

- Classifying quadrilaterals
- Properties of parallelograms
- Proving that a quadrilateral is a parallelogram
- Special parallelograms
- Trapezoids and kites
- Placing figures in the coordinate plane
- Proofs using coordinate geometry

Area
Find the area of a variety of polygonal figures and study the properties of circles

- Areas of parallelograms and triangles
- The Pythagorean Theorem and its Converse
- Special right triangles
- Areas of trapezoids, rhombuses, and kites
- Areas of regular polygons
- Circles and arcs
- Areas of circles and sectors
- ● Geometric probability

Similarity
Learn the properties of similar figures and relate area and volume to similarity ratios

- Ratios and proportions
- Similar polygons
- Proving triangles similar
- Similarity in right triangles
- Proportions in triangles
- Perimeters and areas of similar figures

Right Triangle Trigonometry
Grasp the basic trigonometric relationships for right triangles and use them in problem solving

- The tangent ratio
- Sine and cosine ratios
- Angles of elevation and depression
- Vectors
- Trigonometry and area

Surface Area and Volume
Master the methodology for finding the volume and surface area of common geometric solids

- Space figures and nets
- Space figures and drawings
- Surface areas of prisms and cylinders
- Surface areas of pyramids and cones
- Volumes of prisms and cylinders
- Volumes of pyramids and cones
- Surface areas and volumes of spheres
- Areas and volumes of similar solids

Circles
Discover the vocabulary and conceptual relationships relating to circles and sectors

- Tangent lines
- Chords and arcs
- Inscribed angles
- Angle measures and segment lengths
- Circles in the coordinate plane
- Locus: a set of points

Transformations
Use coordinate geometry to manipulate plane figures

- Reflections
- Translations
- Rotations
- Compositions of reflections
- Symmetry
- Tessellations
- Dilations

Sequence:

Trimester One

Chapter One - Tools of Geometry
Basic elements and nomenclature of geometry

- Patterns and inductive reasoning
- Points, lines, and planes
- Segments, rays, parallel lines and planes
- Measuring segments and angles
- Basic constructions
- The coordinate plane
- Perimeter, circumference, and area

Chapter Two - Reasoning and Proof
The essential logic and vocabulary used in geometric proof

- Conditional statements
- Biconditionals and definitions
- Deductive reasoning
- Reasoning in algebra
- Proving angles congruent

Chapter Three - Parallel and Perpendicular Lines
Relationships formed by parallel and perpendicular lines, including construction

- Properties of parallel lines
- Proving lines parallel
- Parallel lines and the Triangle Angle-Sum Theorem
- The Polygon Angle-Sum Theorem
- Lines in the coordinate plane
- Slopes of parallel and perpendicular lines
- Constructing parallel and perpendicular lines

Chapter Four - Congruent Triangles
Methods of proving triangles congruent and using congruency in proof

- Congruent figures
- Triangle congruence by SSS and SAS
- Triangle congruence by ASA and AAS
- Using congruent triangles: CPCTC
- Isosceles and equilateral triangles
- Congruence in right triangles
- Using corresponding parts of congruent triangles

Trimester Two

Chapter Five - Relationships Within Triangles
The essential properties of triangles and forming indirect proof

- Midsegments of triangles
- Bisectors in triangles
- Concurrent lines, medians, and altitudes
- Inverses, contrapositives, and indirect reasoning
- Inequalities in triangles

Chapter Six - Quadrilaterals
The fundamental properties of special quadrilaterals and an introduction to coordinate geometry

- Classifying quadrilaterals
- Properties of parallelograms
- Proving that a quadrilateral is a parallelogram
- Special parallelograms
- Trapezoids and kites

- Placing figures in the coordinate plane
- Proofs using coordinate geometry

Chapter Seven - Area
Special right triangles and finding area of polygons

- Areas of parallelograms and triangles
- The Pythagorean Theorem and its Converse
- Special right triangles
- Areas of trapezoids, rhombuses, and kites
- Areas of regular polygons
- Circles and arcs
- Areas of circles and sectors
- Geometric probability

Chapter Eight - Similarity
Using ratio and proportion to relate similar figures

- Ratios and proportions
- Similar polygons
- Proving triangles similar
- Similarity in right triangles
- Proportions in triangles
- Perimeters and areas of similar figures

Trimester Three

Chapter Nine - Right Triangle Trigonometry
Basic right triangle trigonometry, including sine, cosine and tangent

- The tangent ratio
- Sine and cosine ratios
- Angles of elevation and depression
- Vectors
- Trigonometry and area

Chapter Ten - Surface Area and Volume
Surface area of common geometric solids such as prisms, pyramids, cylinders, cones, and spheres

- Space figures and nets
- Space figures and drawings
- Surface areas of prisms and cylinders
- Surface areas of pyramids and cones
- Volumes of prisms and cylinders
- Volumes of pyramids and cones
- Surface areas and volumes of spheres
- Areas and volumes of similar solids

Chapter Eleven - Circles
The fundamental properties of circles, sectors, and angles

- Tangent lines
- Chords and arcs
- Inscribed angles
- Angle measures and segment lengths
- Circles in the coordinate plane
- Locus: a set of points

Chapter Twelve - Transformations
Transformation of plane figures using coordinate geometry

- Reflections
- Translations
- Rotations
- Compositions of reflections
- Symmetry
- Tessellations
- Dilations

Physical Education

Physical Education is taught to students in pre-k through grade eight at Academy Hill School. The curriculum is derived from the Massachusetts Comprehensive Health Curriculum Framework and National Physical Education Standards, and adapted to meet the needs of a gifted and talented population. Students in pre-k through grade four receive one hundred fifty minutes of physical education per week and students in grade five through grade eight receive one hundred minutes of physical education per week. The physical education curriculum is designed to teach in all three learning domains - affective, cognitive, and physical.

Our youngest students explore how their body moves and develop skill themes and movement concepts. These students are introduced to the idea of fitness and the importance of activity. The lessons address cognitive learning by expanding students' movement vocabulary, as well as by developing social and cooperative skills in the affective domain. From grades three and up, students build on their skill foundation. Skills and concepts are practiced and applied under various conditions, including modified games. Fitness and wellness are explored and the students begin to link concepts from science (human body) to physical activity and fitness.
Students are expected to have a strong skill understanding and challenge their cognitive abilities through team strategies. Teamwork, cooperation, and leadership ideas are interwoven in all units. The program is designed to nurture lifelong movers through the varied curriculum; students are encouraged to develop a healthy self-concept and a positive attitude towards fitness and physical activity.

The goals of the Physical Education program are to help students to:

- Demonstrate competency in movement skills.

- Apply movement concepts and principles to the learning and development of motor skills.
- Develop a physically active lifestyle.
- Achieve and maintain a health-enhancing level of physical fitness.
- Demonstrate responsible personal and social behavior in physical activity settings.
- Demonstrate understanding and respect for differences among people in physical activity settings.
- Understand that physical activity provides opportunities for enjoyment, challenge, self-expression, and social interaction.

Physical Education Kindergarten-Grade Three

Class Meetings: 150 Minutes a week

Physical Education is an important piece to every student's development. Our program consists of goals and objectives which align with both state and national standards.

Goals:

- Learn developmentally appropriate motor skills and movement concepts and practice them in small sided games and through sport.
- Refine skills learned in previous years.
- Learning proper personal behaviors and social behaviors in a physical activity setting.
- To be able to work with a team and practice skills such as teamwork and communication.
- Respecting both self and others while in class at all times.
- Develop perseverance and cooperation skills to help with day-to-day life tasks.
- Enjoy living a healthy and active lifestyle.

Sequence:

Fall Term:

- Locomotor Skills
- Soccer
- Throwing Catching Football

Winter Term

- Cooperation Games
- Dance
- Hiking
- Scooters
- Sledding
- Yoga

Spring Term

- Baseball/Softball
- Basketball

- Field Games
- Hockey
- Kickball
- Lacrosse

Physical Education Grades 4-8

Class Meetings: 100 Minutes a week

Physical Education is an important piece to every student's development. Our program consists of goals and objectives which align with both state and national standards.

Goals:

- Gain skills and knowledge to be physically active for a lifetime
- Develop and enhance social skills and self esteem
- Apply previously learned movement concepts to new and advanced skills and practice them through activities and sports.
- Demonstrate an understanding and respect for all students in a physical activity setting
- Develop and reinforce cooperative behavior

Sequence:

Fall Term

- Basketball
- Fitness Testing
- Football
- Rugby
- Soccer
- Street Hockey

Winter Term

- Cooperation Games
- Fitness Testing
- Hiking
- Ping Pong
- Snowshoeing
- Yoga

Spring Term

- Baseball/Softball
- Fitness Testing
- Golf
- Kickball
- Lacrosse
- Volleyball

Please see appendix for a sample unit lesson plan for Grade 3 Physical Education.

Visual Art

Art education is an essential and fundamental part of personal growth and intellectual development. Through art, most aspects of human nature can be identified, encouraged and nurtured. We are committed to studying art disciplines as recommended by the National Standards of Education in the Arts. The Visual Arts standards in the elementary years focus on general Art knowledge and skills to help create a foundation for artistic study in later years (drawing, painting, sculpture, and graphic design.)

Art classes within the elementary grades help students understand how media, technique and process are used to create works of art. Through the Elementary Visual Arts curriculum, students:

- Develop an understanding of how artworks are structured
- Explore how art has a variety of functions
- Learn to identify, analyze and select subject matter, symbols and ideas for personal and cultural expression
- Explore how historical and cultural contexts provide meaning for works of art
- Learn how to assess the merits of their own artworks and the artworks of others

Art classes within the middle grades expand on the elementary foundation in understanding and skills in the visual arts in an exploratory manner. Through the Middle school Visual Arts curriculum, students:

- Develop increasingly advanced creative strategies, skills, and habits of mind through artistic practices
- Apply design literacy to a wide variety of traditional and new media
- Acquire increasing complex procedural knowledge, skill and craftsmanship in art making while exploring an expanded range of media
- Develop more aesthetic judgment that supports the making and understanding of rich meaning in art
- Explore a wide range of ideas about the meaning and purpose of visual art
- Form a broader knowledge and understanding of our rich and diverse historical and cultural heritage through art

Visual Arts - Kindergarten

Class Meetings: Students in Kindergarten meet twice a week for 30-minute sessions.

Students in every grade level begin the year with these goals:

Goals:

- Understand the rules of the Art room

- Discuss the Elements of Art

TRADE/TEXTBOOKS:

- Patterns/Lorenz Books
- *Individual themed prints and books*
- *History of Art/Parragon Publishing*

Goals:

- Introduce the Color wheel
- Learn about paint, brushes and how to use them (K-4-Content Standard 1) Understanding and applying media, techniques, and processes
- Practice what happens when colors mix (K-4-Content Standard 1a) Students know the differences between materials, techniques, and processes
- Create a pendant/ use the elements of texture, color, shape and form
- Learn about and practice making patterns (K-4-Content Standard 1b) Students describe how different materials, techniques, and processes cause different responses
- Experience drawing a self-portrait from a mirror
- Discuss drawings for theme project
- Learn to listen, observe and follow direction while doing a step by step theme drawing
- Free Choice- gain an appreciation for earning a special art day as a group
- Color Wheel project - learn about primary and secondary colors using a variety of materials
- Practice cutting with scissors. (K-4-Content Standard 1d) Students use art materials and tools in a safe and responsible manner
- Discuss our art theme
- Draw pictures of a subject based on the theme
- Experience using clay to create the subject from the previous drawing (K-4-Content Standard 4b) Students identify specific works of Art as belonging to particular cultures, times, and places
- Enjoy working with clay/ describe what it feels like (tactile experience)
- Use creativity and Imagination
- Learn about collage/ create a patterned snow person
- Learn about a new artist and different art styles (K-4-Content Standard 4) Understanding the visual arts in relation to history and cultures
- Enjoy learning about new materials and techniques
- Appreciate that Art is exciting and fun

Sequence:

Trimester One

- Art Room rules and Element Discussion
- Practice painting with primary and secondary colors
- Create a pendant using some of the Elements
- Paint different types of patterns with tempera paint
- Draw a self-portrait using a mirror

- Create a drawing for theme project
- Free Choice

Trimester Two

- Create a color wheel project using knowledge of primary and secondary colors
- Draw subject based on theme
- Use clay to create subject from previous drawing
- Learn the skills of patience and detail
- Creation and exploration of patterned snow people (intro to collage)
- Introduction to art style
- Painting of a composition based on previous art style
- Creation of a Torn Paper collage

Trimester Three

- Sand painting, pastel on black paper
- Heart art project
- Create a portfolio and appreciate its purpose
- Learn about an artist
- Creation of composition in artist' style
- Intro to another art style
- Produce an art project based on art style

Visual Arts - Grade One

TRADE/TEXTBOOKS:

- Patterns/Lorenz Books
- *A color of his own, Leo Lionni Individual themed prints Books relating to theme*
- *History of Art/Paragon Publishing*

Class Meetings: Students in grades one through eight meet once a week and twice a week for 50 minute sessions.

Goals:

- Review the Color Wheel
- Gain an understanding of how the Elements are used to create Art
- Review painting, how to use paintbrushes and paint (K-4 Content Standard 1) Understanding and applying media, techniques, and processes
- Practice mixing colors (Standard 1a) Students know the differences between materials, techniques and processes
- Explore taking a line for a walk with paint and oil pastel
- Learn about composition
- Learn about basic shape, design, painting techniques, sculpture and collage
- Create a pendant/ use the elements of texture, color, shape and form
- Learn about and practice making patterns (K-4 Content Standard 1b) Students describe how different materials, techniques, and processes cause different responses

- Introduce and discuss drawings relating to theme
- Learn to listen, observe and follow direction during a step by step drawing for theme
- Free Choice-gain an appreciation for earning a special Art day as a group
- Experience an exciting way to explore the color wheel by blending colored model magic clay K-4-Content Standard) Students know the differences between materials, techniques and processes
- Learn about sculpture in a safe and creative way
- Color Wheel project- explore primary and secondary colors using a variety of materials
- Practice cutting with scissors and applying glue (K-4-Content Standard) 1d Students use art materials and tools in a safe and responsible manner
- Discuss art theme and related project
- Draw pictures of subject relating to theme
- Experience using clay to create subject from the previous drawing (K-4-Content Standard 4b) Students identify specific works of Art as belonging to particular cultures, times and places
- Enjoy working with clay/ what does it feel like? (tactile experience)
- Engage in creativity and imagination to form a work of art
- Learn about collage/ create a patterned snow person
- Introduction to an art style
- Learn about watercolor and create a tree branch in this medium
- Engage in the creation of a portfolio and appreciate its purpose
- Learn about a new artist and art style (K-4-Content Standard 4) Understanding the visual arts in relation to culture and history
- Enjoy learning about new materials and techniques
- Appreciate that Art is exciting and fun

Sequence:

Trimester One

- Art room rules and Element Discussion
- Practice painting with primary and secondary colors
- Create a pendant using some of the elements
- Study various works of an art style
- Introduction to oil pastel
- Learn about composition
- Create Color/line work of Art
- Paint different types of patterns with tempera paint
- Introduce and discuss art theme
- Create a theme drawing
- Free Choice

Trimester Two

- Create a color wheel project using knowledge of primary and secondary colors
- Study and draw subject based on theme

- Learn about clay
- Sculpt an object from clay based on theme
- Learn the skills of patience and detail
- Creation and exploration of patterned snow people (intro to collage)
- Introduction to art style
- 100th day of school project

Trimester Three

- Composition painting done in art style from Trimester Two
- Introduction to watercolor
- Produce a watercolor tree branch
- Create a portfolio
- Appreciate and learn about an artist
- Discussion about artists and styles of Art
- Intro to another art style
- Create a small painting inspired by artist
- Help with signs and numbers for the Art show

Visual Arts - Grade Two

TRADE/TEXTBOOKS:

- Patterns/Lorenz Books Individual themed prints Theme related books
- *History of Art/Parragon Publishing*
- Art books about artists Individual prints of artists work

Class Meetings: Students in grades one through eight meet once a week and twice a week for 50 minute sessions.

Goals:

- Focus on the elements of line, shape and color
- Color Wheel Discussion
- Gain an understanding of how the Elements are used to create Art
- Review painting, how to use paint and paintbrushes (K-4-Content Standards1) Understanding and applying media, techniques and processes
- Practice mixing colors (Standard 1a) Students know the differences between materials, techniques and processes
- Learn about drawing, basic shape, design, painting techniques, sculpture and collage
- Experience drawing a self-portrait from a mirror
- Learn about sculpture in a safe and creative way
- Create a pendant/ use the elements of texture, color, shape and form
- Learn about and practice making patterns (K-4 Content Standard 1b) Students describe how different materials, techniques, and processes cause different responses
- Explore taking a line for a walk with paint and oil pastel
- Introduce and discuss art theme
- Learn to listen, observe and follow direction to create a theme drawing

- Free Choice-gain an appreciation for earning a special Art day as a group
- Experience an exciting way to explore the color wheel by blending colored model magic clay (K-4-Content Standard) Students know the differences between materials, techniques and processes
- Discuss our art theme and related project
- Study pictures of theme subject for inspiration to create an original piece
- Explore theme information to gain knowledge of subject
- Produce a drawing of a subject design/ explore incorporating symbols that have meaning (K-4-Content Standard 3b) Students select and use subject matter, symbols, and ideas to communicate meaning
- Experience using clay to create object from subject (K-4-Content Standard 4b) Students identify specific works of Art as belonging to particular cultures, times and places
- Enjoy working with clay/ what does it feel like? (tactile experience)
- Engage in creativity and imagination
- Learn about collage/ create a patterned snow person
- Engage in the creation of a portfolio and appreciate its purpose
- Learn about a new artist and art styles (K-4-Content Standard 4) Understanding the visual arts in relation to culture and history
- Produce a work in the style of an artist
- Enjoy learning about new materials and techniques
- Appreciate that Art is exciting and fun

Sequence:

Trimester One

- Art room rules and Element discussion
- Practice painting with primary and secondary colors
- Produce a self-portrait from a mirror
- Create a pendant using some of the elements
- Study various works of an art style
- Introduction to oil pastel
- Continue to learn about composition
- Create Color/line work of Art
- Paint different types of patterns with tempera paint
- Introduce and discuss art theme
- Free Choice

Trimester Two

- Study and draw subject from theme and sculpt subject from clay
- Learn the skills of patience and detail
- Creation and exploration of patterned snow people (intro to collage)
- Introduction to art style
- 100th day of school project

Trimester Three

- Composition painting done in art style from Trimester Two
- Heart art project
- Appreciate and learn about an artist
- Create a small painting inspired by artist
- Discussion about artists and art styles
- Help with signs and numbers for the Art show
- Create a portfolio
- Intro to another art style
- Painting based on above style

Visual Arts - Grade Three

TRADE/TEXTBOOKS:

- Individual theme prints
- *History of Art/Parragon Publishing*
- Individual Art style Prints
- Art books about artists

Class Meetings: Students in grades one through eight meet once a week and twice a week for 50 minute sessions.

Goals:

- Focus on the elements of line, shape and color and form
- Color Wheel Discussion
- Produce a 3D mini likeness
- Continue learning how the Elements are used to create Art
- Review painting, how to use paint and paintbrushes (K-4-Content Standards 1) Understanding and applying media, techniques and processes
- Continue to learn about the principles of composition
- Develop new skills in painting on a canvas
- Explore painting complementary and tertiary colors
- Practice mixing colors (Standard 1a) Students know the differences between materials, techniques and processes
- Expand knowledge of basic shape, design, painting techniques, sculpture and collage
- Introduce and discuss drawing theme project
- Listen, observe and follow direction to create a theme drawing
- Free Choice-Continue to appreciate earning a special Art day as a group
- Continue to develop observational skills
- Discuss our art theme and related project
- Experience painting art theme on a canvas (K-4-Content Standard 4b) Students identify specific works of Art as belonging to particular cultures, times and places
- Study pictures of theme subject for inspiration to create a painting on canvas
- Explore subject matter pertaining to theme

- Produce a drawing of a subject based on theme
- Explore incorporating theme letters and symbols (K-4-Content Standard 3b) Students select and use subject matter, symbols, and ideas to communicate meaning
- Engage in creativity and imagination to create a work of Art
- Engage in the creation of a portfolio and appreciate its purpose
- Learn about a new artist and art styles (K-4-Content Standard 4) Understanding the visual arts in relation to culture and history
- Produce a work in the style of an artist
- Learn a new style and explore
- Enjoy learning about new materials and techniques
- Appreciate that Art is exciting and fun

Sequence:

Trimester One

- Art room rules and Element Discussion
- 3D mini likeness
- Painting review and practice
- Discuss composition
- Gain a sense of pride for your own work and value the work of others
- Introduce and discuss art theme
- Create a theme drawing
- Paint complementary and tertiary colors
- Practice drawing the symbols of theme
- Produce a painting from the subject matter pertaining to the theme
- Free Choice

Trimester Two

- Heart Art project
- Creation and exploration of patterned snow people (intro to collage)
- Introduction to art style
- Help with signs and numbers for the Art show
- Create a portfolio
- 100th day of school project

Trimester Three

- Appreciate and learn about a nineteenth century artist
- Create a painting inspired by artist
- Discussion about artist and art styles
- Intro to new art style
- produce artwork from current style

Visual Arts - Grade Four

TRADE/TEXTBOOKS:

- Individual themed prints Themed art books
- *History of Art/Parragon Publishing*
- Individual art Prints
- Architectural art prints and information

Class Meetings: Students in grades one through eight meet once a week and twice a week for 50 minute sessions.

Goals:

- Focus on the elements of line, shape, color, form, and texture
- Create a self-portrait made from objects of favorite things
- Field Trip to view local architecture
- Exploration of architecture through the study of architectural drawings and designs
- Learn about the value of long-term projects
- Produce a 2D and 3D architecture
- Gain self-confidence
- Continue learning about the elements of art, with a particular focus on shape and form
- Develop new drawing skills, use of value and perspective
- Expand knowledge of basic shape, design, painting techniques, sculpture and collage
- Introduce and discuss art theme
- Listen, observe and follow direction to create a theme drawing
- Free Choice-Continue to appreciate earning a special Art day as a group
- Continue to develop observational skills
- Discuss our art theme and related project
- Produce a 3D object (K-4-Content Standard 4b) Students identify specific works of art as belonging to particular cultures, times, and places
- Enjoy working with polymer clay/ what does it feel like? (tactile experience)
- Study pictures of subject for inspiration
- Explore other symbolic aspects of theme
- Produce a drawing of subject/ explore incorporating symbols (K-4-Content Standard 3b) Students select and use subject matter, symbols, and ideas to communicate meaning
- Engage in creativity and imagination to create a work of Art
- Engage in the creation of a portfolio and appreciate its purpose
- Learn about a new artist and art styles (K-4-Content Standard 4) Understanding the visual arts in relation to culture and history
- Help with signs and numbers for the Art show
- Produce a work in the style of an artist
- Explore a new style
- Enjoy learning about new materials and techniques
- Appreciate that Art is exciting and fun

Sequence:

Trimester One

- Art room rules and Element Discussion
- Completion of favorite things self portrait
- Learn about architecture
- Long term project/architecture
- Introduce and discuss art theme
- Practice drawing the symbolic aspects of theme
- Create a theme drawing
- Free Choice

Trimester Two

- Develop new skills in drawing a 3D subject
- Learn new techniques using recycled materials
- Learn how to work with polymer clay
- Produce a 3D drawing
- Create a 3D object

Trimester Three

- Produce a small work of art in a new art style
- Create a portfolio
- Help with signs and numbers for the Art show
- Continue to learn about individual artists while working in that style

Visual Arts - Grade Five

TRADE/TEXTBOOKS:

- Individual Art prints
- *History of Art/Parragon Publishing*
- Architectural prints and information

Class Meetings: Students in grades one through eight meet once a week and twice a week for 50 minute sessions.

Goals:

- Focus on the elements of line, shape, color, form and texture
- Create a self-portrait made from objects of favorite things
- Exploration of architecture through study of architectural drawings and designs (5-8 Content Standard 6) Making connections between visual arts and other disciplines
- Learn about the value of long-term projects
- Produce a 2D and 3D architectural project
- Gain self confidence

- Continue learning about the elements of art, with a particular focus on shape and form
- Develop new drawing skills, use of value and perspective
- Expand knowledge of basic shape, design, painting techniques, sculpture and collage
- Introduce and discuss art theme
- Listen, observe and follow direction to create a theme drawing
- Free Choice-Continue to appreciate earning a special Art day as a group
- Continue to develop observational skills
- Explore drawing through series of sketches
- Explore drawing gestures using a variety of materials such as conte crayon, pastel and charcoal
- Discussion and appreciation of work done by other students/ how it relates to artist works (5- 8 Content Standard 5) Reflecting upon and assessing the characteristics and merits of their work and the work of others
- Discuss our art theme and related project
- Study pictures relating to theme for inspiration
- Explore symbols of theme
- Produce a drawing of subject/ explore incorporating symbols of theme (5-8 Content standard 3b) Students use subjects, themes, and symbols that demonstrate knowledge of contexts, values, and aesthetics that communicate intended meaning in artworks
- Produce a 3D subject from clay or other materials (5-8 Content Standard 5b) Students analyze contemporary and historic meanings in specific artworks through cultural and aesthetic inquiry
- Enjoy working with polymer clay/other materials
- Engage in creativity and imagination to create a work of Art
- Engage in the creation of a portfolio and appreciate its purpose
- Help with signs and numbers for the Art show
- Learn about a new artist and art styles
- Produce a work in the style of an artist
- Explore a new art style
- Enjoy learning about new materials and techniques
- Appreciate that Art is exciting and fun

Sequence:

Trimester One

- Art room rules and Element Discussion
- Completion of favorite things self portrait
- Greetings and music
- Learn about architecture
- Long term project/architecture
- Practice drawing the symbols of theme
- Introduce and discuss art theme
- Create a theme drawing
- Free Choice

Trimester Two

- Drawing series/ new materials experimentation
- Drawing appreciation
- Develop new skills in drawing a 3D subject
- Produce a 3D theme subject from various materials
- Create a portfolio

Trimester Three

- Help with signs and numbers for the Art show
- Continue to learn about individual artists while working in that style
- Produce a small work of art in a new art style

Visual Arts - Grade Six

TRADE/TEXTBOOKS:

- Individual Art prints
- *History of Art/Parragon Publishing*
- Artist biography
- Architectural prints and information

Class Meetings: Students in grades one through eight meet once a week and twice a week for 50 minute sessions.

Goals:

- Continue learning about the elements of art, with a particular focus on shape and form
- Develop new drawing skills, use of value and perspective
- Expand knowledge of basic shape, design, painting techniques, sculpture and collage
- Create a self-portrait made from objects of favorite things
- Introduce and discuss art theme
- Listen, observe and follow direction to create a theme drawing
- Free Choice-Continue to appreciate earning a special Art day as a group
- Continue to develop observational skills
- Explore drawing through series of sketches
- Explore drawing gestures using a variety of materials such as conte crayon, pastel and charcoal/create a gray scale
- Discussion and appreciation of work done by other students/ how it relates to artist works (5- 8 Content Standard 5) Reflecting upon and assessing the characteristics and merits of their work and the work of others
- Gain knowledge and appreciation of soft pastel
- Learn about a new artist
- Gain confidence through practice drawing
- Learn about proportion, scale, value and the human figure
- Produce a pastel work inspired by an artist
- Discuss our art theme and related project

- Study pictures of theme subjects for inspiration
- Explore the symbols of theme
- Produce a drawing of current subject/ explore incorporating theme symbols (5-8 Content standard 3b) Students use subjects, themes, and symbols that demonstrate knowledge of contexts, values, and aesthetics that communicate intended meaning in artworks
- Engage in creativity and imagination to create a work of Art
- Engage in the creation of a portfolio and appreciate its purpose
- Learn about a new artist and art styles
- Explore a new style
- Create a small work in current style
- Enjoy learning about new materials and techniques
- Appreciate that Art is exciting and fun

Sequence:

Trimester One
- Art room rules and Element Discussion
- Greetings and theme music
- Completion of favorite things self portrait
- Introduce and discuss art theme
- Create a theme project
- Elements
- Practice drawing symbols of theme
- Free Choice

Trimester Two
- Drawing series/ new materials experimentation
- Drawing appreciation
- Intro to new artist
- Produce a work in the likeness of artists style
- Develop new skills in drawing a 3D subject
- Produce a 3D object
- Create a portfolio

Trimester Three
- Help with signs and numbers for the Art show
- Continue to learn about individual artistic styles
- Produce a small work of art in a particular style

Visual Arts - Grade Seven

TRADE/TEXTBOOKS:
- *History of Art/Parragon Publishing*
- Artist biography
- Individual Art Prints

- Art movement prints

Class Meetings: Students in grades one through eight meet once a week and twice a week for 50 minute sessions.

Goals:

- Continue learning about the elements of art, with a particular focus on positive and negative space, shape and form
- Develop new drawing skills, continue to expand on use of value and perspective
- Expand knowledge of basic shape, design, painting techniques, sculpture and collage
- Create a self-portrait made from objects of favorite things
- Introduce and discuss art theme
- Listen, observe and follow direction to create a theme drawing
- Free Choice-Continue to appreciate earning a special Art day as a group
- Continue to develop observational skills
- Learn about proportion, scale, value and the human figure
- Explore drawing through series of sketches
- Explore drawing gestures using a variety of materials such as conte crayon, pastel and charcoal/create a gray scale
- Discussion and appreciation of work done by other students/ how it relates to artist works (5-8 Content Standard 5) Reflecting upon and assessing the characteristics and merits of their work and the work of others
- Continue to compare and discuss works of Art using descriptive terms
- Learn about a new artist and art styles
- Discuss our art theme and related project
- Study pictures of current subject for inspiration
- Explore the symbols of theme
- Engage in creativity and imagination to create a work of Art
- Engage in the creation of a portfolio and appreciate its purpose
- Learn about a new artist and art styles (5-8 Content Standard 5b)Students analyze contemporary and historic meanings in specific artworks through cultural and aesthetic inquiry
- Learn about an art technique
- Create a work of art using this technique
- Learn the value of working in a group/ group project
- Explore a new art style
- Create a small work in this style

Sequence:

Trimester One

- Art room rules and Element Discussion
- Completion of favorite things self portrait
- Greetings and music
- Elements

- Completion of favorite things self portrait
- Free Choice

Trimester Two
- Drawing series/ new materials experimentation
- Discussion and appreciation of work done by other students/ how it relates to artist works (5-8 Content Standard 5) Reflecting upon and assessing the characteristics and merits of their work and the work of others Drawing appreciation
- Practice drawing symbols pertaining to theme
- Introduce and discuss art theme
- Create a theme drawing
- Produce a 3D clay piece
- Create a portfolio
- Continue to learn about individual artistic styles

Trimester Three
- Art style project
- Produce a small work of art in an art style
- Help with signs and numbers for the Art show

Visual Arts - Grade Eight

TRADE/TEXTBOOKS
- *History of Art/Parragon Publishing*
- Artists biography
- Individual art prints
- Theme related books

Class Meetings: Students in grades one through eight meet once a week and twice a week for 50 minute sessions.

Goals:
- Continue to learn the value of working in a group/ group project
- Continue learning about the elements of art, with a particular focus on positive and negative space, shape and form, value and color relationships
- Develop new drawing skills, continue to expand on use of value and perspective
- Expand knowledge of basic shape, design, painting techniques, sculpture and collage
- Create a self-portrait made from objects of favorite things
- Discuss and begin class gift project/ to be worked on throughout the year
- Introduce and discuss art theme
- Listen, observe and follow direction to create a theme drawing
- Free Choice-Continue to appreciate earning a special Art day as a group
- Continue to develop observational skills
- Learn about proportion, scale, value and the human figure
- Explore drawing through series of sketches

- Explore drawing gestures using a variety of materials such as conte crayon, pastel and charcoal/create a gray scale
- Discussion and appreciation of work done by other students/ how it relates to artist works (5- 8 Content Standard 5) Reflecting upon and assessing the characteristics and merits of their work and the work of others
- Continue to compare and discuss works of Art using descriptive terms
- Discuss our art theme and related project)
- Study pictures of subject for inspiration
- Explore the symbols of theme
- Produce a drawing of subject/ explore incorporating symbols to create your own name (5-8 Content standard 3b) Students use subjects, themes, and symbols that demonstrate knowledge of contexts, values, and aesthetics that communicate intended meaning in artworks
- Engage in creativity and imagination to create a work of Art
- Engage in the creation of a portfolio and appreciate its purpose
- Learn about a new artist and art styles (5-8 Content Standard 5b) Students analyze contemporary and historic meanings in specific artworks through cultural and aesthetic inquiry.
- Explore a new art style
- Create a small work in new style

Sequence:

Trimester One

- Art room rules and Element Discussion
- Completion of favorite things self portrait
- Greetings and music
- Elements
- Discussion about class gift
- Begin class gift
- Completion of favorite things self portrait
- Practice drawing the ancient alphabet from theme
- Introduce and discuss art theme
- Create a theme drawing
- Free Choice

Trimester Two

- Develop new skills in sculpting a 3D object from clay
- Discuss individual styles
- continue to work on class gift
- Create a portfolio with an individual artistic style
- Intro to new art style and artist

Trimester Three

- Discuss current art style

- Create small work in this style
- Help with signs and numbers for the Art show
- Completion of the class gift

Music

The goal of the music program is to introduce students to a variety of musical experiences that incorporate listening, singing, playing instruments, movement, and composing to instill an appreciation and knowledge of music as a creative art form that students can participate in throughout their lives.

Students learn how to read standard musical notation to have a common language for singing and playing instruments such as the recorder, ukulele and Orff percussion instruments, both as a soloist and in classroom ensembles. Students also improvise and compose music using these classroom instruments. Students learn to sing a variety of songs from their own and other cultures in unison, rounds and parts with proper vocal technique. The music curriculum incorporates movement throughout all the grade levels and folk dances from a variety of cultures are taught. Students listen to a variety of musical styles and discuss what makes a piece of music art and how music is an integral part of our culture. Students work cooperatively in classroom musical ensembles, learning to create and perform music as part of a group.

Music - Kindergarten

Class meetings: Twice a week for 30 minutes

Resources:
- Game Plan K music curriculum, Kriske/Delelles
- Various CDs and sheet music books

Thematic Goals:
- Students will learn to *sing* a variety of songs both alone and with a group
- Students will begin to use and read *notation*, having experience with the language of music
- Students will identify names and timbre of and *play classroom instruments* alone and in a group
- Students will *improvise* movements and vocal and instrumental parts
- Students will learn about *form* in music through movement

End of Year Outcomes Students will be able to:
- Sing a variety of Nursery rhymes, traditional folk songs, movement games songs, patriotic songs and songs in different languages
- Perform a simple two-part round
- Sing independently, echoing back a short phrase using proper intonation
- Perform a steady beat on classroom instruments and in movement
- Perform simple rhythm pattern notation of quarter, half and eighth notes on the classroom instruments and with body percussion

- Identify and play melodies moving up and down by step and skip on the classroom barred instruments
- Notate ascending and descending steps on a staff
- Accompany songs with a steady bourdon on the classroom barred instruments
- Improvise 'answers' to an 8 beat 'question' on the xylophones and classroom percussion instruments
- Choose an instrument and improvise a 'tune' to add to the telling of a 'sound story'
- Aurally recognize the timbres of different instruments and name them
- Perform movement games and dances from a variety of cultures

Music - Grade One

Class meetings: once a week for 50 minutes

Resources:
- Game Plan 1 music curriculum, Kriske/Delelles
- Various CDs and sheet music books

Thematic Goals:
- Students will learn to *sing* a variety of songs both alone and with a group
- Students will use and read *notation*, having experience with the language of music
- Students will identify names and timbre of and *play a variety of melodies and rhythms on classroom instruments* alone and in a group
- Students will *improvise* movements and will improvise and compose short melodies and rhythms on the classroom instruments
- Students will experience *form* in music through singing and movement

End of Year Outcomes Students will be able to:
- Sing a variety of Nursery rhymes, traditional folk songs, movement games songs, patriotic songs and songs in different languages
- Perform a simple two part round
- Sing independently, echoing back a short phrase using proper intonation and singing with a steady tempo
- Perform a steady beat on classroom instruments and in movement
- Perform simple rhythm pattern notation of quarter, half and eighth notes and their rests on the classroom instruments and with body percussion
- Identify and play melodies moving up and down by step and skip on the classroom barred instruments
- Notate ascending and descending steps on a staff
- Accompany songs with a steady bourdon on the classroom barred instruments
- Read and perform symbols for dynamics and tempo
- Improvise 'answers' to an 8 beat 'question' on the xylophones and classroom percussion instruments
- Choose an instrument and improvise a 'tune' to add to the telling of a 'sound story'

- Describe different aspects of musical style from a recording using observations of tempo, instrumentation, dynamics, and form
- Aurally recognize the timbres of different instruments and name them
- Perform movement games and dances from a variety of cultures

Music - Grade Two

Class meetings: once a week for 50 minutes

Resources:
- Game Plan 2 music curriculum, Kriske/Delelles
- Various CDs and sheet music books

Goals:
- Students will learn to *sing* a variety of songs in unison and in rounds both alone and with a group
- Students will use and read basic melodic and rhythmic *notation*
- Students will *play a variety of melodies and rhythms on classroom instruments* alone and in a group
- Students will *improvise* movements and will improvise and compose short melodies and rhythms on the classroom instruments
- Students will experience *form* in music through singing and movement

End of Year Outcomes Students will be able to:
- Sing a variety of Nursery rhymes, traditional folk songs, movement games songs, patriotic songs and songs in different languages in unison and in simple rounds
- Sing independently, using proper intonation, rhythmic accuracy and singing with a steady tempo
- Students will use appropriate dynamics, tempos, and expression while singing
- Perform a steady beat on classroom instruments and in movement
- Perform simple rhythm pattern notation of quarter, half, whole and eighth notes and their rests on the classroom instruments and with body percussion
- Identify and play melodies moving up and down by step and skip on the classroom barred instruments
- Notate steps and skips on a treble staff
- Accompany classroom songs with a steady bourdon and a crossover bourdon on the classroom barred instrument
- Read and accurately perform symbols for dynamics and tempo
- Improvise ‘answers’ to an 8 beat ‘question’ on the xylophones and classroom percussion instruments
- Improvise and compose short rhythmic ostinatos to accompany songs
- Choose an instrument and improvise a ‘tune’ to add to the telling of a ‘sound story’
- Aurally recognize the timbres of different instruments and name them
- Describe different aspects of musical style from a recording using observations of tempo, instrumentation, dynamics, form and texture

Music - Grade Three

Class meetings: once a week for 50 minutes

Resources:

- Game Plan 3
- Music Curriculum, Recorder
- Jazz Festival, M.C. Handel
- My Recorder Book, Sandy Feldstein
- Various CDs and sheet music books

Goals:

- Students will learn to *sing* a variety of songs both alone and with a group and will sing in unison as well as singing rounds and singing in 2 parts
- Students will perform and read basic melodic notation in treble clef and rhythmic *notation*
- Students will *play a variety of melodies and rhythms on classroom instruments* alone and in a group and will begin the study of the soprano recorder
- Students will *improvise* movements and will improvise and compose short melodies and rhythms on the classroom instruments
- Students will experience *form* in music through singing and movement

End of Year Outcomes Students will be able to:

- Sing from memory a variety of traditional folk songs, movement games songs, patriotic songs and songs in different languages in unison, rounds, and 2 parts
- Sing independently, using proper intonation, rhythmic accuracy and singing with a steady tempo
- Use appropriate dynamics, tempos, and expression while singing and will be able to blend their voice with others in the class
- Demonstrate proper posture and breathing while singing
- Perform a steady beat on classroom instruments and in movement
- Perform simple rhythm pattern notation of quarter, half, whole and eighth notes and their rests on the classroom instruments, on recorders and with body percussion
- Identify and play melodies moving up and down by step and skip and read notation in treble clef of G, A, B, C', and D'
- Read and accurately perform symbols for dynamics and tempo on recorder
- Demonstrate knowledge of proper breathing and sound production on the soprano recorder and ability to play short melodies in a classroom ensemble
- Accompany classroom songs on the barred instruments using a steady bourdon and a crossover bourdon
- Improvise 'answers' to an 8 beat 'question' and 'trade 4s' on the xylophones and classroom percussion instruments
- Improvise and compose short rhythmic ostinatos to accompany songs
- Improvise short tunes on the recorder over a recorded or live accompaniment

- Compose a short melody for the soprano recorder and notate it
- Describe different aspects of musical style from a recording using observations of tempo, instrumentation, dynamics, form and texture
- Perform folk dances from a variety of cultures

Music - Grade Four

Class meetings: once a week for 50 minutes

Resources:
- Game Plan 4 music curriculum, Recorder
- Jazz Festival, M.C. Handel
- My Recorder Book, Sandy Feldstein
- Various CDs and sheet music books

Goals:
- Students will learn to *sing* a variety of songs both alone and with a group and will sing in unison as well as singing rounds and singing in 2-3 parts
- Students will perform and read basic melodic notation in treble clef and rhythmic *notation*
- Students will identify and *play a variety of melodies and rhythms on classroom instruments* alone and in a group and will continue playing more complex melodies and duets on the soprano recorder
- Students will *improvise* and *compose* short melodies and accompaniments for their recorders and for the classroom instruments
- Students will learn to identify *form* in music through singing, playing, and dance

End of Year Outcomes Students will be able to:
- Sing from memory a variety of traditional folk songs, movement games songs, patriotic songs and songs in different languages in unison, rounds, and 2-3 parts both with and without accompaniment
- Sing independently, using proper intonation, rhythmic accuracy and singing with a steady tempo
- Read music from a choral score, following a specific part and following tempo and dynamic markings as well as musical directions such as D.S. al coda and da capo
- Use appropriate dynamics, tempos, and expression while singing and will be able to blend their voice with others in the class
- Demonstrate proper posture and breathing while singing and will be able to follow a conductor's directions
- Perform a steady beat on classroom instruments and in movement
- Perform rhythm pattern notation of quarter, half, whole, eighth and sixteenth notes and their rests on the classroom instruments, on recorders and with body percussion
- Identify and play melodies moving up and down by step and skip and read notation in treble clef of D, E, G, A, B, C', and D'
- Read and accurately perform symbols for dynamics and tempo

- Demonstrate knowledge of proper breathing and sound production on the soprano recorder and ability to play melodies in a classroom ensemble and independently using the correct
- Sight read simple melodies in treble clef on recorder
- Accompany classroom songs on the barred instruments using a steady bourdon and a crossover bourdon
- Improvise 'answers' to an 8 beat 'question' and 'trade 4s' on the xylophones and classroom percussion instruments
- Improvise and compose short rhythmic ostinatos to accompany songs
- Improvise short tunes on the recorder over a recorded or live accompaniment
- Compose a melody for the soprano recorder and notate it
- Describe different styles of Western Music and music from other cultures using observations of tempo, instrumentation, melody, harmony, dynamics, form and texture
- Perform folk dances from a variety of cultures

Music - Grade Five

Class meetings: once a week for 50 minutes

Resources:
- Game Plan 5 music curriculum
- Recorder Jazz Festival, M.C. Handel
- My Recorder Book, Sandy Feldstein
- Various CDs and sheet music books

Goals:
- Students will learn to *sing* a variety of songs both alone and with a group and will sing in unison as well as singing rounds and singing in 2-3 parts
- Students will perform and read basic melodic notation in treble clef and rhythmic *notation*
- Students will identify and *play a variety of melodies and rhythms on classroom instruments* alone and in a group and will continue playing more complex melodies and duets on the soprano recorder
- Students will *improvise* and *compose* short melodies and accompaniments for their recorders and for the classroom instruments
- Students will learn to identify *form* in music through singing, playing, and dance

End of Year Outcomes Students will be able to:
- Sing from memory a variety of traditional folk songs, movement games songs, patriotic songs and songs in different languages in unison, rounds, and 2-3 parts both with and without accompaniment
- Sing independently, using proper intonation, rhythmic accuracy and singing with a steady tempo
- Read music from a choral score, following a specific part and following tempo and dynamic markings as well as musical directions such as D.S. al coda and da capo

- Use appropriate dynamics, tempos, and expression while singing and will be able to blend their voice with others in the class
- Demonstrate proper posture and breathing while singing and will be able to follow a conductor's directions
- Perform a steady beat on classroom instruments and in movement
- Perform rhythm pattern notation of quarter, half, whole, eighth and sixteenth notes and their rests on the classroom instruments, on recorders and with body percussion
- Identify and play melodies moving up and down by step and skip and read notation in treble clef of D, E, G, A, B, C', and D'
- Read and accurately perform symbols for dynamics and tempo
- Demonstrate knowledge of proper breathing and sound production on the soprano recorder and ability to play melodies in a classroom ensemble and independently using the correct
- Sight read simple melodies in treble clef on recorder
- Accompany classroom songs on the barred instruments using a steady bourdon and a crossover bourdon
- Improvise 'answers' to an 8 beat 'question' and 'trade 4s' on the xylophones and classroom percussion instruments
- Improvise and compose short rhythmic ostinatos to accompany songs
- Improvise short tunes on the recorder over a recorded or live accompaniment
- Compose a melody for the soprano recorder and notate it
- Describe different styles of Western Music and music from other cultures using observations of tempo, instrumentation, melody, harmony, dynamics, form and texture
- Perform folk dances from a variety of cultures

Music - Grades Six through Eight

Class meetings: once a week for 50 minutes

Resources:
- Ukulele in the Classroom, Hill/Doane
- Alfred's Essentials of Music Theory, Surmani/Manus
- Musicplay online
- Music listening/history resources
- Various CDs, online music video clips, and sheet music books

Goals:
- Students will learn to *sing* a variety of songs both alone and with a group and will sing in unison as well as singing rounds and singing in 2, 3 and 4 parts in a variety of languages both 'a cappella' and accompanied
- Students will perform and read basic melodic notation in treble clef, more complex rhythmic *notation* and will understand how to use tempo and expression markings
- Students will identify and *play a variety of melodies and rhythms on classroom instruments* alone and in a group as well as learning the basic harmonic structure of songs

- Students will learn to play the soprano ukulele, learning to play both melodies and strumming chords to accompany singing
- Students will *improvise* and *compose* short melodies and accompaniments for their ukuleles and for the classroom instruments
- Students will learn to identify *form* in music through singing, playing, listening and dance
- Students will listen to, sing, and perform music from many different cultures and time periods and in a variety of styles throughout the year.

End of Year Outcomes Students will be able to:

- Sing from memory a variety of traditional folk songs, movement games songs, patriotic songs, songs from different cultures and in different languages in unison, rounds, and 2, 3 and 4 parts both with and without accompaniment
- Sing independently, using proper intonation, melodic and rhythmic accuracy, and a steady tempo
- Read music from a choral score, following a specific part and following tempo and dynamic markings as well as musical directions such as D.S. al coda and da capo
- Use appropriate dynamics, tempos, phrasing and expression while singing and will be able to blend their voice with others in the class
- Demonstrate proper posture and breathing while singing and will be able to follow a conductor's directions
- Demonstrate a broad vocal range
- Perform a steady beat on classroom instruments and in movement
- Perform rhythm pattern notation of quarter, half, whole, eighth, sixteenth and dotted notes and their rests on the classroom instruments, on ukuleles and with body percussion
- Identify and play melodies on ukulele that move up and down by step and skip and are in treble clef in the C Major Scale
- Read and accurately perform symbols for dynamics and tempo
- Demonstrate knowledge of proper sound production on the soprano ukulele and ability to play melodies in a classroom ensemble and independently
- Ability to accurately play duets on soprano ukulele, demonstrating proper sound production, rhythm, tempo, and pitch
- Demonstrate ability to accompany songs with the C, F, and G chords on the ukulele
- Accompany classroom songs using a 3 chord pattern on the barred instruments
- Improvise 'answers' to an 8 beat 'question' and 'trade 4s' on the xylophones and classroom percussion instruments
- Improvise and compose short rhythmic ostinatos and harmonies to accompany songs
- Improvise short tunes on the ukulele to a chorded accompaniment
- Compose a short melody for solo or duet on the soprano ukulele and notate it for others to play
- Describe different styles of Western Music and music from other cultures using observations of tempo, instrumentation, melody, harmony, dynamics, form and texture
- Perform folk dances from a variety of cultures

Chorus

Class: Grades Four through Eight

Class meetings: once a week for 30 minutes during an instructional block (students need parental permission to participate)

Resources:

- Various choral octavos and rounds

Goals:

- Students will learn choral repertoire in 2 and 3 parts in a variety of styles and from a variety of cultures
- Students will learn how to read a choral score in 2-4 parts
- Students will learn proper vocal and breathing techniques and how to blend in an ensemble with other voices
- Students will support the cultural life at AHS by performing at school-wide programs and graduation
- Students will build confidence through performance and ensemble work with others

Additional Music Programs and Music Trips:

- Springfield Falcons Game-Singing of the National Anthem in October
- Holyoke Soldiers' Home- Grades Two and Three perform a program for the Veterans in November
- International Feast-Musical presentation of international music from a variety of classes and students
- Choral Concert-Spring performance by the AHS Chorus
- Springfield Symphony Orchestra-Attend an Educational Concert, usually with grades Two through Six
- AHS Commencement /All School celebration musical presentation
- Piano Lessons Offered before and after school for a fee separate from tuition

Science

We believe that science education is an essential part of a child's life. As a result, the four branches of science -- life science, physical science, earth and space science, and technology -- are an integral part of our science curriculum. Science is the door through which children can access knowledge about the world around them as well as about themselves. Science also aids in the development of logical thinking and observation, and provides gifted children an outlet for their curiosity.

The topics of study are unique to each grade. The specific science skills are taught on a continuum from the Early Learners' program through eighth grade. Lower school students begin with observations and descriptions of the world around them. As the children continue through the grade levels, they begin to formulate hypotheses, design experiments to test hypotheses, and

conduct the experiments. Students are introduced to the metric system in grade one and continue to use this method of measuring throughout the grade continuum.

The overarching goals for our science program are to:

- Develop science literacy in life
- Develop skills in experimenting and using lab equipment
- Nurture the innate curiosity of our gifted population
- Learn inquiry skills
- Learn the skills of the scientific process
- Study life, physical, earth and space science, and technology

The following pages list the topics our children study in science during each year, and our learning objectives in each of the strands of life, physical, earth and space sciences, and technology.

Science - Grade Kindergarten

Class Meetings: 45 minutes, 2-3 times per week

Resources: Variety of informational texts, internet resources, and hands on experiences

Students will be able to:

Life Science:

- Differentiate between living and non-living things.
- Recognize that living things need air, food, and water.
- Recognize that people, animals, and insects interact with the environment and may change with the seasons.
- Identify characteristics of insects and be able to discuss their adaptations and survival tactics.
- Define prey and predator and discuss the relationship between them.
- Explain and describe life cycles of butterflies, frogs, and other animals of their choosing.
- Compare and contrast between different stages of an animal's life cycle and life cycles of different animals.
- Identify the 5 senses and sort which experiences utilize each sense.

Physical Science:

- Use observation skills to learn about new objects and ideas.
- Sort objects by observable properties such as shape, size, color, weight, and texture.
- Recognize states of matter such as liquid, solid, and gas.
- Describe movements of objects, and notice how objects move differently than others based on size, shape, force, and directionality.

Earth Science:

- Describe weather changes from day to day and over the course of a year.

- Notice and describe patterns in weather and seasons.
- Describe water cycle and explain where and how we encounter each stage.
- Identify and describe clouds by name.
- Distinguish between the different types of clouds.

Technology / Engineering:
- Describe characteristics of natural and man-made materials.
- Identify possible uses for materials and tools.
- Describe how body parts work as tools to lift, push, cut, etc.

Please see appendix for a sample unit lesson plan for Kindergarten Science.

Science - Grade One

Class Meetings: 4-5 times/week 50 minute classes

Resources:
- *Actual Size By: Steve Jenkins*
- AIMS *Exploring Environments*
- AIMS *Primarily Plants*
- AIMS *Primary Physics*
- AIMS *Under Construction*
- *ScienceWorks for Kids: Animals with Backbones*
- *ScienceWorks for Kids: Learning About Animals*

Students will be able to:

Physical
- Differentiate between properties of objects (e.g., size, shape, weight) and properties of materials (e.g., color, texture, hardness).
- Describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round and-round, fast, and slow.
- Demonstrate that the way to change the motion of an object is to apply a force (give it a push or a pull). The greater the force, the greater the change in the motion of the object. Push and pull objects on a hard, smooth surface.
- Recognize that under some conditions, objects can be balanced.

Earth and Space
- Describe the weather changes from day to day and over the seasons.
- Identify some events around us that have repeating patterns, including the seasons of the year, day and night.

Life
- Recognize that animals (including humans) and plants are living things that grow, reproduce, and need food, air, and water.

- Differentiate between living and nonliving things. Group both living and nonliving things according to the characteristics that they share.
- Recognize that plants and animals have life cycles, and that life cycles vary for different living things.
- Recognize that fossils provide us with information about living things that inhabited the earth years ago.
- Recognize that people and other animals interact with the environment through their senses of sight, hearing, touch, smell, and taste.
- Identify the ways in which an organism's habitat provides for its basic needs (plants require air, water, nutrients, and light; animals require food, water, air, and shelter).

Technology and Engineering:

- Understand that materials both natural and human-made have specific characteristics that determine how they will be used.
- Identify and describe characteristics of natural materials (e.g., wood, cotton, fur, wool) and human-made materials (e.g., plastic, Styrofoam).
- Identify and explain some possible uses for natural materials (e.g., wood, cotton, fur, wool) and human-made materials (e.g., plastic, Styrofoam).
- Identify and describe the safe and proper use of tools and materials (e.g., glue, scissors, tape, ruler, paper, toothpicks, straws, spools) to construct simple structures.
- Engineering design requires creative thinking and consideration of a variety of ideas to solve practical problems.
- Identify tools and simple machines used for a specific purpose, e.g., ramp, wheel, pulley, lever.
- Describe how human beings use parts of the body as tools (e.g., teeth for cutting, hands for grasping and catching), and compare their use with the ways in which animals use those parts of their bodies.

See appendix for sample unit lesson plan for Grade 1 Science.

Science - Grade Two

Class Meetings: Two to three times a week for 50 minutes each

Resources: AIMS - Primary Magnets, The Magic of Magnets, Earth Exploration, Rocks and Minerals, Birds, Amazing Birds - Cornell Lab of Ornithology, Texts may include; A Tree is a Plant, The Great Kapok Tree, Owls, Various Internet resources

Life Science
Trees (Year One)
Identify different types of trees

- Explain the life cycle
- Identify parts of a tree (roots/trunk/taproot/bark/branches/leaves/flowers/fruit)
- Explain the differences between deciduous vs conifer
- Identify leaves (palmate, pinnate, opposite, alternate, simple, compound)

- Explain why photosynthesis is important
- Explain the uses for trees
- Explain how they grow and survive

Birds (Year Two)
- Identify different bird species
- Explain the life cycle of a bird
- Identify the parts of a bird (beak, wings, eyes, eggs)
- Explain adaptations/characteristics
- Explain habitats
- Describe the size and weight of different birds
- Explain how birds get food and shelter

Physical Science
Magnets
- Identify the poles
- Explain what a force field is
- Identify different types of magnets
    - horse shoe
    - bar
    - wand
    - disc
- Explain why magnets attract vs repel
- Explain uses in our world

Earth Science
Rocks (Year One)
- Explain the differences in igneous, sedimentary, metamorphic rocks
- Explain how they are formed
- Describe the layers of the earth
- Identify famous rock structures around the world

Volcanoes
- Identify different types of volcanoes (inder, composite, shield)
- Explain how they are formed
- Compare the good vs destructive qualities of volcanoes
- Explain what the ring of fire is and where it is located

Earthquakes
- Explain how they are formed
- Identify where they happen
- Describe the effects on the earth and people
- Describe safety precautions and construction prevention

Landforms and Waterways (Year two)

- Define different waterways and landforms
- Identify them on different continents
- Create models showing understanding of each form
- Compare and contrast similar forms/waterways
- Discuss their effects/uses of different cultures

Please see appendix for a sample unit lesson plan for Grade 2 Science.

Science – Grade Three

Class Meetings: 2-3 times per week, 50 minutes per class

Resources:
- AIMS- *Electrical Connections*
- AIMS- *Probing Space*
- Assorted manipulatives per topic (wires, batteries, light bulbs, sea shells, etc.)
- Internet resources
- Selected informational texts about space, electricity, and oceans
- Snap circuits

Students will be able to:

Physical Science
Heat and Electricity:
- Provide evidence that heat can be transferred in different ways (direct and indirect contact). They will classify materials as conductors or insulators.
- Recognize and describe the effects of static electricity charges. They will produce static charges by friction between two surfaces. They will observe static electricity and its effects. They will model the basic structure of a molecule, and define electrons, protons, neutrons, and a nucleus.
- Investigate and provide evidence that electricity requires a closed loop to produce measurable effects. They will identify the source of electricity for various objects.
- Investigate and describe how to light a light bulb or sound a buzzer given a battery, wires, and a light bulb or buzzer. They will describe and compare the path of electricity through various circuits. They will provide evidence from investigations that electrical circuits require a loop through which electricity can pass.
- Compare and classify materials as conductors of electricity, or as insulators.
- Describe how to make a simple electromagnet using a battery, nail, and wire.
- Describe the difference between renewable and nonrenewable energy sources.
- Create plans to reduce energy consumption and evaluate the results.

Life Science
Oceans:
- Identify and describe features and behaviors of some of the plants and animals living in an ocean and explain ways that these organisms are well suited to their environment

- Compare and contrast habitats found within the ocean.
- Explain how animals and plants can be grouped according to observable features.
- Classify a variety of animals and plants according to their observable features and provide reasons for placing them into different groups.
- Given a list of additional animals or plants, decide whether or not they could be placed within the established groups or does a new group have to be added.
- Describe what classifying tells us about the relatedness among the animals or plants.
- Based on information about the features and behaviors of animals and plants from very different ocean environments, describe reasons that they might not survive if their habitat changed or if they were moved from one habitat to another.
- Recognize food as the source of materials that all living things need to grow and survive.
- Describe what happens to food in plants and animals. (Contributes to growth, supports repair, provides energy, is stored for future use, is eliminated)
- Identify the things that are essential for ocean plants to grow and survive.
- Identify and describe the interactions of organisms in an ocean habitat, i.e. competition for space, food and water; beneficial interactions, roles within food chains and webs: scavengers, decomposers, producers, consumers.
- Explain that changes in an organism's habitat are sometimes beneficial and sometimes harmful.

Earth and Space Science
Solar System:

- Recognize that the earth is part of a system called the "solar system" that includes the sun (a star), planets, and many moons.
- Recognize that the Earth revolves around (orbits) the sun in a year's time and that the earth rotates on its axis once approximately every 24 hours. Make connections between the rotation of the earth and day/night, and the apparent movement of the sun, moon, and stars across the sky. Recognize the observable effects of rotation and revolution (apparent movements of sun, moon, planets, and stars.)
- Describe the changes that occur in the observable shape of the moon over the course of a month.
- Recognize that the sun supplies heat and light to the earth and is necessary for life.
- Explain how the tilt of the earth and its revolution around the sun result in an uneven heating of the earth, which in turn causes the seasons.
- Recognize that the universe contains many billions of galaxies, and that each galaxy contains many billions of stars.
- Recognize that gravity is a force that pulls all things on and near the earth toward the center of the earth. Gravity plays a major role in the formation of the planets, stars, and solar system and in determining their motions.
- Describe lunar and solar eclipses, the observed moon phases, and tides. Relate them to the relative positions of the earth, moon, and sun.
- Identify techniques and tools used to investigate the solar system.
- Identify and describe physical properties of comets, asteroids, and meteors.

See appendix for sample unit lesson plan for Grade 3 Science.

Science - Grade Four

Class Meetings: Alternate Days, 50 minutes per session

Resources:

- *Holt Science and Technology: Weather and Climate*
- *AIMS- Weather Sense*
- *Holt Science and Technology: Microorganisms*
- *It's About Time: Project Based Inquiry Science- The Book Support Challenge*

Students will be able to:

Inquiry and Process Skills

- Classifying – arranging or distributing objects, events, or information representing objects or events in classes according to some method or system
- Communicating – giving oral and written explanations or graphic representations of observations
- Comparing and contrasting – identifying similarities and differences between or among objects, events, data, systems, etc.
- Creating models – displaying information, using multisensory representations
- Gathering and organizing data – collecting information about objects and events which illustrate a specific situation
- Generalizing – drawing general conclusions from particulars
- Identifying variables – recognizing the characteristics of objects or factors in events that are constant or change under different conditions
- Inferring– drawing a conclusion based on prior experiences
- Interpreting data – analyzing data that have been obtained and organized by determining apparent patterns or relationships in the data
- Making decisions – identifying alternatives and choosing a course of action from among the alternatives after basing the judgment for the selection on justifiable reasons
- Demonstrating Safety – handling or treating materials and equipment safely, skillfully, and effectively
- Measuring– making quantitative observations by comparing to a conventional or nonconventional standard
- Observing – becoming aware of an object or event by using any of the senses (or extensions of the senses) to identify properties
- Predicting – making a forecast of future events or conditions expected to exist

Life Science
Microorganisms:

Structure and Function

- Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.
- All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular). Unicellular organisms (microorganisms), like multicellular organisms, need food, water, a way to dispose of waste, and an environment in which they can live. Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues or organs that are specialized for particular body functions.

Growth and Development of Organisms

- Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles that include being born (sprouting in plants), growing, developing into adults, reproducing, and eventually dying.
- Organisms reproduce, either sexually or asexually, and transfer their genetic information to their offspring.

Organization for Matter and Energy Flow in Organisms

- Animals and plants alike generally need to take in air and water, animals must take in food, and plants need light and minerals; anaerobic life, such as bacteria in the gut, functions without air. Food provides animals with the materials they need for body repair and growth and is digested to release the energy they need to maintain body warmth and for motion.
- Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use. Animals obtain food from eating plants or eating other animals**.**

Earth Science
Weather:

Earth Materials and Systems

- Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. Rainfall helps shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around. Human activities affect Earth's systems and their interactions at its surface.

The Roles of Water in Earth's Surface Processes

- Water is found almost everywhere on Earth: as vapor; as fog or clouds in the atmosphere; as rain or snow falling from clouds; as ice, snow, and running water on land and in the ocean; and as groundwater beneath the surface. The downhill movement of water as it flows to the ocean shapes the appearance of the land. Nearly all of Earth's available water is in the ocean. Most freshwater is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere.
- Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation as well as downhill flows on land. The complex patterns of the changes and the movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns. Global movements of water and its changes in form are propelled by sunlight and gravity. Variations in density due to variations in temperature and salinity drive a global pattern of interconnected ocean currents. Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations.

Weather and Climate

- Weather is the minute-by-minute to day-by-day variation of the atmosphere's condition on a local scale. Scientists record the patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. Climate describes the ranges of an area's typical weather conditions and the extent to which those conditions vary over years to centuries.
- Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns. Because these patterns are so complex, weather can be predicted only probabilistically. The ocean exerts a major influence on weather and climate by absorbing energy from the sun, releasing it over time, and globally redistributing it through ocean currents. Greenhouse gases in the atmosphere absorb and retain the energy radiated from land and ocean surfaces, thereby regulating Earth's average surface temperature and keeping it habitable.
- The foundation for Earth's global climate system is the electromagnetic radiation from
- The sun as well as its reflection, absorption, storage, and redistribution among the atmosphere, ocean, and land systems and this energy's re-radiation into space.

Biogeology

- Living things affect the physical characteristics of their regions (e.g., plants' roots hold soil in place, beaver shelters and human-built dams alter the flow of water, plants' respiration affects the air). Many types of rocks and minerals are formed from the remains of organisms or are altered by their activities.

Natural Hazards

- A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions, severe weather, floods, coastal erosion). Humans cannot eliminate natural hazards but can take steps to reduce their impacts.
- Some natural hazards, such as volcanic eruptions and severe weather, are preceded by phenomena that allow for reliable predictions. Others, such as earthquakes, occur suddenly and with no notice, and thus they are not yet predictable. However, mapping the history of natural hazards in a region, combined with an understanding of related geological forces can help forecast the locations and likelihoods of future events.

Engineering

Defining and Delimiting an Engineering Problem

- Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.

Developing Possible Solutions

- Research on a problem should be carried out – for example, through Internet searches, market research, or field observations – before beginning to design a solution. An often productive way to generate ideas is for people to work together to brainstorm, test, and refine possible solutions. Testing a solution involves investigations how well it performs under a range of likely conditions. Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. There are many types of models, ranging from simple physical models to computer models. They can be used to investigate how a design might work, communicate the design to others, and compare different designs.

Optimizing the Design Solution

- Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.

See appendix for sample unit lesson plan for Grade 4 Science.

Sequence

Trimester One

Weather

Materials: *Holt Science and Technology: Weather and Climate*, *AIMS- Weather Sense*

- Features of informational text

- What is weather?
- Weather vs. climate
- The atmosphere
- The water cycle
- The role of sun, wind, and water
- Types of precipitation
- Types of clouds
- Types of storms
- Weather forecasting
- Weather maps
- The work of meteorologists

Trimester Two

Conclusion of weather unit above
Engineering
Materials*: It's About Time: Project Based Inquiry Science- The Book Support Challenge*

- Students define the criteria and constraints of a design problem
- Students evaluate design solutions to determine how well each meets the criteria and constraints of the problem.
- Students develop models to generate data for iterative testing and modification of the proposed design
- Students design solutions to better meet the criteria for success.
- Students analyze data from tests to determine similarities and differences among several designs

Trimester Three

Microorganisms
Materials: *Holt Science and Technology: Microorganisms*

- What is a living thing?
- Cells structure and function
- Growth of living organisms
- Cell reproduction
- Bacteria
- One-celled organisms

Science - Grade 5

Class Meetings: Alternate Days, 1 hour per session

Students will be able to:

Inquiry and Process Skills:

- Classifying – arranging or distributing objects, events, or information representing objects or events in classes according to some method or system
- Communicating – giving oral and written explanations or graphic representations of observations
- Comparing and contrasting – identifying similarities and differences between or among objects, events, data, systems, etc.
- Creating models – displaying information, using multisensory representations
- Gathering and organizing data – collecting information about objects and events which illustrate a specific situation
- Generalizing – drawing general conclusions from particulars
- Identifying variables – recognizing the characteristics of objects or factors in events that are constant or change under different conditions
- Inferring– drawing a conclusion based on prior experiences
- Interpreting data – analyzing data that have been obtained and organized by determining apparent patterns or relationships in the data
- Making decisions – identifying alternatives and choosing a course of action from among the alternatives after basing the judgment for the selection on justifiable reasons
- Demonstrating Safety – handling or treating materials and equipment safely, skillfully, and effectively
- Measuring– making quantitative observations by comparing to a conventional or nonconventional standard
- Observing – becoming aware of an object or event by using any of the senses (or extensions of the senses) to identify properties
- Predicting – making a forecast of future events or conditions expected to exist
- Valuing - contributions of underrecognized groups and individuals to the narrative of scientific progress
- Exploring - considering careers in science and exploring professions based on areas of interest

Life Science
Ecology

Interdependent Relationships in Ecosystems

- The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Either way, they are "consumers." Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil for plants to use. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem.
- Organisms and populations of organisms are dependent on their environmental interactions both with other living things and with nonliving factors. Growth of

organisms and population increases are limited by access to resources. In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction. Similarly, predatory interactions may reduce the number of organisms or eliminate whole populations of organisms. Mutually beneficial interactions, in contrast, may become so interdependent that each organism requires the other for survival. Although the species involved in these competitive, predatory, and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environments, both living and nonliving, are shared.

Cycles of Matter and Energy Transfer in Ecosystems

- Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, water, and minerals from the environment and release waste matter (gas, liquid, or solid) back into the environment.
- Food webs are models that demonstrate how matter and energy is transferred between producers (generally plants and other organisms that engage in photosynthesis), consumers, and decomposers as the three groups interact—primarily for food—within an ecosystem. Transfers of matter into and out of the physical environment occur at every level—for example, when molecules from food react with oxygen captured from the environment, the carbon dioxide and water thus produced are transferred back to the environment, and ultimately so are waste products, such as fecal material. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem.

Ecosystem Dynamics, Functioning, and Resilience

- When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die.
- Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all of its populations. Biodiversity describes the variety of species found in Earth's terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health.

Social Interactions and Group Behavior

- Groups can be collections of equal individuals, hierarchies with dominant members, small families, groups of single or mixed gender, or groups composed of individuals similar in age. Some groups are stable over long periods of time; others are fluid, with members moving in and out. Some groups assign specialized tasks to each member; in others, all members perform the same or a similar range of functions.
- Groups may form because of genetic relatedness, physical proximity, or other recognition mechanisms (which may be species specific). They engage in a variety of signaling behaviors to maintain the group's integrity or to warn of threats. Groups often dissolve if

they no longer function to meet individuals' needs, if dominant members lose their place, or if other key members are removed from the group through death, predation, or exclusion by other members.

Human Impacts on Earth Systems

- Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. For example, they are treating sewage, reducing the amounts of materials they use, and regulating sources of pollution such as emissions from factories and power plants or the runoff from agricultural activities.
- Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of many other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. Typically, as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise.

Earth Science Geology

The History of Planet Earth

- Earth has changed over time. Understanding how landforms develop, are weathered (broken down into smaller pieces), and erode (get transported elsewhere) can help infer the history of the current landscape. Local, regional, and global patterns of rock formations reveal changes over time due to Earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed. Patterns of tree rings and ice cores from glaciers can help reconstruct Earth's recent climate history.
- The geological time scale interpreted from rock strata provides a way to organize Earth's history. Major historical events include the formation of mountain chains and ocean basins, the evolution and extinction of particular living organisms, volcanic eruptions, periods of massive glaciation, and development of watersheds and rivers through glaciation and water erosion. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale.

Earth Materials and Systems

- Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. Rainfall helps shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around. Human activities affect Earth's systems and their interactions at its surface.

The Roles of Water in Earth's Surface Processes

- Water is found almost everywhere on Earth: as vapor; as fog or clouds in the atmosphere; as rain or snow falling from clouds; as ice, snow, and running water on land and in the ocean; and as groundwater beneath the surface. The downhill movement of water as it flows to the ocean shapes the appearance of the land. Nearly all of Earth's available water is in the ocean. Most freshwater is in glaciers or underground; only a tiny fraction is in streams, lakes,
- Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation as well as downhill flows on land. The complex patterns of the changes and the movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns. Global movements of water and its changes in form are propelled by sunlight and gravity. Variations in density due to variations in temperature and salinity drive a global pattern of interconnected ocean currents. Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations.

Biogeology

- Living things affect the physical characteristics of their regions (e.g., plants' roots hold soil in place, beaver shelters and human-built dams alter the flow of water, plants' respiration affects the air). Many types of rocks and minerals are formed from the remains of organisms or are altered by their activities.

Physical Science

Simple Machines Forces and Motion

- Each force acts on one particular object and has both a strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object s speed or direction of motion. The patterns of an object s motion in various situations can be observed and measured when past motion exhibits a regular pattern, future motion can be predicted from it.

Types of Interactions

- Objects in contact exert forces on each other (friction, elastic pushes and pulls). Electric, magnetic, and gravitational forces between a pair of objects do not require that the objects be in contact – for example, magnets push or pull at a distance. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.
- The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center.

Stability and Instability in Physical Systems

- A system can change as it moves in one direction (e.g., a ball rolling down a hill), shifts back and forth (e.g., a swinging pendulum), or goes through cyclical patterns (e.g., day and night). Examining how the forces on and within the system change as it moves can

help to explain the system s patterns of change. A system can appear to be unchanging when processes within the system are occurring at opposite but equal rates (e.g., water behind a dam is at constant height because water is flowing in at the same rate that water is flowing out). Changes can happen very quickly or very slowly and are sometimes hard to see (e.g., plant growth). Conditions and properties of the objects within a system affect how fast or slowly a process occurs (e.g., hear conduction rates).

Sequence and Materials:

Trimester One
Geology
Materials: *Holt Science and Technology Earth's Changing Surface*

- Features of informational text
- Landforms: their development and changes to them
- Earth's four spheres- atmosphere, lithosphere, biosphere, hydrosphere- and how they interact
- Weathering, abrasion, surface area
- Soil types
- Soil formation
- Erosion and deposition by soil, water, ice
- Glaciation

Trimester Two
Conclusion of geology unit above
Simple Machines
Materials: *Holt Science and Technology- Forces, Motion and Energy, AIMS- Simply Machines*

- Work
- The six simple machines
- Compound machines
- Catapult

Trimester Three
Ecology
Materials: *Holt Science and Technology: Environmental Science, NSTA Press- Exploring Ecology*

- Definition
- Biomes of the world
- Food chains
- Food webs
- Producers and consumers
- Adaptations of species
- Invasive species
- Competition among species
- Experiment design

Please see appendix for a sample unit lesson plan for Grade Four and Five Science.

Science - Grade Six

Class Meetings: once daily for 50 minutes

Materials:

- Glencoe's *Human Body Systems* and *Animal Diversity*
- Selections from *The Parrot's Lament* and *The Octopus and the Orangutan* by Eugene Linden

Students will be able to:

Core Skills

- Understand and use the scientific method
- Craft testable hypotheses
- Record data in a systematic way
- Graph and analyze data
- Learn proper lab safety procedures
- Summarize data in a written format

Human Anatomy & Physiology

- Study the anatomy and physiology of the following systems: muscular, skeletal, circulatory, respiratory, renal, nervous and immune
- Learn the purpose of each system
- Learn about proper nutrition and exercise habits, as well as alcohol and drug awareness
- Measure the pulse and respiration rates before and in response to aerobic exercise
- Trace the genetic inheritance of hemophilia among the royal families of Europe, pre-WWI
- Identify the Vitamin C concentration in orange juice via chemical means
- Construct models of the lungs, a nephron, and a neuron in order to better understand their functioning
- Learn about diffusion, acids, and bases
- Research and write a short paper about a particular infectious disease, its treatment and epidemiological history.

Animal Physiology & Behavior

- Study the system by which animals are classified
- Evaluate whether an organism is an animal based on animal characteristics.
- Learn about the characteristics, habitat and behaviors of sponges, cnidarians, worms, mollusks, arthropods, echinoderms, fish, amphibians, birds and mammals.
- Evaluate the adaptations of a variety of animals to their environments (including the octopus, honeybee, cheetah, etc.)

- Connect form to the physiological functions of a variety of animals.
- Observe and discuss the behavior of a variety of animals in our environment, as well as by video.
- Evaluate different species' ability to learn and communicate via different modalities.
- Research and create a PowerPoint presentation about a specific animal's life cycle, habitat, diet, physical and behavioral adaptations.

Sequence:

Trimester One and First Half of Trimester Two

Anatomy, Physiology and Health
Chapter One
The Skeletal System
- Build and label a model of the skeletal system
- The functions of the skeletal system
- The internal structure of bones
- Types of bone fractures and the healing process
- Selections from *Gray's Anatomy for Children* coloring pages
- Learn to identify 23 individual bones

The Muscular System
- Active demonstration: actin and myosin
- Muscles working in pairs
- Learn to identify 15 individual muscles
- Types of muscle tissue
- Activity: What exercises target specific muscles

The Integumentary System
- The purposes and functions of skin
- Lab: estimating the surface area of skin
- Label and identify the components of skin

Chapter Two
Nutrition
- What makes a meal healthy?
- My Plate
- Paired project: What is the healthiest and unhealthiest meal at a certain restaurant?
- Special diets: vegetarian, vegan, common food allergies
- Students keep a food journal for seven days and analyze their own eating habits
- The role of vitamins, proteins, carbohydrates, etc. in the body?
- Lab: How much vitamin C is in each type of orange juice?

The Digestive System
- Digestive system diagram
- Documentary: "The Digestive System"
- The process of digestion
- Lab: Acids and bases

Chapter Three

The Circulatory System

- Diagram of the pathway of blood through the heart
- Active demonstration: create a diagram of the heart, lungs and body on the floor.
- Students trace the path of blood through the body.
- How the heart works
- The functions of the circulatory system

Blood

- The functions of blood
- Hemophilia
- Documentary: "The Royal Disease"
- The genetics of hemophilia

The lymphatic system

- Purposes of the lymphatic system
- Leukemia

Chapter Four

The Respiratory System

- Active demonstration: Create a model lung
- Purposes of the respiratory system
- The structure and function of the pulmonary alveolus
- Asthma

The Excretory System

- The structure and function of the excretory system
- The nephron

Chapter Five

The Nervous System

- Create a model of a neuron
- Diagram: the parts of a neuron
- Action potentials
- What happens at the synapse?
- The functions of the major parts of the brain
- The effects of drugs and alcohol on the brain and behavior

The Five Senses

- Paired project: create a presentation and demonstration about one of the five senses.
- The five senses and the brain
- Lab: eye dominance, color perception

Chapter Six

The Endocrine System

- Diabetes
- How the brain uses hormones

The Reproductive System

- Basic male and female anatomy
- Fertilization Human life stages
- Fetal development during pregnancy

Chapter Seven
The Immune System
- Immune cells

- How the body fights infection Infectious diseases
- Individual Paper: Select an infectious disease, research and write a paper about the disease that conforms to MLA standards
- Hand hygiene and disease transmission
- Epidemiology: The effect of environment, sanitation and other factors on the transmission of disease
- Non-infectious diseases
- Cancer

Second Half of Trimester Two and Trimester Three

Animals and Animal Behavior
Chapter One
Scientific Organization of Animals
- How living organisms are classified
- Artistic representation of the classification system for living organisms Sponges and cnidarians
- Diagram of sponge anatomy
- The lifecycle of moon jellies
- The interaction of marine life and environment Flatworms and roundworms
- Worms and disease in human populations

Chapter Two
Mollusks
- Anatomy of the octopus
- Octopus intelligence
- Octopus communication
- Cephalopod locomotion Segmented Worms
- Lab: worms and compost Arthropods
- Data Analysis: Bees and Colony Collapse Disorder
- Documentary: the communication of Bees Echinoderms

Chapter Four
Birds
- Individual project: students select a bird and create a PowerPoint presentation for the class
- Why flight is possible

- Structure and function of birds from different environments
- Parrots and language (based on the work of Dr. Irene Pepperberg)
- The intelligence of ravens and crows
- Lab: observe a bird feeder and identify the birds Mammals
- The anatomy and physiology of the cheetah
- Compare and contrast: the cheetah vs. the lion (behavior and physical characteristics)
- Great apes: classification, communication and intelligence

Chapter Five
Types of Behavior
- How behavior is observed and recorded
- Social behavior
- Territorial behavior Behavioral Interactions
- Behavioral communication
- Rats and empathy
- Lab: observe the territorial behavior of local wildlife

Independent Projects
- Research project about pioneering scientists
- Students undertake background research for a science fair project
- The students formulate a hypothesis and write a materials and method sections
- Each student conducts an experiment and presents his or her findings at a science fair

Science Grade Seven and Eight, Year 1 and Year 2

Class Meetings: once daily for 50 minutes

Year 1
Resources: *Middle School Chemistry* by the American Chemical Society (http://www.middleschoolchemistry.com); Pearson Prentice Hall Science Explorer: *Chemical Building Blocks* and *Chemical Interactions;* laboratory glassware and chemicals; goggles and other necessary safety equipment

Students will be able to:

Core Skills
- Make observations, raise questions, and formulate hypotheses
- Design and conduct an experiment specifying variables to be changed, controlled, and measured
- Select appropriate tools and technology (e.g., calculators, computers, thermometers, meter sticks, balances, graduated cylinders, and microscopes), and make quantitative observations
- Present and explain data and findings using multiple representations, including tables, graphs, mathematical and physical models, and demonstrations

- Communicate procedures and results using appropriate science and technology terminology
- Recognize that there are more than 100 elements that combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter
- Differentiate between an atom (the smallest unit of an element that maintains the characteristics of that element) and a molecule (the smallest unit of a compound that maintains the characteristics of that compound)
- Recognize that heat is a form of energy and that temperature change results from adding or taking away heat from a system

Measurement and Laboratory Equipment

- Identify types of glassware and appropriate uses for each
- Learn to use measurement tools, such as rulers, triple beam balances, and graduated cylinders
- Select and make use of appropriate technology, such as calculators and computers
- Make quantitative observations

Matter

- Realize that matter makes up the physical world around us
- Understand that matter consists of atoms, which may be organized into molecules
- Learn that water molecules attract each other
- Understand the concept of molecular energy
- Identify the states of matter (solid, liquid, gas, and plasma) and properties of each
- Relate molecular motion to the state of matter and to transitions between states
- Recognize that air consists of matter
- Understand the relationships between heat, temperature, and molecular motion
- Relate changes of state to transfer of heat and molecular motion

Density

- Learn the definition of density and appropriate units
- Find the volume of an object by calculation and by displacement
- Find and explain the density of water in the metric system
- Learn that floating or sinking depends on the relative densities of the substances
- Explain that density changes due to temperature and relate to molecular motion

The Periodic Table and Bonding

- Explain how scientists arrived at the current atomic model
- Identify the properties and locations of electrons, protons, and neutrons in the current model
- Follow the initial development of the periodic table of elements by Dmitri Mendeleev
- Understand the atomic properties which may be inferred from the periodic table
- Learn to use energy level models to represent electron configuration
- Understand the significance of the valence level
- Relate the type of bond to the valence properties of the atoms involved
- Develop Lewis dot diagrams for atoms, compounds, and ions

- Construct molecular formulas for specific combinations of atoms

Water
- Observe that water molecules are attracted to one another
- Relate surface tension to molecular attraction
- Understand that the water molecule is polar and relate polarity to bonding behavior
- Define the constituent parts of a solution
- Explain how ionic and covalent solutes enter solution

Chemical Change
- Differentiate between chemical reactions and physical changes
- Identify the major categories of reactions
- Learn to represent reactions with equations
- Understand how conservation of mass applies to reaction equations
- Use coefficients to balancing equations
- Define Avogadro's number and relate to the mole as a unit of measure
- Calculate the molecular weight of a compound
- Use molar ratios to solve problems relating to chemical equations

Acids and Bases
- Learn the definitions of acids and bases
- Identify common examples of acids and bases
- Relate the strength of an acid or base to its pH
- Understand the relationship between the strength of an acid and the concentration of hydronium ions formed in solution
- Understand the relationship between the strength of an base and the concentration of hydroxide ions formed in solution
- Define a neutralization reaction as a reaction between an acid and a base
- Show that the products of a neutralization reaction are water and a salt

Sequence

Trimesters One through Three Chemistry

Chapter One
Measurement and Laboratory Equipment
- The International System of Units (SI)
- The seven base units in SI
- SI prefixes and unit conversions
- Use of triple beam balance
- Introduction to types of glassware and the proper use of each
- Interpreting scales and the use of significant figures

Matter
- Matter makes up the physical world around us

- Chemistry is the study of matter
- Matter consists of tiny particles, atoms and molecules
- Matter exists in four phases on Earth: solid, liquid, gas, and plasma
- Phase is a physical property of a substance
- The attraction between water molecules and surface tension
- Molecules of a liquid are attracted to one another but are able to move relative to one another
    - Activity: Water and surface tension
- Molecular motion and its relationship to energy
- Heating a liquid increases the average speed of the molecules and causes them to spread further apart
- Cooling a liquid reduces the average speed of the molecules and results in the molecules being closer together
    - Activity: Motion of molecules in hot versus cold water
- Temperature is a measure of the average kinetic energy of the particles of a substance
- A liquid thermometer indicates temperature due to the expansion or contraction of the liquid contained within
- In a solid, the attraction between molecules is strong relative to kinetic energy (motion) of the molecules
- The molecules of a solid vibrate, but stay in fixed positions relative to one another
- As in liquids, increasing the motion of the molecules causes them to move slightly further apart
- Cooling a solid decreases the motion of the molecules and allows them to move closer to one another
- Air is a gas which consists of particles which have mass
- In a gas, the attraction between particles is weak relative to the kinetic energy
- The state of a substance depends on the balance between the motion of the particles and the attraction the particles have for one another
    - Activity: Demonstrate that air has mass

Chapter Two

Changes of State

- Adding energy in the form of heat to particles increases kinetic energy (energy of motion)
- An increase in kinetic energy results in an increase in temperature
- Temperature is a measure of the average kinetic energy of the particles of a substance
- Removing energy from particles decreases kinetic energy
- A reduction in kinetic energy results in a decrease in temperature
- Conduction is the transfer of energy between particles
- Faster-moving particles collide with slower-moving particles
- Slower moving particles speed up, while faster-moving particles slow down
- Heat is the transfer of energy from a substance at a higher temperature to a substance at a lower temperature
- Some materials are better conductors than others
    - Demonstration: Conduction between metal washers and water

- Evaporation occurs when particles of a liquid gain enough energy that the motion of the particle overcomes the attractions from other molecules and becomes a gas
- Increasing heat energy increases the rate of evaporation
    - Activity: Evaporation of water from paper towel
- Condensation occurs when the particles of a gas slow down to the point where the attraction between particles brings them together to form a liquid
    - Activity: Condensation of water molecules
- Freezing occurs when the particles of a liquid substance slow down to the point where the attraction between particles causes them to assume fixed positions as a solid
    - Activity: Ice forms on a cold metal can
- Melting occurs when the particles of a solid gain kinetic energy to the point where the motion overcomes the attraction between particles and the particles move past one another
    - Activity: Ice melting on good conductor versus poor conductor
- Sublimation occurs when the particles of a solid gain kinetic energy so rapidly that they transition directly from the solid state to a gas.
- Deposition is the opposite of sublimation; it occurs when the particles of a gas lose kinetic energy so rapidly that they transition directly to the solid state.

Chapter Three

Density

- Density is a characteristic property of a substance
- Density is the relationship between the mass of a substance and the volume of the space it occupies
- Density is calculated by dividing the mass of a substance by its volume
- Density depends on the mass of the atoms or molecules, their size, and their arrangement
- Objects which have the same volume but different masses have different densities
    - Activity: Find densities of samples made from a variety of materials
- The volume of an object is a measure of the space that it occupies
- Volume can be calculated based on the dimensions of some shapes
- The volume of irregularly shaped objects can be difficult or impossible to calculate directly
- Finding volume by displacement: a submerged object displaces a volume of liquid equal to the volume of the object
- Principle was discovered by Archimedes
- One milliliter of water has a volume of one cubic centimeter
- Atoms on the periodic table are arranged according to the number of protons in the nucleus
    - Activity: Finding the density of sample cylinders with equal volumes
- Liquid substances also have characteristic densities
- The density of water is one gram per cubic centimeter
- Density of a specific substance does not vary with volume
    - Activity: Confirm the density of water
- An object will float if it is less dense than the liquid in which it is placed
- An object will sink if it is more dense than the liquid in which it is placed

- A floating object will displace a volume of liquid which has the same mass as the object
    - Project: Create "boat" to float a given (highly dense) object in water
- Liquids obey the same rules as solids with respect to floating or sinking
- A liquid will float if it is less dense than the liquid in which it is placed
- A liquid will sink if it is more dense than the liquid in which it is placed
    - Activity: Create a density column using liquids with varying densities
- Temperature affects density because the volume of a substance depends on the energy of its particles
- Particles with more energy spread further apart, occupying a larger volume
- Particles with less energy are closer together, occupying a smaller volume
    - Demonstration: Hot and cold water

Chapter Four

The Periodic Table and Bonding

- Atoms consist of tiny particles called protons, neutrons, and electrons
- Protons, neutrons, and electrons are made of even tinier particles (leptons and quarks)
- The nucleus consists of protons and possibly neutrons
- Electrons surround the nucleus
- Electrons exist in a "probability region" around the nucleus, but are usually shown as in defined orbits for simplicity
- Protons have a positive charge, while electrons have a negative charge
- The charge on the proton and electron are exact opposites of one another
- Neutrons have no charge
- Protons and electrons attract one another
    - Activity: Static Electricity
- An element is a substance made entirely of only one type of atom
- The periodic table is an organized chart of the atoms which make up all matter
- Developed initially by Dmitri Mendeleev in 1869
- Mendeleev ordered the known elements by atomic mass and noticed that properties tended to repeat in a periodic manner
- Mendeleev was able to correctly predict that as-yet unknown elements would fill gaps in the organization
- Modern periodic table arranged elements in order of atomic number (the number of protons in the nucleus)
- The number of electrons surrounding the nucleus is equal to the number of protons in the nucleus
- Different atoms of an element may have differing numbers of neutrons (isotopes)
- Atomic mass of an element is the weighted average mass across all isotopes
    - Activity: Flash card characteristics of elements
- Electrons surround the nucleus of an atom in regions called "energy levels"
- An energy level represents the three-dimensional space surrounding the nucleus where an electron is most likely to exist
- Organization and numbering of energy levels
- Each energy level can accommodate only a specific number of electrons before additional electrons must occupy the next highest level

- Electrons in the energy level farthest from the nucleus are valence electrons
- Atoms in the same group (column) have the same number of valence electrons
    - Activity: Periodic table of energy levels
- Valence electrons are involved in bonding
- The attraction of each atom's nucleus for the valence electrons of the other atom pulls them together
- Covalent bonding is the sharing of electrons between atoms
- Covalent bonding holds the atoms together as a molecule
- Covalently bonded molecules are more stable than the separate atoms
- If attractions between the protons and electrons of atoms are strong enough, an electron can move completely from one atom to another
- Atom which has lost or gained an electron is an ion
- Ion can be positive (lost an electron) or negative (gained an electron)
- The positive and negative ions are strongly attracted to another, forming an ionic bond
    - Activity: Build model of ionic crystal
- Lewis dot diagrams are symbolic representations of valence configurations
- Diagrams can be used to illustrate covalent or ionic bonding
- Single bonds are represented by a pair of dots or a single line
- Double bonds are represented by two pairs of dots or two lines
- Triple bonds are represented by three pairs of dots or three lines
    - Activity: Build the Lewis dot diagram periodic table

Chapter Five

The Water Molecule and Dissolving

- Water has the formula H2O
- Water is a covalent molecule with an overall neutral charge
- Unequal sharing of electrons creates a slight negative charge near the oxygen atom and a slight positive charge near the hydrogen atoms
- Polar covalent molecule
- The hydrogen ends of one water molecule attract the oxygen end of another water molecule
    - Activity: Evaporation rate of water versus isopropyl alcohol
- The attraction between water molecules at the surface is called surface tension
- The polarity of the molecules is responsible for water's strong surface tension
    - Activity: Compare surface tension of water and isopropyl alcohol
- Water dissolves ionic substances because negative ions are attracted to the hydrogen ends, and positive ions are attracted to the oxygen end
- Solubility represents the amount of a substance (solute) that can dissolve in a solvent
    - Activity: Solubility of table salt in water and isopropyl alcohol
- Sugar molecules (sucrose) are soluble in water
- Sucrose molecules are slightly polar due to O-H bonds
- A nonpolar covalently bonded solvent such as mineral oil will not dissolve a polar substance such as sucrose or water
    - Activity: Solubility of M&M coating in water, oil, and alcohol
- Different substances have measurably different solubilities in water

- Solubility can be used to help identify an unknown substance
    - Activity: Identify unknown substances based on solubility in water
- Temperature affects rate and absolute solubility
- Higher temperatures mean increased molecular motion
- More solute molecules contact solvent molecules with more force
    - Activity: Solubility of M&M coating in hot versus cool water
- Liquids, like solids, can be dissolved in liquids
- Polar liquids dissolve polar liquids, but not non-polar liquids (such as oils)
- Non-polar liquids dissolve non-polar liquids, but not polar liquids (such as water)
    - Activity: Solubility of polar and non-polar liquids in water
- Gases, like liquids and solids, can be dissolved in liquids
- Solubility depends on the interaction between gas molecules and solvent molecules
- Solubility varies greatly depending on temperature
- More gas dissolves in cold water than hot water due to energy of molecules
    - Demonstration: Solubility of carbon dioxide in cold versus hot water
- The process of dissolving can be endothermic or exothermic
- Endothermic - temperature decreases
- Exothermic - temperature increases
- Energy is required to break the bonds of the solute
- If the energy required to separate the particles of the solute is greater than the energy released when the solvent particles "bond" to the particles, then it is endothermic
- If the energy required to separate the particles of the solute is less than the energy released when the solvent particles "bond" to the particles, then it is exothermic
- Project: Making Lye Soap
    - Students work in pairs to create lye soap using coconut oil
    - Each student writes a report documenting the procedure followed, the result, and an analysis detailing where they might have improved the procedure

Chapter Six

Chemical Change

- A physical change does not create a new substance
- A chemical change creates a new substance
- The atoms and molecules that interact are called reactants
- The atoms and molecules produced by the reaction are called products
- No atoms are created or destroyed in a chemical reaction (conservation of mass)
- Nuclear reaction required to change an atom to that of another element
    - Demonstration: Candle burning
- Changing the amount of reactants affects the amount of products produced
- Mass is conserved in a chemical reaction
    - Demonstration: Vinegar and baking soda reaction
- The solutes in two solutions, when mixed, can react to form an insoluble solid
- The insoluble solid is called a precipitate
    - Activity: Magnesium sulfate reacting with sodium carbonate
- Temperature affects the rate of a chemical reaction

- Reactants must be moving fast enough and impact with enough force for the reaction to occur
- Increasing temperature increases molecular motion
    - Demonstration: Cold and warm glow sticks
- A set of reactions can be used to identify an unknown substance because substances have characteristic chemical properties
    - Activity: Using reaction to identify substance
- A chemical reaction involves breaking and forming chemical bonds
- Energy is required to form bonds, and energy is released when bonds are broken
- If two substances react and the temperature of the mixture decreases, the reaction is called endothermic
- If two substances react and the temperature of the mixture increases, the reaction is called exothermic
    - Activity: Measuring temperature change for vinegar and baking soda reaction
- The pH scale is used to measure the strength of an acid or base
- Acidic solutions have a pH less than 7
- Basic solutions have a pH greater than 7
- Universal indicator turns from green to red in acidic solutions
- Universal indicator turns from green to purple in basic solutions
    - Activity: Using universal indicator solution to identify acidic and basic solutions
- pH is a measure of hydronium ions in solution
- Acids increase the number of hydronium ions in solution
- Bases decrease the number of hydronium ions in solution
- A reaction between an acid and a base is called a neutralization reaction
- Products of a complete neutralization reaction are water and a salt
    - Activity: Neutralization reaction
- Carbon dioxide in aqueous solution causes water to become acidic
- Acidity can be reduced or neutralized by adding a base
    - Demonstration: Carbon dioxide gas in universal indicator becomes acidic
- A balanced chemical equation obeys the law of conservation of mass
- The coefficients of the equation specify the ratios of reactants and products
- The coefficients can be thought of as molecules or moles of molecules
- The molar mass of each reactant and product can be used to determine the corresponding masses, in grams

Year 2

Resources: Selections from *On the Origin of Species by Means of Natural Selection* by Charles Darwin, *The Human Evolution Coloring Book* by Adrienne L. Zihlman,
The following online resources:

- PBS: Evolution (http://www.pbs.org/wgbh/evolution/)
- Smithsonian National Museum of Natural History: What does it mean to be human? (http://humanorigins.si.edu/)
- Institute of Human Origins (https://iho.asu.edu/)
- Nova - Becoming Human (http://www.pbs.org/wgbh/nova/evolution/becoming- human.html)

- Understanding Evolution (http://evolution.berkeley.edu/)
- Howard Hughes Medical Institute (http://www.hhmi.org/educational-materials)
- Learn Genetics (http://learn.genetics.utah.edu/)

Students will be able to:

Core Skills

- Learn proper lab safety procedures
- Approach questions using a scientific approach
- Use a triple-beam balance scale to measure mass of an object
- Understand and use the scientific method
- Demonstrate that the way to change the motion of an object is to apply a force
- Make observations, raise questions, and formulate hypotheses
- Design and conduct scientific investigations
- Analyze and interpret results of scientific investigations
- Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge
- Identify independent and dependent variables
- Record data in a systematic way
- Graph and analyze data
- Present relationships between and among variables in appropriate forms
- Use mathematical operations to analyze and interpret data results
- Graph and analyze data
- Communicate experimental procedures and results
- Summarize data in a written format
- Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions
- State questions raised by an experiment that may require further investigation
- Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations
- Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation
- Construct and use tables and graphs to interpret data sets
- Convert within a unit (e.g., centimeters to meters)
- Solve simple algebraic expressions
- Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)

Evolution

- Recognize that evidence drawn from geology, fossils, and comparative anatomy provides the basis of the theory of evolution
- Explain how evolution is demonstrated by evidence from the fossil record, comparative anatomy, genetics, molecular biology, and examples of natural selection
- Relate the extinction of species to a mismatch of adaptation and the environment

- Give examples of ways in which genetic variation and environmental factors are causes of evolution and the diversity of organisms
- Recognize that biological evolution accounts for the diversity of species developed through gradual processes over many generations

Cellular Biology

- Classify organisms into the currently recognized kingdoms according to characteristics
- Describe species as reproductively distinct groups of organisms
- Recognize that all organisms are composed of cells
- Compare and contrast plant and animal cells, including major organelles
- Recognize that within cells, many of the basic functions of organisms are carried out
- Recognize that every organism requires a set of instructions that specifies its traits, which are stored in the organism's chromosomes
- Heredity is the passage of phenotypic traits from one generation to another.
- Recognize that hereditary information is contained in genes located in the chromosomes of each cell
- Compare sexual reproduction (offspring inherit half of their genes from each parent) with asexual reproduction (offspring is an identical copy of the parent's cell)
- Recognize that the sexual reproductive system allows organisms to produce offspring that receive half of their genetic information from their mother and half from their father, and that sexually produced offspring resemble, but are not identical to, either of their parents

Genetics

- Describe the basic structure (double helix, sugar/phosphate backbone, linked by complementary nucleotide pairs) of DNA, and describe its function in genetic inheritance
- Describe the basic process of DNA replication and how it relates to the transmission and conservation of the genetic code
- Explain the basic processes of transcription and translation, and how they result in the expression of genes
- Distinguish among the end products of replication, transcription, and translation
- Explain how mutations in the DNA sequence of a gene may or may not result in phenotypic change in an organism
- Explain how mutations in gametes may result in phenotypic changes in offspring
- Distinguish among observed inheritance patterns caused by several types of genetic traits
- Describe how Mendel's laws of segregation and independent assortment can be observed through patterns of inheritance
- Use a Punnett Square to determine the probabilities for genotype and phenotype combinations

Physical Science

- Differentiate between weight and mass, recognizing that weight is the amount of gravitational pull on an object
- Explain and give examples of how the motion of an object can be described by its position, direction of motion, and speed
- Differentiate between potential and kinetic energy

- Identify situations where kinetic energy is transformed into potential energy and vice versa
- Recognize that heat is a form of energy and that temperature change results from adding or taking away heat from a system
- Interpret and provide examples that illustrate the law of conservation of energy
- Interpret and provide examples of how energy can be converted from gravitational potential energy to kinetic energy and vice versa
- Describe both qualitatively and quantitatively how work can be expressed as a change in mechanical energy
- Describe both qualitatively and quantitatively the concept of power as work done per unit time

Sequence

Trimesters One and Two

Evolution, Cellular Biology, Reproduction, and Genetics

Geologic History
- Geologic time and divisions (Eon, Era, Period, Epoch)
- Important milestones (age of Earth, first mammals, first human ancestors)
    - Activity: Create timeline of Earth's history

Taxonomy
- Linnaeus' life and contribution to taxonomy
- The six kingdoms currently recognized
- Types of organisms in each:
    - Prokaryotic or eukaryotic
    - Unicellular, multicellular, or both
    - Producers, consumers, or both
    - Method of reproduction
- Species are genetically distinct and cannot interbreed to produce fertile offspring

Evolution and Natural Selection
- Charles Darwin's life
- Activity: Darwin's Great Voyage of Discover (PBS)
- Natural selection
    - Darwin's observations of the Galapagos finches
    - Contrast with Lamarck's version of evolution

Human Evolution
- Terms: hominin vs. hominid
    - Assignment: Hominin species study sheet assignment
- Human hominin lineage (as currently theorized) and other hominid species:
    - Ardipithecus ramidus

    - Australopithecus anamensis
    - Kenyanthropus platyops
    - Australopithecus afarensis
    - Australopithecus africanus
    - Homo rudolfensis
    - Homo habilis
    - Homo erectus
    - Homo heidelbergensis
    - Homo floresiensis (nicknamed “the hobbit” due to insular dwarfism)
    - Homo neanderthalensis
    - Homo sapiens
- Human origins (HECB)
- Australopithecines (HECB)
- Compare and contrast each species with each other and modern humans in terms of:
    - Skull characteristics, such as
        - Cranial capacity
        - Temporal region size and zygomatic arch
        - Shape of brain case
        - Entry of spine
    - Bipedal indicators, such as
        - Shape of pelvis
        - Angle of femur
        - Location of center of gravity
        - Arch of foot
        - Achilles tendon
        - Construction of knee
        - Nuchal ligament
- Adaptations in Homo sapiens for running
    - Achilles tendon to absorb shock
    - Longitudinal arch in foot to absorb shock
    - Long legs increase stride length
    - Relatively large joint surfaces in hip, knee for shock absorption
    - Center of mass location for better balance
    - Relatively large gluteal muscles for stabilization of upper body
    - Nuchal ligament to stabilize head

Cellular Biology

- The cell as the building block of life
- The characteristics of living organisms
    - Internal organization
        - organelles
        - cells
        - tissues
        - organs
    - Transform and use energy
        - Respiration

        - Photosynthesis
        - Chemosynthesis
        - Producers vs. consumers
    - Interact with their environments
    - Reproduce
        - Asexual reproduction
        - Sexual reproduction
    - Population evolves over time
- Viruses
    - Structure and function
    - Living organism?
- The cell theory of biology
    - All organisms are composed of cells
    - The cell is the structural unit of life
    - Cells arise by division of preexisting cells
    - Cells can be cultured to produce more cells
        - in vitro
        - in vivo
- Types of cells
    - Archaea
    - Prokaryotes
    - Eukaryotes
- Prokaryotic cell features
    - Sticky outer protective layer (capsule)
    - Cell wall
    - Plasma membrane
    - Mesosome
    - Nucleoid
    - Cytoplasm
        - Semi-fluid cell interior
        - no membrane-bound organelles
        - location of metabolic enzymes and ribosomes
    - Activity: Create model of plasma membrane with transport proteins
- Eukaryotic cell features
    - Shares some features with prokaryotic cells
        - plasma membrane
        - cytoplasm (with ribosomes)
        - nuclear material
        - may have cell wall (plant cells)
    - Eukaryotic from Greek
        - “eu” - “with” or “true”
        - “karyon” - “kernel” or “nucleus”
    - Cytoskeleton
        - Consists of:
            - Microtubules
            - Microfilaments

            - Intermediate Filaments
        - Maintains cell shape
        - Anchors organelles
        - Provides contractility and movement
        - Tracks for intracellular transport
    - Cilia and flagella
        - For cellular movement
        - Composed of microtubules
        - Motor protein dynein
    - Nucleus
        - Nuclear envelope (double phospholipid bilayer with nuclear pores)
        - Nuclear matrix
        - Nucleoplasm
        - Chromatin
            - DNA and proteins which make up chromosomes
        - Outer membrane continuous with endoplasmic reticulum
    - Endomembrane system, consisting of:
        - Endoplasmic reticulum
            - Rough - has ribosomes and secretes vesicles containing proteins
            - Smooth - lacks ribosomes; produces lipids
        - Golgi apparatus/complex
            - The "postman" of the cell
            - Receive proteins from the endoplasmic reticulum in vesicles
            - "Packages" proteins in vesicles "tagged" for particular destination
        - Lysosomes
            - Only in animal cells
            - Contain enzymes which break down large molecules
    - Mitochondria
        - Carry out respiration
        - Double membrane system
        - Contain separate DNA
    - Ribosomes
        - Protein synthesis
        - Exist free in cytoplasm or as part of rough ER
        - No membrane, but generally thought of as organelle
    - Plants also have:
        - Chloroplasts
        - Central vacuole
            - Storage space in plant cells
            - May store ions, waste, pigment, or many other substances
            - Helps maintain cell rigidity due to turgor pressure
- Genetic material in eukaryotic cells
    - DNA (deoxyribonucleic acid)
        - nucleic acid pairs
        - phosphate - sugar backbone
        - helical structure

    - Chromatin
        - Term for DNA wrapped around histones
        - Histones - proteins around which DNA coils
    - Chromosomes
        - Organizational unit of DNA
        - Humans have 23 pairs of chromosomes
        - Homologous chromosomes
            - Same sequences of genes
            - May have different versions of each gene, called alleles
        - Activity: Genetic disorder or disease research
- Stem cells
    - Cells which are undifferentiated
    - Differentiated cells are specialized for a particular function (such as skin or liver)
    - Differentiated cells are also called somatic cells
    - Useful for research into treatment of diseases
    - Types of stem cells:
        - Embryonic
        - Induced Pluripotent
        - Therapeutic cloning
        - Somatic

Heredity

- Gregor Mendel and Mendelian genetics
    - Considered the "father" of genetics
    - Monk in Austria, mid-1800's
    - Studied inheritance with pea plants while at monastery
    - Mendel's Principles of Inheritance
        - Fundamental theory of heredity
            - Inheritance involves passing discrete units from parents to offspring
            - Genes
        - Principle of segregation
            - Units of heredity must separate into reproductive cells
            - Meiosis
        - Principle of independent assortment
            - Traits are inherited independently
            - Chromosomes
            - Genes on same chromosome are often inherited together
    - Specialized reproductive cells
        - Gametes, or germ cells
            - Egg
            - Sperm
        - Haploid - carry one of each pair of chromosomes
        - Diploid cells have the full complement of chromosomes (two of each)
    - Genotype
        - The specific combination of alleles inherited by offspring

        - Homozygous - same allele on both homologous chromosomes
        - Heterozygous - different alleles on the two homologous chromosomes
    - Phenotype
        - Specific trait expressed due to genotype
    - Alleles can be dominant or recessive
        - Dominant allele produces the dominant phenotype, even if only one copy is inherited (one homologous chromosome contains the dominant allele)
        - Recessive allele will only be expressed if both homologous chromosomes inherited contain the recessive allele
    - Punnett square
        - Used to predict the outcome given specific allele combinations for each parent

Cellular Division (Mitosis and Meiosis)

- Mitosis
    - Part of the cell cycle process
    - Each "daughter" cell is genetically identical to "parent" cell
    - Method of reproduction for unicellular organisms
        - Often called binary fission
    - Specific stages of mitosis
        - Interphase
            - "Resting" portion of the cell cycle
            - Preparation for mitosis
            - Organelles and DNA are replicated
        - Prophase
            - Chromosomes condense
            - Nuclear membrane dissolves
            - Mitotic spindle forms
        - Metaphase
            - Chromosomes line up along the middle of the cell
            - Spindle fibers attach to kinetochores
        - Anaphase
            - Spindle fibers begin to shorten
            - Pull one of each pair of duplicate chromosomes toward opposite poles of the cell
        - Telophase
            - Chromosomes decondense
            - Nuclear envelope forms
            - Cytokinesis completes, two "daughter" cells result

- Meiosis
    - In sexual reproduction, each parent produces a germ cell with half of the required chromosomes, one of each homologous pair (haploid cells)
    - Meiosis is the process resulting in germ cells
    - Meiosis is similar to mitosis; however:
        - Two cycles of cellular division occur

        - Results in four haploid cells instead of two diploid cells
        - "Crossing over" may occur between homologous chromosomes
            - Sections of the chromosomes may swap ("synapse")
            - Increases diversity in offspring
    - Meiosis I
        - Very similar to mitosis
        - Duplicate chromosomes are not separated
        - Result is two cells which are haploid
            - One of each homologous pair and its duplicate
            - Joined at the centromere
            - Each is called a chromatid until separated
    - Meiosis II
        - Each cell produced in Meiosis I goes through Meiosis II
        - The duplicate chromatids are separated
        - Each cell produced is still haploid, but with one copy of each chromosome

DNA Structure

- Discovered by Watson and Crick, 1953
- Double helix
- Similar to a ladder when straightened
    - Sides consist of sugar and phosphate molecules
    - Rungs are complementary nucleic acids
        - Adenine pairs with Thymine
        - Cytosine pairs with Guanine
- Gene
    - Specific section of a chromosome
    - "Recipe" for a protein
    - Specific order of nucleic acids determines the amino acids for the protein
- DNA Replication
    - DNA polymerase
    - DNA is split, each side is completed to form two copies
    - Each copy is half of the original strand of DNA

Protein Synthesis

- The process through which a protein is created based on the instructions encoded in the DNA
- Consists of two phases:
    - Transcription
        - RNA polymerase creates messenger RNA (mRNA) strand
        - Complementary to base pairs of gene, though Uracil substitutes for Thymine
        - mRNA travels through nuclear pore into cytoplasm
    - Translation
        - The mRNA strand is "read" by ribosome and protein is assembled
        - Ribosome reads mRNA in groups of three bases, called codon

        - Each codon matches a transport RNA molecule (tRNA) with the matching anti-codon (complementary bases)
        - Each tRNA molecule correlates to a particular amino acid
        - String of amino acids is assembled
        - Complete strand of amino acids is called a protein (or polypeptide)

Epigenomics

- Each somatic cell (except of mature red blood cells) contains the entire genome
- Particular genes are expressed or inhibited by molecular "tags"
    - DNA methylation - methyl groups effectively turn genes "on" or "off"
    - Histone modification - histone changes affect gene transcription
- Environment influences epigenome
- Effects are passed along to daughter cells (mitotic division)
- Previously believed that an embryo's epigenome was "erased"
    - Now proven that some tags are passed along to offspring
    - In some ways, similar to Lamarck's version of evolution Please see appendix for sample unit lesson plan for Grade 7/8 Biology.

Trimester Three
Energy, Pulleys, and Gears

Physics of Energy

- Energy
    - What is energy
    - Forms of energy; examples
        - Kinetic energy (KE) - energy that a body possesses due to its motion
        - Potential energy (PE) - energy that a body possesses due to position or configuration
            - Gravitational PE - due to mass and position in gravitational field
            - Elastic PE - such as slingshot or spring
            - Chemical PE - stored in a molecule's bonds
            - Electromagnetic PE - attraction or repulsion due to magnetic field
            - Nuclear PE - stored in forces holding the nuclear particles together
        - Thermal energy (heat) - due to motion of atoms
        - Electromagnetic energy - created when electrons jump to lower levels
            - Light and microwaves are examples
- Transformation of energy
    - Energy can be converted to other forms
    - In a conventional automobile:
        - Chemical energy stored in gasoline is released as heat (thermal energy)
        - Thermal energy is converted to kinetic energy by engine
        - Much of the original chemical energy is lost
            - Heat is lost to air (to prevent engine overheating)
            - Kinetic energy is lost to:
                - Friction (within the engine and throughout the drivetrain)
                - Air resistance (pushing air molecules out of the way)

            - Pumping (compression air/fuel mixture; pumping oil and water throughout the engine)
            - Alternator (must be spun to keep battery charged)
            - Rolling resistance (deforming tire)
            - Braking
        - Braking - all kinetic energy gained must be shed to bring the car to a stop
            - Brakes convert motion to heat through friction
            - Brake components (pads, rotor, caliper) become hot
            - Heat is lost to surrounding air
    - In hybrid or electric automobiles, some of the energy lost to braking can be captured through "regeneration"
        - Use the motion of the car to drive generator, which recharges the battery
        - Car slows as kinetic energy is converted to stored electricity
- In a closed system, energy can be transformed from one type to another, but can neither be created nor destroyed
    - The total energy of the system must remain constant
    - For thermal energy, this concept is called the First Law of Thermodynamics
- Calculating gravitational potential energy and kinetic energy
    - All units in mks system (meters, kilograms, and seconds)
    - PE = mgh
        - $m$is the mass of object
        - g is the gravitational constant
        - h is the height above that which is designated "zero"
    - KE = ! mv !
        - $m$is the mass of object
        - $v$is the velocity (speed) of the object
    - Joule (J) is the unit of energy
- Solve problems involving kinetic or potential energy, and the transformation from one to the other
    - For an object initially at rest, then allowed to fall in a gravitational field, find
        - PE and KE at various points
        - Velocity of object
        - Mechanical energy: total of PE and KE (must remain constant)
- Work
    - Work is defined as the energy necessary for a force (F) to move an object through a distance (d)
    - $W = Fd$
    - Units of work are the same as energy (Joules, J)
    - "Net" work can also be thought of as the change in energy of an object
    - For an object to gain energy, work must be done to the object
    - For an object to lose energy, work must be done by the object
- Power
    - Power is the rate of using energy, or the rate of doing work
    - Units are Joules per second

Pulleys

- Pulleys allow the redirection of force (for example, pulling down to lift an object)

- A single pulley does not affect the magnitude of the force or the work necessary
- Pulleys used in combination can be used to reduce, or increase, effort (force)
    - A "block and tackle" arrangement reduces the force required to lift an object
    - The force must be applied throughout a greater distance
    - The work required must remain the same
- Activity: Using pulleys to redirect force and reduce effort

Gears

- Gears can also be used to reduce, or increase, effort
- Example is bicycle gearing
- Larger front gear ("chainring") and smaller rear gear ("cog") results in more distance traveled per revolution of the cranks
    - Requires more effort (force), but the effort must be applied throughout fewer revolutions of the crank - work must remain the same
- Smaller front gear ("chainring") and larger rear gear ("cog") results in less distance traveled per revolution of the cranks
    - Requires less effort (force), but the effort must be applied throughout more revolutions of the crank - work must remain the same
- Activity: Using gears to increase or decrease the number of output rotations

Please see appendix for a sample unit lesson plan for Grade Seven and Eight Science.

Social Studies

Academy Hill School's social studies curriculum is drawn from the National Curriculum Standards for Social Studies (2010) and differentiated to meet the needs of a diverse student body. The following pages list our learning objectives for our social studies curriculum which has a focus on history, geography, culture, economics, civics, and government.

Students are grouped by age level, but within each grade teachers differentiate learning activities and assignments to ensure that all students are interacting with the material in a meaningful and appropriate way. Teachers periodically differentiate by student interest to allow students to delve deeper into meaningful topics. Across all grades the emphasis is on creating meaning and thinking critically. Communities are the primary focus from Early Learners to grade two beginning with the individual and gradually expanding to a world view. Students in grades three through eight focus on American history beginning with Native Americans and then moving chronologically through to the civil rights era, or beyond as applicable to that year.

Social Studies - Grade Kindergarten

Class Meetings: 45 minutes a day, 2-3 times per week
Resources: assorted texts and materials
Students will be able to:

History

- Tell personal stories in chronological order.

- Re-tell known stories in sequence using words such as first, next, and last.
- Use words and phrases indicating chronology such as long ago, before, after, last year, etc.
- Use words for passage of time such as days, weeks, months, years, and seasons.
- Read dates on a calendar and associate them with days of the week.
- Use "because" in personal stories and in retelling events.
- Identify and describe several events and important people in U.S. holidays (Presidents day, Martin Luther King Jr. etc.)
- Identifying cultures and understanding the difference in diverse cultures.

Geography

- Describe a map as a representation of physical places on paper.
- Show and tell what a map and globe is, with understandings of scale and perspective.
- Use location words such as down, up, near, far, and next to in telling stories.
- Identify street address, city/town, and MA etc.
- Describe location and features of places.

Civics and Government

- Understand role of government in caring for citizens.
- Understand role of citizens in government.
- Give examples of rules, fairness, and justice etc.
- Give examples of community helper jobs.

Economics

- Give examples of jobs that people do and the purpose of those jobs.
- Demonstrate understanding of why people need to work.
- Give examples of what people do with income and the choices they must make.
- Give examples of products and services that people offer and purchase from others.

United States Leaders, Symbols, Events, and Holidays

- Identify the current President of the United States, describe what presidents do, and explain that they get their authority from a vote by the people.
- Identify and describe several events and important people in U.S. holidays (Presidents day, Martin Luther King Jr. etc.)
- Identify and explain the meaning of American national symbols such as the flag, and the White House.

Living, Learning, and Working Together

- Identify and describe community helpers and their roles.
- Understand how community members help each other.
- Make connections between classroom and school community to town or national community.

Please see appendix for sample Kindergarten Social Studies/Literacy unit plan.

Social Studies - Grade One

Class Meetings: 4-5 times/week 50 minute classes
Resources:

- Scholastic Grade One Weekly Readers
- Neighborhood & Community
- Write & Read Books
- Beginning Geography
- Me on the Map
- The Little House Calendar Money
- Various internet resources

Students will be able to:

History

- Identify temporal sequences such as days, weeks, months, years, and seasons.
- Use correctly words and phrases related to time (now, in the past, in the future) and recognize the existence of changing historical periods.
- Place events in students' own lives in chronological order.
- Read dates on a calendar and associate them with days of the week.
- Place events in students' own lives in chronological order.
- Read dates on a calendar and associate them with days of the week.

Geography

- Describe a map as a representation of a space, such as the classroom, the school, the neighborhood, town, city, state, country, or world.
- Identify cardinal directions (north, east, south, west) and apply them to maps, locations in the classroom, school, playground, and community.
- Define and give examples of a continent, mountain, river, lake, and ocean.
- Describe a map as a representation of a space, such as the classroom, the school, the neighborhood, town, city, state, country, or world.
- Identify cardinal directions (north, east, south, west) and apply them to maps, locations in the classroom, school, playground, and community.
- Define and locate the North and South Poles and the equator.
- Define and give examples of a continent, mountain, river, lake, and ocean.

Civics and Government

- Give examples that show the meaning of the following words: politeness, achievement, courage, honesty, and reliability.

Economics

- Give examples of products (goods) that people buy and use
- Give examples of services that people do for each other.
- Give examples of the choices people have to make about the goods and services they buy (e.g. a new coat, a tie, or a pair of shoes) and why they have to make choices (e.g., because they have a limited amount of money).

United States Leaders, Symbols, Events, and Holidays

- On a map of the United States, locate Washington, D.C., and identify it as the capital of the United States of America; locate Boston and identify it as the capital of Massachusetts.
- Identify the current President of the United States, describe what presidents do, and explain that they get their authority from a vote by the people.
- Identify and explain the meaning of American national symbols.
    - The American flag
    - The bald eagle
    - The White House
    - The Statue of Liberty
- Demonstrate the ability to recite the Pledge of Allegiance, to explain its general meaning, and to sing national songs such as America the Beautiful, My Country, 'tis of Thee, God Bless America, and The Star Spangled Banner and explain the general meaning of the lyrics.
- Give reasons for celebrating the events or people commemorated in national and Massachusetts holidays. On a calendar for the current year, identify the months for Labor Day, Columbus Day, Veterans' Day, Thanksgiving, Martin Luther King, Jr. Day, Presidents' Day, Patriots' Day, Memorial Day, Flag Day, and Independence Day.
- Give reasons for noting the days that mark the changes in seasons.

Individuals, Families, and Communities Now and Long Ago

- After reading or listening to folktales, legends, and stories from America (e.g., Johnny Appleseed, Paul Bunyan, Davy Crockett, John Henry, and Annie Oakley) and from around the world (e.g., Anansi, Issun Boshi, the Knee-High Man, Lon Po Po, and Medio Pollito), describe the main characters and their qualities.
- After reading or listening to stories about famous Americans of different ethnic groups, faiths, and historical periods (e.g., Neil Armstrong, Cesar Chavez, Roberto Clemente, Thomas Edison, Bill Gates, Daniel Inouye, Thurgood Marshall, Rosa Parks, Colin Powell, Sacagawea, Jonas Salk, Harriett Beecher Stowe, Clarence Thomas, Booker T. Washington, and the Wright Brothers) describe their qualities or distinctive traits)
- Explain that Americans have a variety of different religious, community, and family celebrations and customs, and describe celebrations or customs held by members of the class and their families.

Social Studies - Grade Two

Class Meetings: Two to three times a week for 50 minutes each
Resources: Texts may include; The Sun and the Kookaburra, Mabela the Clever, Zorro and Quwi, A True Book Series - all continents, Various Internet resources

Students will be able to:
Citizenship

- Identify and practice good citizenship in and out of the classroom.
- Give examples of how people working together can accomplish goals.

- Recognize the importance of respecting different cultures and beliefs.
- Recognize the difference between town/state/country/continent.

Geography

- Construct and use the basic elements of maps and globes (e.g., title, legend, cardinal directions, scale, grid, parallels, meridians).
- Locate north, south, east, west, borders, lines of longitude and latitude, equator, north and south poles using a map.
- Recognize world geographic features (e.g., peninsulas, islands, continents, straits,)
- compare and contrast climate, weather and location with regard to people's clothing, food, shelter and jobs.
- Describe how people in the community make their living from the environment and give examples of activities that individuals can do to keep the environment clean.
- Construct and interpret data from various types of maps, globes, charts, graphs and timelines (e.g., population, products, climate).

Economics

- Identify people who produce and consume goods and services in the community.
- Compare and contrast how goods and services are exchanged today versus how they were exchanged in the past.

Culture

- Compare and contrast folktales from around the globe.
- Identify traits in tales used by different cultures.
- Identify different settings and plots of tales around the world.
- Describe how people live, dwell, eat around the globe.
- Discuss and exam agriculture on the different continents; understanding climate, culture effects.

History

- Interpret and create Timelines.
- Understand and use the calendar to relate time in conversation.
- Recognize past people who made a difference in forming the US.

Social Studies - Grade Three

Class Meetings: 2-3 times per week, 50 minutes per class
Resources:
Texts may include:

- Making Thirteen Colonies by Joy Hakim
- From Colonies to Country by Joy Hakim
- Primary Source Readers- Causes of the Revolution
- Colonial Life
- The First Americans
- Various nonfiction readers
- Various internet resources

- Manipulatives for projects and models
- State, country and world maps

Students will be able to:

History

- Create timelines using appropriate intervals of time and record events in the order they occurred.
- Identify and examine local connections to significant events and themes in United States history.
- Investigate the national origins of prominent individuals (past and present) in one's town and state, and examine the influence of their heritage on the community.
- Identify the cultures and traditions of Native American peoples before colonization.
- Compare and contrast the impact of colonization on both Native American Peoples and the colonists in Massachusetts.
- Explain the influences that contributed to European exploration and colonization in North America.
- Compare and contrast the factors leading to Colonial settlement.
- Trace the evolving relationship between England and its American Colonies.
- Compare and contrast the economic, political and/or religious differences that contributed to conflicts (e.g. French and Indian Wars, American Revolution).
- Recognize and evaluate the significance of historical national documents (e.g. Declaration of Independence).
- Evaluate the relative influence of individual events that contributed to the American Revolution.
- Compare the perspectives of England and the Colonies relative to the events preceding the American Revolution.

Geographical space

- Identify and locate Massachusetts' and America's various physical features (e.g. rivers, oceans, mountains).
- Create a representation of geographic features (e.g. map, graph, model).
- Differentiate between absolute and relative locations (e.g. longitude and latitude versus proximity).
- Describe how physical systems (weather, geography, climate) have affected people's lives in Massachusetts (e.g. economy, recreation, transportation).
- Explain the relationship between the environment and Native Americans' way of life in Massachusetts.

Economics

- Explain that when we buy something, we also give up something (opportunity cost).
- Compare and contrast barter and cash exchanges.
- Analyze the effects of trade among colonists and Native Americans in Massachusetts.
- Explain that when resources vary, so does wealth and poverty.
- Analyze how businesses use limited resources to create goods and services.

Research Skills

- Gather information in content areas through a variety of independent use of reference material and of primary and secondary electronic media.
- Answer questions about content gathered from electronic media (maps, artifacts, recordings, charts, graphs, images)
- Identify the difference between a primary and secondary source.

Civics and Government

- Explain the process through which citizens can influence lawmaking in the United States, past and present (e.g. Colonial government, state constitution).
- Demonstrate one's rights and responsibilities as a citizen (e.g. voting, paying taxes, obeying laws).
- Demonstrate examples of disagreements between government and citizens regarding taxation, past and present.

Social Studies - Grade Four

Class Meetings: Every other day for 50 minutes
Text: A History of US: The New Nation, Vol. 4, by Joy Hakim
Resources: A History of US: The New Nation, Vol. 4, by Joy Hakim Teachers' Edition and Resource book. Additional resources that present other grade level appropriate points of view that complement the existing majority narrative approach to the Colonial time period. These include titles such as African-Americans Who Made a Difference and other works emphasizing the plurality and diversity extant in the time period.

Primary Sources: U.S. Declaration of Independence, U.S. Bill of Rights, U.S. Constitution, Broadsides.

Critical thinking and organizational skills:

- Develop in-class note taking skills
- Develop productive online research skills
- Paraphrase research content
- Identify plagiarism and learn skills to avoid it
- Distinguish fact from opinion
- Identify the "why" behind important historical events
- Identify various points-of-view related to historical events

Sequence:

Fall
Understand the beginnings of the U.S. government:

- End of American Revolution
    - Shays's Rebellion
    - Constitution
    - Bill of Rights
    - Slavery

- Building of Washington, DC
- George Washington
    - Precedents set

Develop timeline of U.S. history

- Show major events
    - Discuss causes and effects of the events
    - Identify historical importance of the events
    - Relate them to current time

Learn U.S. geography

- Learn U.S. states and capitals set #1
    - Original 13 colonies
- World capitals will be substituted for those students who have already learned the 50 U.S. states and capitals.
    - Chart westward expansion of U.S. between 1781 - 1791
        - Northwest Territory
        - Northwest Ordinance

Winter

- Presidents Adams, Jefferson, Madison, and Monroe and their contributions to the development of the U.S. in relation to the world
    - Monroe Doctrine

Continue learning U.S. geography

- Learn U.S. states and capitals set #2 *
    - Northwest Territory and Southwest Territory states
- World capitals will be substituted for those students who have already learned the 50 U.S. states and capitals.
    - Chart continued westward expansion of U.S. from 1789 - 1824
        - Louisiana Purchase
        - Lewis and Clark
        - Native Americans
            - Sacagawea

Discuss the importance of the War of 1812

- Identify economic changes
    - Development of steamboat
    - Crops grown for money rather than consumption
    - Factories vs. hand-made goods

- Understand the development of political parties
    - Hamilton vs. Jefferson
    - Federal-centered vs. State-centered government Storrowton Village Little Red Schoolhouse Program

Spring

- Native Americans
    - Trail of Tears
    - President Jackson
- Slavery, abolitionists and events leading to the CIvil War

Learn U.S. geography

- Map skills
- U.S. states and capitals sets #3 and #4 *
    - Louisiana Purchase and Red River Basin states
    - Florida, Texas, Oregon Country, Mexican Cession, Gadsden Purchase, Alaska, and Hawaii
- World capitals will be substituted for those students who have already learned the 50 U.S. states and capitals.
    - Locate all 50 U.S states
    - Pan African Museum Visit

Social Studies - Grade Five

Class Meetings: Every other day for 60 minutes
Resources: Civil War Lesson Plans: Elementary from Civil War Trust website. Visual and related resources from Library of Congress. Videos and actual or virtual field trips. Teaching Tolerance curriculum from Southern Poverty Law Center. Zinn Education Project.
Current events - Time for Kids, NewsELA. Materials selected to present balanced opinions and grade level appropriate text and images.
Texts used: A History of US: Reconstructing America, Vol. 6, by Joy Hakim, I Take Up My **Pen:** Letters from the War from the Gilder Lehrman Institute of American History. Elijah of Buxton and Seaward Born novels about enslaved people.
Other Sources: Art, videos, multimedia, music, actual and virtual field trips
Other Opportunities: National History Day Competition, Museum in Progress
Primary source documents: Excerpts from a variety of sources that add perspective, understanding and/or challenge the existing meta- narrative of majority authors. Special emphasis and attention given to diverse points of view and underrepresented groups and people. U.S. Constitution, Emancipation Proclamation and related primary sources.

Critical thinking and organizational skills:

- Develop in-class note taking skills
- Maintain a history notebook for reflective journaling
- Develop productive online research skills
- Paraphrase research content
- Identify plagiarism and learn skills to avoid it
- Distinguish fact from opinion
- Identify the multiple reasons “why” undergirding important historical events
- Identify various points-of-view related to historical events
- Emphasize the role that underrepresented groups and individuals play in history
- Link events in the period under study to the present

- Explain how technological changes drove societal changes

Fall
History and Historians

- Emphasize the role of diversity in all aspects of history
- Understand the ways in which a meta-narrative of progress and equality is at odds with history
- Understand and define popular and public history
- Identify the various types of history such as social, political, military, environmental, etc.
- Offer an age-appropriate definition of historiography and discuss diverse interpretations of events

Enslaved Peoples and Abolitionists

- Understand the origins of African American slavery as an institution
- Enhance student understanding and knowledge of the diversity of African Americans
- Understand the role of social class and status within the African American community
- Challenge existing stereotypes and common perceptions about the institution of slavery
- Understand the role of Abolitionists in challenging the system
- Express the importance of the Underground Railroad
- Forefront the moral choices of groups and individuals and value same
- Listen and understand the hidden meanings in spirituals

Milestone Events Towards Civil War

- Discuss causes and effects of the events
- Identify historical importance of the events
- Relate historical events to current time
- Pre-1860 disunion
    - Missouri Compromise
    - Nat Turner's Rebellion
    - Tariff of 1828
    - Compromise of 1850
    - Kansas-Nebraska Act
    - Dred Scott Decision
    - John Brown's Raid

Conditions in the U.S. and early events of the U.S. Civil War

- Regional economic conditions in the US
- Cultural conditions in the North and South
- Lincoln's election
- South Carolina seceded
- Fort Sumter
- Jefferson Davis elected
- Differing views of the Constitution

Winter
Key Events in the U.S. Civil War

- Discuss the importance of the Battle of Antietam
- Identify the pros and cons of the Emancipation Proclamation
- Discuss the realities of life at war
- The search for food
- Disease and its impact on the war effort
- Daily life of a soldier
- Identify major battles
    - Railroads and waterways
    - Strategic locations
        - Washington, D.C. and Richmond, VA
    - Geography of the land
    - Reliability of intelligence

Civil War Homefront

- Discuss changing roles of women and children
- Amplify the roles of enslaved and freed peoples
- Identify how news traveled to and from home
    - Newspapers
    - Letter writing
    - Non-literate communications

Events signaling the end of the war

- Battle of Vicksburg
- Battle of Gettysburg
- Discuss the significance of the Gettysburg Address

Movement Toward a Postbellum Society

- John Wilkes Booth
- Lincoln's plan for reunification
- Identify the 13th, 14th, and 15th Amendments
- Discuss positive and negative outcomes of the war

Discuss the condition of the U.S. post-Civil War

- Lincoln's plan for reunification
- John Wilkes Booth
- Identify the 13th, 14th, and 15th Amendments
- Discuss positive and negative outcomes of the war
- Teach legacy outcomes in modern context such as Confederate statues
- Interpret the 1876 Philadelphia Exposition as a marker of modernity

Spring

Reconstruction Politics

- Andrew Johnson and Impeachment
- Congressional Reconstruction
- Progress of Blacks in Reconstruction Congress
- Thaddeus Stevens

Jim Crow

- Sharecropping as an economic and social crisis
- The KKK
- Lynching and Ida B. Wells
- Yick Wo (Lee Yick) v. Hopkins
- Plessy v. Ferguson
- Booker T. Washington v. DuBois worldviews

Humans and the Environmental History of the West

- Railroads and displacement of Indigenous peoples
- Role of Asian American in railroads
- African American and Latinx cowboys
- Environmental impact of settlement on animals

Grades 4 and 5 Presidential Election Years

Curriculum adapts to include a unit on elections

- Branches of U.S. government
- Election process
    - Relevant vocabulary
    - Electoral vote vs. popular vote
    - Political parties
- Project
    - Run class election
        - Vote for presidential and vice-presidential field trips
            - Caucus
            - Campaign
            - Speeches
            - Voting

Please see Appendix for a sample unit lesson plan for Grade 5 Social Studies.

Social Studies - Grades Six

Class Meetings: once daily for 50 minutes

Resources:

Texts Used: *A History of US, An Age of Extremes* by Joy Hakim, and all related teacher and instructional resources

Current Events News Sources: *The New York Times UpFront Magazine* (student subscription)

Other News Sources: *The Washington Post*, *The New York Times*, NPR's *All Things Considered*, *National Geographic, PBS, Cobblestone Magazine* etc.

Other Sources: Ken Burns *National Parks, Brooklyn Bridge and Statue of Liberty* documentaries; *Newsies* (film); excerpts from American Biography series (i.e. Mother Jones, Jane Addams, Henry Ford, the Wright Brothers, Woodrow Wilson); American Experience episodes, i.e. *The Wright Stuff; Samantha, An American Girl Story.*

Primary Source Documents: *U. S. Constitution*; excerpts from relevant landmark Supreme Court cases; newspaper and TV news reports relevant to events studies, particularly those from muckraking journalists such as Nellie Bly and Ida Tarbell; pages from Sears and Roebuck mail-order catalogue; transcripts of historic speeches, including those from union organizers, Theodore Roosevelt, Woodrow Wilson; documents and video from various presidential libraries and museums.

Other Opportunities: various guest speakers; field trips to Concord; JFK LIbrary and Museum (Boston, MA); Lowell Mills; Wistariahurst Museum

Critical Thinking and Organizational Skills:

- Perform in class and text-based note taking
    - Master outline-style
    - Learn to record sources and page citations
    - Learn to identify and summarize key points of a text
- Organize notebook: chronological and thematic methods of organization
- Conduct research and write a research paper
    - Record sources and required information for a citation
    - Learn to paraphrase, summarize, and quote from sources
        - Understand the purpose and value of each skill
    - Properly cite sources according to MLA Style Guide
    - Evaluate online sources for productive and accurate research
    - Identify author's opinion vs. fact
- Understand plagiarism and how to avoid it
    - Learn to distinguish between honest and dishonest use of sources
- Deliver research succinctly and in organized ways in an oral presentation
- Create visually effective slideshows and use slideshows effectively in delivery of information
- Analyze and evaluate texts
    - Understand multiple points of view/perspectives
    - Parse political speeches to understand points of view and techniques for swaying an audience
- Critically evaluate cause and effect with regard to major historical events
    - Create flowcharts to show sequence of interdependent events
    - Analyze patterns of cause and effect to find common sources of change
- Create and record events on a visually effective timeline
- Critically evaluate the impact of different political systems on history
- Critically evaluate the impact of different racial biases on history
- Critically evaluate the impact of war on social and economic trends

Students will be able to:

Trimester One:

- Understand "What is History"
    - Think critically about change over time and the continuity of values amidst change

- Understand the importance of a "free press" and the free and accurate flow of information in a democracy
- Practice the research skills of paraphrasing, summarizing, and quoting to report information from texts
  and news stories
- Practice outlining skills for note-taking
  - Have knowledge of the following content areas:
    - Gilded Age Capitalists
      - Andrew Carnegie, John D. Rockefeller, J. Piermont Morgan
    - Storyteller and Creator
      - L. Frank Baum
    - Monopolies and the Sherman Antitrust Act
      - Economic terms: market economy, command economy, trust, monopoly
    - Builders and Dreamers: Engineers and Architects; Structures
      - Roebling, Lloyd Wright, Olmsted and their creations, i.e. Brooklyn Bridge, Prairie School of Architecture, Central Park
      - Statue of Liberty

Trimester Two:

- Have knowledge of the following content areas:
  - Presidents from Lincoln to Theodore Roosevelt
    - Andrew Johnson, Ulysses S. Grant, Rutherford B. Hayes, James A. Garfield, Chester A. Arthur, Grover Cleveland, Benjamin Harrison, William McKinley
  - The Populist or "People's Party"
    - Party platform
  - William Jennings Bryan
    - Silver Standard
  - Federal Reserve System
    - Economic terms: inflation, deflation
  - Economic Insecurity/Depression of 1893
    - Economic terms: mortgage, installment, default, foreclose, unemployment, depression, tariff, interest, debt
    - Causes of the Depression of 1893
  - Election of 1896
  - Mail-order catalogue and implication for economy and society

Trimester Three:

- Have knowledge of the following content areas:
  - The rise of labor unions in the United States
    - Haymarket Massacre
    - Samuel Gompers
    - Triangle Shirtwaist Factory Fire
    - The Wobblies

- Agitators and Muckrakers and Reformers and Inventors
  - Mother Jones
  - Ida Tarbell
  - Nellie Bly
  - Upton Sinclair
  - Sam McClure
  - Jane Addams
  - Henry Ford
  - Wright Brothers
- National Parks and Conservation; Hawaii
  - John Muir
  - Princess Ka'iulani; missionaries; indigenous culture of Hawaiian people and negative effects of colonization
- Theodore Roosevelt
  - Progressivism and the Gilded Age
  - Stages of TR's life: early, youth, naturalist, President, post-presidency
- Spanish-American War
  - Causes; yellow journalism; USS Maine; land spoils of war
- Presidents Taft and Wilson
  - Third party politics; Bull Moose Party
  - Start of World War I

Social Studies – Grade Seven

Class Meetings: Daily for 60 minutes
Resources:
Texts Used: American History: Reconstruction to the Present (Houghton Mifflin Harcourt Publishing Co. 2018);
War, Peace, and All that Jazz by Joy Hakim.
Current Events News Sources: The New York Times UpFront Magazine (student subscription)
Other News Sources: The Washington Post, The New York Times, NPR's All Things Considered, National
Geographic, The Wall Street Journal, etc.
Other Sources: Lesson plans and teaching materials from the Gilder Lehrman Institute of American History and NEH; videos from art museums; biographies, scholarly articles, and monographs on New Deal artists, musicians, and photographers from UMass and Springfield Central libraries; timelines, videos, and event summaries from the FDR Library and Museum; etc.
Primary Source Documents: U. S. Constitution; excerpts from relevant landmark Supreme Court cases; newspaper and tv news reports relevant to events studies; transcripts of historic speeches, including Herbert Hoover's 1928 address to the Republican Party National Convention and Franklin D. Roosevelt's 1936 Address to the Democratic Party National Convention; letters, memoirs, images, posters, and documents from the Gilder Lehrman Institute of American History, the Library of Congress, and The FDR Library and Museum, etc.; Jacob Lawrence's The Great Migration Series.

Other Opportunities: various guest speakers and field trips to FDR Home and FDR Library and Museum (Hyde Park, New York); Museum of Springfield History

Critical Thinking and Organizational Skills:

- Perform in class and text-based note taking
- Master outline-style
- Learn to record sources and page citations
- Learn to identify and summarize key points of a text
- Organize notebook: chronological and thematic methods of organization
- Conduct research and write a research paper
- Record sources and required information for a citation
- Learn to paraphrase, summarize, and quote from sources
- Understand the purpose and value of each skill
- Properly cite sources according to MLA Style Guide
- Evaluate online sources for productive and accurate research
- Identify author's opinion vs. fact
- Understand plagiarism and how to avoid it
- Learn to distinguish between honest and dishonest use of sources
- Deliver research succinctly and in organized ways in an oral presentation
- Create visually effective slideshows and use slideshows effectively in delivery of information
- Analyze and evaluate texts
- Understand multiple points of view/perspectives
- Parse political speeches to understand points of view and techniques for swaying an
- audience
- Critically evaluate cause and effect with regard to major historical events
- Create flowcharts to show sequence of interdependent events
- Analyze patterns of cause and effect to find common sources of change
- Create and record events on a visually effective, informative timeline
- Create step-charts to depict the evolution of a policy
- Critically evaluate the impact of different political and economic philosophies on U.S. history
- Critically evaluate the impact of different racial biases on U.S. history
- Critically evaluate the impact of war on social and economic trends
- Critically evaluate the protection and fulfillment of human rights in US society
- Think strategically about a president's role before and during war
- Weighing the pros and cons of military action
- Weighing the pros and cons of international alliances
- Weighing the risks of neutrality
- Debate the pros and cons of national and international policies and actions
- Understand how to use and generate historical maps
- Understand the geopolitical shift caused by World War I

Students will be able to:

Trimesters One and Two:

- Understand "What is History"
    - Develop an understanding of the concept of history after working with concrete objects in a sorting and grouping activity
- Understand the importance of a "free press" and the free and accurate flow of information in a democracy
- Master the research skills of paraphrasing, summarizing, and quoting to report information from texts and news stories
- Master outlining skills for note-taking
- Have knowledge of the following content areas:
    - World War I
        - Maps of pre-WWI Europe, the Balkans, and the Middle East
        - Causes: nationalism, imperialism, militarism, the Alliance System
        - The onset of war in Europe
            - The assassination of Archduke Ferdinand (June 1914)
            - Austria-Hungary's declaration of war on Serbia
            - The reactions of allied countries
            - World War begins (jAug. 1914)
        - Trench warfare
        - American neutrality
            - Immigrants' ties to Europe
            - The socialist critique
            - Economic ties to Britain and France
            - Trade with Germany
                - Britain's blockade
        - The American shift toward war
            - German U-boat attacks
                - The Lusitania (1915)
                - The Arabic (Aug. 1915)
                - The Sussex (1916)
            - Zimmerman's Telegram
            - Russia withdraws from war--the 1917 Revolution
                - Treaty of Brest-Litovsk
            - Wilson requests a declaration of war (April, 1917)
                - To "make the world safe for democracy"
        - U. S. enters the war
            - Selective Service Act (1917)
                - Minority participation/restrictions
            - Labor shortages
            - The American Expeditionary Force
            - The war experience
                - Trench warfare
                - New weaponry
                    - Tanks, machine guns, poison gas, etc.
                    - War in the air
                    - Battleships

        - US offensives and Allied victories
            - From Ypres to Meuse-Argonne
        - Total war losses
    - Armistice--Nov. 11, 1918
- The War at Home
    - Government management of the war effort
        - Expanded powers for Wilson
            - More control of economy
                - Fixing prices
                - Regulating or nationalizing industries
                    - War Industries Board
                    - Railroad, Fuel, Food Administrations
    - The War Economy
        - Economic growth and rising prices
            - Union membership increases
    - Selling the War
        - Financing
            - Progressive income tax
            - War bonds
        - Propaganda
            - Committee on Public Information
                - War Bond Posters
                - Administration Posters
    - Civil Liberty Issues
        - Anti-immigrant attacks rise
        - Espionage and Sedition Acts
        - Schenck v United States; Debs v United States; Abrams v United States
    - World War I and Social Change
        - The Great Migration
        - Women and work
        - The 19th Amendment (1919-1920)
            - The Amendment process
- Winning the Peace?
    - Wilson's Fourteen Points
        - Points 1-4: reducing future wars
        - Points 5-13: self-determination for all
        - Point 14: the League of Nations
    - The Paris Peace Conference (Jan - June 1919)
        - Participants
        - The Treaty of Versailles
            - new nations
            - reparations
            - war-guilt clause
            - lingering issues
    - Opposition at home

- Public opposition
- Senate opposition
- Henry Cabot Lodge
- Ratification fails
- The legacy of war in Europe
- The Roaring Twenties
- The Harding Administration
- foreign policy
- Isolationism
- Washington Naval Conference (1921)
- [Kellogg-Briand Pact (1928)]
- Ford-McCumber Tariff
- The Dawes Plan
- European discontent
- domestic policy
- Pro-business policies
- Cut federal budget
- Lower taxes
- Bureau of budget
- Scandals
- The Coolidge Administration
- domestic policy
- Pro-business policies (laissez-faire)
- Lower government regulations
- Reduce taxes
- Increase available credit (Andrew Mellon)
- Keep high tariffs
- The Era of the Automobile
- mass production
- Increased productivity
- Increased innovation
- The assembly line
- Consumerism
- Electrification and the boom in modern appliances
- Advertising
- Business expansion
- New debt
- Installment plans
- Speculation
- The Twenties: Increased Fear
- Social trends
- Xenophobia and nativism
- The Rise of the KKK
- The Red Scare
- The Palmer Raids
- Sacco and Venzetti

- Immigration and citizenship issues
    - The quota system
        - A look back at the Chinese Exclusion Act (1882)
    - The Emergency Quota Act (1921)
    - The Johnson-Reed Act (1924)
    - The Indian Citizenship Act (1924)
- Union membership
    - The strikes of 1919
        - Compare and contrast
    - The decline in union membership in the 1920s
        - Racism and immigrant issues

- The Twenties: a Changing Culture
    - Prohibition
        - The amendment: pros and cons
        - The Volstead Act
        - The rise in crime
        - Repeal
    - Cultural Innovations
        - Radio and film
        - Sports and entertainment
        - Flight
        - Music (Gershwin, Berlin, etc.)
            - Jazz
        - Literature
            - Sinclair Lewis, Edna St. Vincent Millay, Hemingway, Fitzgerald, etc.)
        - The Harlem Renaissance
            - Bessie Smith, Louis Armstrong, Duke Ellington, Langston Hughes

Trimester Three:

- Have knowledge of the following content areas:
- The Economics of Prosperity
    - The U. S. Stock Market and related concepts/terminology including Bull vs. Bear Markets; shares; shareholder; buying on margin; etc
- The Great Depression
    - Examine the 1929 Stock Market Crash and understand:
        - Its causes (political, economic, social)
        - Its effects: national and international
    - Examine the response of President Hoover as expressed in actions and speeches
    - Understand the Bonus March: causes and outcome
    - Analyze Hoover's philosophical, political, and economic ideas
    - Understand the downward cycle of an economic depression
    - Examine and analyze statistics that show the true dimensions of the Great Depression
    - Understand President Roosevelt's political and economic ideas and his response to the crisis in 1933

- Examine the legislation of the First Hundred Days and the policies and programs of the New Deal
- Research and present on an artist (painter, sculptor, actor, musician, or photographer) sponsored by New Deal programs
    - Create New Deal style poster advertising your art
    - Present research at New Deal Artists Salon
- Understand the political, social, and economic agenda behind the New Deal
- Understand how the New Deal represented a new, active view of government

Social Studies - Grade Eight

Class Meetings: once daily for 50 minutes
Resources:
Texts Used: *American History: Reconstruction to the Present* (Houghton Mifflin Harcourt Publishing Co. 2018);
War, Peace, and All that Jazz by Joy Hakim.
Current Events News Sources: *The New York Times UpFront Magazine* (student subscription)
Other News Sources: *The Washington Post*, *The New York Times*, NPR's *All Things Considered*, *National Geographic,* etc.
Other Sources: the film, *One Survivor Remembers*, from the *Teaching Tolerance* curriculum on the Holocaust; teaching packets of "artifacts" related to WWII from the Gilder Lehrman Institute of American History and The Imperial War Museum (London); timeline of events, videos, and primary source documents from the U. S. Holocaust Memorial Museum.
Primary Source Documents: *U. S. Constitution*; excerpts from relevant landmark Supreme Court cases; newspaper and tv news reports relevant to events studies; transcripts of historic speeches, including Franklin D. Roosevelt's Jan. 1941 State of the Union Address; FDR's "Day of Infamy" Speech; Winston Churchill's "Iron Curtain" Speech; Joseph Stalin's Feb. 1946 Address to the electors of the Moscow Communist Party; U. S. Government and Soviet WWII Propaganda Posters; excerpts from the Yalta and Potsdam Agreements of 1945; *The Universal Declaration of Human Rights*; Martin Luther King's "I Have a Dream" speech; letters, memoirs, etc. from the Gilder Lehrman Institute of American History, the Library of Congress, The FDR Library and Museum, etc.
Other Opportunities: various guest speakers and field trips to FDR Home and FDR Library and Museum (Hyde Park, New York); JFK Library and Museum (Boston, MA); Yiddish Book Center (Amherst, MA); and Washington D.C. museums (including the U. S. Holocaust Memorial Museum), monuments, and U. S. Capital Building.

Critical Thinking and Organizational Skills:
- Perform in class and text-based note taking
    - Master outline-style
    - Learn to record sources and page citations
    - Learn to identify and summarize key points of a text
- Organize notebook: chronological and thematic methods of organization
- Conduct research and write a research paper
    - Record sources and required information for a citation

        - Learn to paraphrase, summarize, and quote from sources
            - Understand the purpose and value of each skill
        - Properly cite sources according to MLA Style Guide
        - Evaluate online sources for productive and accurate research
        - Identify author's opinion vs. fact
- Understand plagiarism and how to avoid it
    - Learn to distinguish between honest and dishonest use of sources
- Deliver research succinctly and in organized ways in an oral presentation
- Create visually effective slideshows and use slideshows effectively in delivery of information
- Analyze and evaluate texts
    - Understand multiple points of view/perspectives
    - Parse political speeches to understand points of view and techniques for swaying an audience
- Critically evaluate cause and effect with regard to major historical events
    - Create flowcharts to show sequence of interdependent events
    - Analyze patterns of cause and effect to find common sources of change
- Create and record events on a visually effective timeline
- Create step-charts to depict the evolution of a policy
- Critically evaluate the impact of different political systems on history
- Critically evaluate the impact of different racial biases on history
- Critically evaluate the impact of war on social and economic trends
- Critically evaluate the protection and fulfillment of human rights in a society and the responsibility of
- nations for the protection of human rights abroad
- Think strategically about the implications of a leader's and a nation's actions before and during war
    - Weighing the pros and cons of military action
    - Weighing the pros and cons of international alliances
    - Weighing the risks of neutrality
- Debate the pros and cons of national and international policies and actions
- Understand how to use and generate historical maps reflective of a sequence of events.

Students will be able to:

Trimester One:

- Understand "What is History"
    - Think critically about change over time and the continuity of values amidst change
- Understand the importance of a "free press" and the free and accurate flow of information in a democracy
- Practice the research skills of paraphrasing, summarizing, and quoting to report information from texts

and news stories

- Practice outlining skills for note-taking
- Have knowledge of the following content areas:

- The transition from democracy to totalitarianism in Post-WWI Europe and Japan
    - The failures of the Treaty of Versailles
        - issues of economics, territory, and national pride
    - The lack of democratic traditions in Italy, Germany, Spain, and Japan
    - The dismantling of democracies in Russia, Italy, Germany, Spain, and Japan
        - Similarities and differences in the paths to dictatorship/militarism
        - the birth of Leninism, Fascism, Nazism, and military dictatorship
            - communism vs fascism vs. Nazism
    - The key tenets of Nazi ideology
        - *Mein Kampf and Aryanism*
- Militarism and territorial expansion in Europe and Asia in the 1930s
    - Italian, Japanese, and German aggression in the 1930s
        - The League of Nation's responses and failures
    - The Munich Agreement of 1939
        - Appeasement?
    - The Fall of Czechoslovakia: March 1939
    - The Molotov-Ribbentrop Pact: 1939
- World War II in Europe (1939-1940)
    - the Invasion of Poland and the strategy of *blitzkrieg*
    - The so-called Phony War and the Maginot Line
    - The invasions of Norway, Holland, Belgium, Luxembourg, and France
        - The Evacuation of Dunkirk
        - The French Government in Exile; the Vichy Government
    - The Battle of Britain (1940-41)
    - The Invasion of Russia (1941)
- The Map of Europe in 1941
    - Students will identify countries and demarcate Germany's farthest reach
- The Holocaust: Steps to Genocide
    - 1933: Hitler's rise to dictatorship
        - laws against dissent, political parties, local and regional autonomy, etc.
        - racial requirements for press membership
        - militarism in society and schools
        - Dachau Labor Camp for political prisoners
    - 1935: the Nuremberg Laws
    - 1938: Kristallnacht
        - the International Response
        - the US response
            - The Evian Conference
            - The *St. Louis* rejection
    - 1939: Genocide begins: "The Final Solution"
        - SS as killing squads
        - ghettos
        - labor camps
    - 1942: The Final Stage of the Final Solution

        - the use of gas chambers
    - International responses to Germany's actions

Trimester Two:

- Have knowledge of the following content areas:
    - America Moves toward War
        - US isolationism in the 1930s
            - Roots of isolationism
                - US response to World War I
            - Steps toward isolationism
                - Rejection of the Treaty of Versailles
                - 1921: Washington Naval Conference
                - 1928: Kellogg-Briand Pact
                - 1936-7: Neutrality Acts
        - US movement away from isolationism
            - 1939: aid to China
            - 1939: "Cash-and-Carry"
            - 1940: Selective Training and Service Act
                - US response to Tripartite Pact
            - 1941 March: Lend Lease Act
            - 1941 August: the Atlantic Charter
            - 1941 September: undeclared war on German u boats
        - Japanese aggression in Asia
            - The US boycott
            - Failure of peace talks
        - Pearl Harbor and US Entry into World War II
            - The Japanese Attack: Dec. 7, 1941
            - A War on Two Fronts: Dec. 11, 1941
    - Government Management of War Efforts on the Home Front
        - Military recruitment, Selective Service, and discrimination in the armed forces
        - New federal agencies and laws
        - Progress and challenges for minorities
        - Internment of Japanese Americans
            - Korematsu v. United States (1944)
            - 1978 reparations
    - World War II: The European Theater (Allied strategy and decision-making)
        - 1941 Dec. FDR and Churchill draft war plans
        - 1941-43 The Battle of the Atlantic
        - 1941-43 The Battle of Stalingrad
        - 1942-43 The North Africa Front: Operation Torch
            - Casablanca and Tehran Conferences
                - "Unconditional Surrender" as goal
        - 1943... The Italian Campaign and Operation Husky
            - Contributions of minority units
        - 1944 June DDay and the advance to Paris
        - 1944 Oct - 1945 Jan The Battle of the Bulge

- World War II: The Pacific Theater (Allied strategy and decision-making)
    - Japanese advances in the Pacific
        - 1941 March US defeat at Bataan
    - The Map of Asia in 1941
        - Students will identify countries and demarcate Japan's farthest reach
    - US Defensive Actions
        - 1942 April Doolittle's Raid
        - 1942 May Battle of the Coral Sea
        - 1943 June Battle of Midway
    - US Offensive Actions: US Island Hopping Strategy
        - 1943 Feb Guadalcanal
        - 1944 Oct Battle of Leyte Gulf
        - 1945 Feb Battle of Iwo Jima
        - 1945 April Battle of Okinawa
- The End of World War Two
    - The end in Europe
        - Soviet advances from East
            - liberation of death camps
        - US advances from West
        - 1945 Feb. Yalta Conference
            - "Free and unfettered elections": seeds of the Cold War
        - 1945 April The death of FDR--Truman succeeds him
        - 1945 April Germany's unconditional surrender
        - 1945 June United Nations established
        - 1945-46 Nuremberg Trials
    - The end in Asia
        - Decisions to use a nuclear weapon: pros and cons
            - The Russia factor
            - Unconditional surrender?
        - The bombings of Hiroshima and Nagasaki
        - Emperor Hirohito calls for surrender
            - Japan's unconditional surrender
        - VJ day
        - The occupation of Japan
            - the MacArthur Constitution
            - a new economy for Japan
        - Trials of Japanese warlords
    - The GI Bill of Rights and the US transition to peacetime

Trimester Three:

- Have knowledge of the following content areas:
    - The Cold War begins
        - Roots of the Cold War
            - Ideological
                - economic: communism vs. free market economy

        - political: totalitarianism vs. democratic/multi-party system
    - war time tensions
        - outcome of Yalta decisions
        - Manhattan Project secrecy
        - Soviet war losses
    - Soviet control of Eastern Europe
- Two defining speeches
    - Stalin's address to Moscow electorate
    - Churchill's "Iron Curtain" address in Fulton, MO
- United Nations as venue of Cold War tensions
- US adopts policy of "Containment"
    - George F. Kennan
    - the Truman Doctrine
    - The Marshall Plan
- Tensions build in Germany
    - 1948: Soviet blockade of West Berlin and Berlin Airlift
    - 1949 NATO formed
- Cold War in Asia
    - 1949: China's revolution
        - US backs Nationalists vs. Mao tse Tung
    - 1950: War in Korea --
        - US backs South Korea
        - China aids North Korea
        - Truce declared: June 23, 1951
- Cold War at Home
    - 1947: J. Edgar Hoover and the Loyalty Review Board
    - The House Un-American Activities Committee
    - The Cases of Hiss and Julian and Ethel Rosenberg
    - 1950s McCarthyism
- Cold War Tensions in the 1950s
    - The Arms Race
        - Development of the H-bomb
            - The policy of mutually assured destruction
    - Implications of the Cold WAr Abroad
        - the Middle East, Latin American, African, Asia
    - The Warsaw Pact in Europe
        - The Eisenhower Doctrine
        - The 1956 Uprising in Hungary
- The Space Race
- The Cold War in the 1960s
    - The Cuban Missile Crisis
    - Crisis in Berlin
    - Two nuclear weapons treaties
- The Cold War in the 1970s
    - President Nixon and the Realpolitik of Henry Kissinger
    - The Policy of Detente

        - The SALT I Treaty of 1972
    - President Carter and Human Rights Issues
        - The SALT II Treaty
- The Cold War comes to an end in the 1980s
    - President Reagan and the Strategic Defense Initiative
    - Reagan and Gorbachev's era of reform
        - 1987 INF Treaty
        - 1989 Collapse of the Berlin Wall
    - 1989-1990 Democratic reforms in Eastern Europe
        - Collapse of the Warsaw Pact
- 1991--The USSR collapses

- Alternate Unit for Trimester Three: The Civil Rights Movement of the 1950s and 1960s
    - Students will be able to:
        - Demonstrate knowledge of:
            - Brown v. Board of Education (1954)
            - The Montgomery Bus Boycott (1955-56)
            - The Little Rock Nine (1957)
            - The Sit-ins of 1960
            - Ruby Bridges and the integration of New Orleans Public Schools
            - The Freedom Rides (1961)
            - The Supreme Court forces The University of Mississippi to admit James H. Meredith (1962)
            - JFK and the desegregation of public housing (1962)
            - MLK's "Letter from Birmingham Jail" and the "Children's Crusade"
            - The March on Washington for Jobs and Freedom (1963)
            - The Civil Rights Act (1964)

Terms One, Two and Three
- Students will read about, research, and understand current events
- Students will be able to succinctly summarize a news story, using their own words and quotations, and will verify information found in that story.
- Students will be able to write a thoughtful response to issues described in their news report and will research solutions to the problems addressed in that report.

Literacy

Academy Hill School's literacy curriculum is drawn from the Massachusetts English Language Arts Curriculum Framework (2011) and differentiated to meet the needs of a diverse student body. The following pages list our learning objectives in each of the state's four strands: Reading, Writing, Speaking and Listening, and Language, for each grade level.

Students are grouped by grade level and differentiated by readiness with flexible grouping so that teachers are continuously challenging students at the appropriate level. Teachers at all levels collaborate regularly to ensure that there is a continuum of learning between grades. The

principles of the discipline stay the same throughout; however the depth and complexity increase over time. Additionally, collaboration between teachers creates an environment where students are able to move between classrooms as needed. At all levels of the literacy curriculum there is a clear emphasis on creativity and critical thought
Literacy

Literacy - Grade Kindergarten

Class Meetings: Twice daily for a total of 100 minutes
Resources:

- *Words Their Way*
- *Explode the Code*
- Assorted curriculum from Tara West
- Handwriting Without Tears
- Handprints Leveled Readers
- Primary Phonics Books
- Dr. Maggie's Phonics
- Other assorted texts and resources

Students will be Able To:

Reading:
General:

- Identify all uppercase and lowercase letters by name and make their sounds.
- Recognize sight words with ease and accuracy.
- Use a variety of strategies to decode new words.
- Recognize patterns in words, recognize rhymes, and identify how words are similar.
- Read grade-level text with purpose and understanding.
- Reflect on reading, and demonstrate comprehension in a variety of ways.
- Read grade-level text orally with accuracy, appropriate rate, and expression on successive readings.
- Use context to confirm or self-correct word recognition and understanding rereading as necessary.
- Identifying beginning and ending sounds in words

Fiction:

- Retell stories, including key details, and demonstrate understanding of their central message or lesson.
- Describe characters, settings, and major events in a story, using key details.
- Make connections between different stories.
- Explain major differences between books that tell stories and books that give information, drawing on a wide reading of a range of text types.
- Use illustrations and details in a story to describe its characters, setting, or events.

Nonfiction:

- Ask and answer questions about key details in a text.

- Identify the main topic and retell key details of a text.
- Know and use various text features (e.g., headings, tables of contents, index, glossaries) to locate key facts or information in a text.
- Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.

Writing:

General:

- Spell sight words correctly.
- Spell unknown words phonetically and draw on phonemic awareness and other conventions to write unknown words.
- Apply common spelling patterns when writing an unknown word.
- With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed.
- Make and follow a plan for writing.
- Use orthographic mapping for words and apply techniques.
- Learn sentence mechanics, such as spacing, punctuation, and using capitalization in sentences.

Fiction:

- Write narratives with a beginning, middle, and end in order.
- Include important details in writing.
- Take the reader into account when writing the story.

Nonfiction:

- Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.
- Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions).

Spelling/Phonics/Vocabulary:

- Demonstrate understanding of spoken words, syllables, and sounds (phonemes).
- Orally produce single-syllable words by blending sounds (phonemes), including consonant blends.
- Isolate and pronounce initial, medial vowel, and final sounds (phonemes) in spoken single-syllable words.
- Know and apply grade-level phonics and word analysis skills in decoding words.
- Know the spelling-sound correspondences for common consonant digraphs.
- Decode regularly spelled one-syllable words.
- Decode two-syllable words following basic patterns by breaking the words into syllables.
- Read words with inflectional endings.
- Use sentence-level context as a clue to the meaning of a word or phrase.

Language:

General:

- Demonstrate developmentally appropriate command of Standard English grammar when writing and speaking.

- Recognize the distinguishing features of a sentence (e.g., first word, capitalization, ending punctuation).
- Use basic conventions in writing, capital at the beginning, lowercase letters throughout, and punctuation at the end.
- Form sentences with subject verb agreement.

Speaking and Listening:
General:
- Participate in group discussions both as speakers and listeners.
- Show engagement through asking questions and contributing to discussions.
- Complete 3 Good Morning Show Presentations on a self-selected topic.

Literacy - Grade One

Class Meetings: Twice daily for an average of 75 minutes per day
Resources: www.readinga-z.com www.raz-kids.com
DeeDee Willls and Deanna Jump Writing Curriculum
Explode the Code (multiple books) *Words their Way* (multiple books)
Texts may include:
Magic Tree House #1: Dinosaurs After Dark
Cam Jansen and the Mystery of the Dinosaur Bones The Keeping Quilt
The Berenstain Bear's Family Reunion
Lucy on the Loose
Primary Phonics Readers

Students will be Able To:

Reading:
Fiction:
- Retell stories, including key details, and demonstrate understanding of their central message or lesson.
- Describe characters, settings, and major events in a story, using key details.
- Explain major differences between books that tell stories and books that give information, drawing on a wide reading of a range of text types.
- Use illustrations and details in a story to describe its characters, setting, or events.

Nonfiction:
- Ask and answer questions about key details in a text.
- Identify the main topic and retell key details of a text.
- Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.
- Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.

Fluency:
- Read with sufficient accuracy and fluency to support comprehension.

- Read grade-level text with purpose and understanding.
- Read grade-level text orally with accuracy, appropriate rate, and expression on successive readings.
- Use context to confirm or self-correct word recognition and understanding rereading as necessary.

Writing:

Fiction:

- Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.

Nonfiction:

- Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.
- Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions).

General:

- With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed.
- With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.

Language:

General:

- Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- Print all upper- and lowercase letters.
- Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- Capitalize dates and names of people.
- Use end punctuation for sentences.
- Use commas in dates and to separate single words in a series.
- Use conventional spelling for words with common spelling patterns and for frequently occurring irregular words.
- Spell untaught words phonetically, drawing on phonemic awareness and spelling conventions.

Spelling/Phonics/Vocabulary:

- Recognize the distinguishing features of a sentence (e.g., first word, capitalization, ending punctuation).
- Demonstrate understanding of spoken words, syllables, and sounds (phonemes) Distinguish long from short vowel sounds in spoken single-syllable words.

- Orally produce single-syllable words by blending sounds (phonemes), including consonant blends.
- Isolate and pronounce initial, medial vowel, and final sounds (phonemes) in spoken single-syllable words.
- Know and apply grade-level phonics and word analysis skills in decoding words.
- Know the spelling-sound correspondences for common consonant digraphs.
- Decode regularly spelled one-syllable words; know final -e and common vowel team conventions for representing long vowel sounds.
- Decode two-syllable words following basic patterns by breaking the words into syllables
- Read words with inflectional endings.
- Recognize and read grade-appropriate irregularly spelled words.Determine or clarify the
- meaning of unknown and multiple-meaning words and phrases based on *grade 1 reading and content*, choosing flexibly from an array of strategies.
- Use sentence-level context as a clue to the meaning of a word or phrase.

Speaking and Listening:

- Present on a self-selected topic speaking audibly and clearly and at an appropriate pace.
- Participating respectfully in discussions as both speakers and listeners.

Literacy - Grade Two

Class Meetings: Twice daily for a total of 100 minutes
Resources: *Words Their Way,Sequential Spelling,* Texts may include: *Roxaboxen, Perfect Time for Pandas, Anansi Goes Fishing, What Makes a Bird a Bird, Various Grammar workbooks, Various Internet resources*

Students will be able to:

Reading

- Use a variety of texts including; fiction, non-fiction, folktales, fairy tales, scripts, dictionaries, atlases, thesauruses, newspapers in guided reading groups, whole class read alouds, individual, and homework.
- Ask and answer such questions as *who, what, where, when, why*, and *how* to demonstrate understanding of key details in a text.
- Retell stories and determine their central message or moral.
- Describe characters; looking at their physical and personality traits and their feels and reactions throughout the story
- Acknowledge differences in the points of view of characters, including by speaking in a different voice for each character when reading dialogue aloud.
- Demonstrate decoding skills and read high frequency words.
- Demonstrate different strategies for understanding new vocabulary.
- Comprehend grade level text by recalling facts, details, and predicting.
- Introduce inferring, cause/effect, and problem/solution.
- Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.

- Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.
- Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.
- Decode regularly spelled two-syllable words with long vowels.
- Decode words with common prefixes and suffixes.
- Recognize and read grade-appropriate irregularly spelled words.
- Read with sufficient accuracy and fluency to support comprehension.
- Read grade-level text with purpose and understanding.
- Read grade-level text orally with accuracy, appropriate rate, and expression on successive readings.
- Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
- Use the dictionary in an alphabetical order to the third letter.
- Build on others' talk in conversations by linking their comments to the remarks of others.
- Ask for clarification and further explanation as needed about the topics and texts under discussion.
- Make connections when reading; text to text, text to self, text to world.

Writing

- Prints legibly using correct formation of letters (lowercase and uppercase sensitive)
- Writes complete sentences.
- Begins to support ideas in writing with examples and reasons.
- Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.
- With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose, using the 5 step processes; plan, rough draft, revise, edit, publish.
- Compose a variety of texts including but not limited to poems, short stories, presentations, opinion pieces.
- Proofreads own and peers work for simple spelling, capitalization, and punctuation errors.
- Use sequencing strategies to construct written work in a logical order.
- Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.
- Write creative texts including a beginning, middle, and end.
- Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.
- Write in friendly letter format to Pen Pals focusing on conversational writing.

Language

- Know and apply grade-level phonics and word analysis skills in decoding words.
- Distinguish long and short vowels when reading regularly spelled one-syllable words.
- Know spelling-sound correspondences for additional common vowel teams.

- Introduce parts of speech (nouns, proper nouns, pronouns, verbs, adjectives, adverbs) to use correctly in both written and oral language.
- Identify words with inconsistent but common spelling-sound correspondences.

Speaking and Listening
- Participate in collaborative conversations with diverse partners about grade two topics and texts with peers and adults in small and larger groups.
- Present on a self-selected topic audibly and clearly and at an appropriate pace.

Literacy - Grade Three

Class Meetings: 75 minutes five days a week
Resources:
Texts may include:
- *The Legend of Sleeping Bear*
- *The Legend of the Lady Slipper*
- *The Sign of the Beaver*
- *The Night of the Full Moon*
- *Big George*
- *Pocahontas, Princess of the new World*
- *Dear Benjamin Banneker*
- *The Mystery at Jamestown*
- *Mayflower Mystery*
- *A Lion to Guard Us*
- *Journey to the New World*
- *Tolliver's Secret*
- *Washington's War*
- *American Tall Tales*
- Various Graphic Organizers
- Various internet sources
- Various grammar workbooks
- *Explode the Code*
- *Megawords*
- *Words Their Way*

Reading Comprehension
After reading fiction (target genres- legends, historical fiction, tall tales) the students will be able to demonstrate comprehension by:

- Asking and answering questions using literal and inferential thinking.
- Retelling selections including all story elements.
- Stating the central message, and how the details support the message.
- Identifying character traits.
- Identifying literal and figurative language.
- Comparing and contrasting points of view, themes, and plots.

After reading nonfiction text, the students will be able to demonstrate comprehension by:

- Asking and answering questions referring to the text for support.
- Identifying the main idea and supporting details.
- Determining sequence, cause and effect, compare and contrast, problem and solution.
- Defining words from grade 3 content area study.
- Comparing two different texts on the same subject.
- Using search tools and text features to locate information pertaining to a topic.

Foundational Skills/ Word Study/ Fluency
To decode and comprehend words, the students will be able to:

- Identify the meaning and spelling of most common prefixes and suffixes.
- Read words with common prefixes and suffixes.
- Read and spell multisyllabic words.
- Read and spell grade level irregular words.
- Read text with sufficient accuracy, expression, and rate to promote comprehension.

Writing Skills
The students will improve the sophistication of their writing by:

- Writing opinion pieces and expository pieces with well- developed paragraphs including topic sentences, supporting details, concluding sentences, and cohesive ties.
- Writing well organized narratives with character development that use dialogue and description.
- Taking pieces through the writing process which includes planning, revising, editing and publishing.
- Conducting research projects, writing reports, and citing sources.

Speaking and Listening
The students will improve their speaking and listening skills by:

- Participating in discussions both as speakers and listeners by asking and answering questions regarding assigned material, by following discussion rules respectfully and by staying on topic.
- Present on a self-selected topic speaking audibly and clearly and at an appropriate pace.

Language
The students will demonstrate command of Standard English grammar and mechanics when writing and speaking by:

- Explaining the function of nouns, verbs, adjectives and adverbs.
- Forming sentences with correct subject verb agreement.
- Identify fragments and run- on sentences.
- Use coordinating and subordinating conjunctions.
- Produce simple, compound and complex sentences.
- Correctly use common homophones.
- Correctly use capitals, commas in lists, quotation marks, and possessives.

Literacy - Grade Four

Class Meetings: 75 minutes 5 days a week
Resources: *Caesar's English I, Grammar Town, Words Their Way,* texts including *Love That Dog, The One and Only Ivan, A Cricket in TImes Square, Knots in My Yo-Yo String, The Birchbark House, Caddie Woodlawn,*

Students will be able to:
Reading

- Use details from a text to explain the meaning of the text or to make inferences from the text.
- Use details to determine the main idea of a text.
- Be able to retell a story using appropriate organization, such as chronological or cause/effect.
- Use charts, graphs, or other visual information to support the reading.
- Explain the use and meaning of various literary figures, including imagery, rhyme scheme, similes, and metaphors, when reading a text including prose and poetry.
- Discuss and identify points of view including first-and third-person.
- Identify parts of a story, including setting, plot, and characters.
- Use word stems to determine the meaning of unfamiliar words.
- Read orally with fluency and accuracy, paying attention to punctuation, inflection, and expression.
- Analyze the biography of an author and interpret how life experiences influenced writing
- Compare and contrast texts written by the same author

Writing

- Write a variety of pieces including poetry, opinion, narrative, informational, and business letters.
- Use an organizational tool such as a web or outline to organize ideas before writing.
- Clearly express the main idea of a paragraph in a topic sentence.
- Clearly express the main idea of a five-paragraph essay in a thesis statement.
- Write an introduction and a conclusion in a five-paragraph essay.
- Support ideas using details, facts, and examples.
- Use appropriate voice, formal or informal, depending on type of writing.
- Write appropriately for a particular audience.
- Use reference materials, such as dictionaries and thesauruses, to find meanings, pronunciations, and alternate word choices.
- Paraphrase ideas using their own words.

Language

- Use standard conventions of English when writing and speaking.
- Use correct grammatical structure including:
    - subject/verb agreement
    - verb tense
    - end punctuation
    - correct capitalization

    - complete sentences
    - prepositional phrases
    - correct use of pronouns, including subject, object,
    - demonstrative, and interrogative
    - comma use including in a list and before coordinating
    - conjunction in a compound sentence
    - use of subordinate and independent clauses
- Use context to determine the meaning of unfamiliar words.
- Use and explain meaning of figurative language including:
    - similes
    - metaphors
    - hyperbole
    - idioms

Vocabulary

- Study Greek and Latin root words to enrich and expand knowledge of English vocabulary.
- Enrich reading comprehension and communication skills through the acquisition of new vocabulary.
- Understand the appropriate usage and context of newly acquired vocabulary.

Please see appendix for a sample unit lesson plan for Grade Four Literacy.

Literacy - Grade Five

Class Meetings: 75 minutes 5 days a week
Resources: *Mastering the 5-Paragraph Essay, Esperanza Rising, Caesar's English II, Grammar Voyage, Lyddie, Counting on Grace, Prairie Lotus and selected multicultural literature.*

Students will be able:

Reading

- Use details from a text to explain the meaning of the text or to make inferences from the text.
- Use details to determine the main idea of a text.
- Be able to retell a story using appropriate organization, such as chronological or cause/effect.
- Explain how an author uses details and evidence to support events or opinions.
- Use charts, graph, or other visual information to support the reading.
- Explain the use and meaning of various literary figures, including imagery, similes, and metaphors, when reading a text.
- Discuss and identify points of view including first-and third-person.
- Discuss how point-of-view impacts the telling of a story.
- Identify parts of a story, including setting, plot, characters, and theme.
- Use word stems to determine meaning of unfamiliar words.
- Use multiple sources for locating information.

Writing

- Write a variety of pieces including opinion, narrative, and compare/contrast.
- Use an organizational tool, such as a web or outline, to organize ideas before writing.
- Clearly express main idea of a five-paragraph essay in a thesis statement listing the main idea of each body paragraph.
- Clearly express main idea of a paragraph in a topic sentence.
- Use appropriate transition words within paragraphs as well as transition sentences between paragraphs.
- Write an introduction and a conclusion in a five-paragraph essay.
- Include a hook and at least two transition sentences within the introduction.
- Support ideas using details, facts, and examples.
- Use correct voice, formal or informal, depending on type of writing.
- Write appropriately for a particular audience.
- Use reference materials, such as dictionaries and thesauruses, to find meanings, pronunciations, and alternate word choices.
- Paraphrase ideas using one's own words.
- Use a variety of sentence types, including simple, compound, and complex, to add interest to writing.

Language

- Use standard conventions of English when writing and speaking.
- Build upon grammatical structure from grade 4 standards, adding
    - Identification of eight basic parts of speech
    - Appositives
    - Linking verbs
    - Clauses
    - Phrases
    - Correct punctuation of titles, including books and movies
- Use reference books, including dictionaries or thesauruses, to find meanings and pronunciations of unfamiliar words.
- Use and explain meaning of figurative language including
    - Similes
    - Metaphors
    - Hyperbole
    - Idioms

Term Projects

Grade 5 does an author study, which is a year-long reading and writing project. During term one, each student selects an author and reads several selections by that author. Term two is devoted to the writing and revising of the written report. In term three each student presents an oral version of his or her written report accompanied by a poster or multimedia project. Questions from peers may be fielded during and after the presentation.

Please see appendix for sample unit lesson plan for Grade 5 Literacy.

Literacy - Grades Six and Seven

Class Meetings: once daily for 50 minutes
Resources:

- Grade Six--*Vocabulary from Classical Roots book 6 and book A; The Magic Lens I;* texts including *A Tale of Two Cities, The Hobbit, The Sword in the Stone, The Phantom Tollbooth, Finding Langston, A Midsummer Night's Dream (abridged), Twelfth NIght (abridged), The Tempest (abridged),* self-selected works of different genres, *various nonfiction essays, and poems.*

- Grade Seven--*Word within the Word II; The Magic Lens II;* texts including *To Kill a Mockingbird, Watership Down, Cry, the Beloved Country, A Ring of Endless Light, Shabanu, A Midsummer Night's Dream (abridged), Twelfth NIght (abridged), The Tempest (abridged),* self-selected works of different genres, *various nonfiction essays, and poems.*

Students will be able to:

Literature

- Read high quality contemporary and classic literature and drama across genres
- Use a literature circle approach to foster analytical skills and engaging discussion.
- Understand literary elements, such as setting, plot structure, character development, dramatic irony, symbolism and theme.
- Understand the narrator's point of view, as well as the cultural and historical context of a novel.
- Craft a written response to each reading assignment that uses evidence to support interpretation of the text.
- Gain knowledge of author's biography and intellectual background

Writing

- Craft a detailed outline to organize arguments and supporting evidence.
- Organize essay into five distinct, well-developed sections.
- Clearly establish and maintain a purpose for every written work.
- Effectively transition between distinct ideas and paragraphs.
- Incorporate quotations from the text to support arguments.
- Use appropriate tone and vocabulary in essays.
- Edit written work for grammatical and mechanical errors, style and clarity.

Vocabulary

- Study Greek and Latin root words to enrich and expand knowledge of English vocabulary.
- Build a lexicon of Classical roots to understand the meanings of advanced vocabulary across the sciences and humanities.
- Enrich reading comprehension and communication skills through the acquisition of new vocabulary.
- Understand the appropriate usage and context of newly acquired vocabulary.

Grammar

- Understand the four levels of grammar: parts of speech, parts of a sentence, phrases and clauses.
- Analyze sentences according to the four levels of grammar.
- Apply knowledge of grammar to the punctuation, structure and syntax of sentences when writing.

Grade Six Reading

- Read some of the following as a class or in literature circles: *The Hobbit, A Tale of Two Cities, The Sword and the Stone, The Phantom Tollbooth, Finding Langston.*
- Read and review self-selected titles from teacher-provided list of works representing 5 genres: classics; autobiography and biography; science fiction and fantasy; historical fiction; realistic fiction
- On occasion, use literature circle approach to discuss novels listed above.
- Identify symbolism and theme, as well as evidence thereof.
- Discuss novels in historical context.
- Examine author's' biographies
- Write literary essays that are organized, include the conventions of grammar and spelling, interweave quotations within body paragraphs, and develop arguments logically.
- Evaluate fiction writing from a writer's perspective and craft fictional stories with a beginning, middle and end, as well as fully-developed characters and setting.
- Read and interpret assorted non-fiction essays
- Maintain nature journals to practice the art of observation and description
- Read and evaluate poetry pre- and post-1900, including identification of poetic devices, theme, mood, tone and imagery.
- *Study vocabulary using Vocabulary from Classical Roots*
- *Study grammar using The Magic Lens I*
- Read, perform, and produce abridged versions of one of the following Shakespeare plays: *A Midsummer Night's Dream; The Tempest; or Twelfth Night*

Grade 7 Reading

- Read some of the following as a class or in literature circles: *To Kill a Mockingbird; Cry, the Beloved Country; Watership Down; The Cage; Shabanu; A Ring of Endless Light.*
- Read and review self-selected titles from teacher-provided list of works representing 5 genres: classics; autobiography and biography; science fiction and fantasy; historical fiction; realistic fiction
- On occasion, use literature circle approach to discuss novels listed above.
- Identify symbolism and theme, as well as evidence thereof.
- Discuss novels in historical context.
- Examine author's' biographies
- Write literary essays that are organized, include the conventions of grammar and spelling, interweave quotations within body paragraphs, and develop arguments logically.
- Read and interpret assorted non-fiction essays
- Maintain nature journals to practice the art of observation and description

- Read and evaluate poetry pre- and post-1900, including identification of poetic devices, theme, mood, tone and imagery.
- *Study vocabulary using Vocabulary from Classical Roots, Vol. A and B*
- *Study grammar using The Magic Lens I*
- Read, perform, and produce abridged versions of one of the following Shakespeare plays: *A Midsummer Night's Dream; The Tempest; or Twelfth Night*

Please see appendix for a sample unit lesson plan for Grades 6 / 7 Literacy.

Literacy - Grade Eight

Class Meetings: once daily for 50 minutes
Resources: *Vocabulary from Classical Roots Book C, Vocabulary from Classical Roots Book D, Fahrenheit 451, I Capture the Castle, Lord of the Flies, A Separate Peace, The Adventures of Sherlock Holmes, Jane Eyre, Ivanhoe*

Students will be able to:

Literature
- Read high-quality contemporary and classic literature and drama across genres
- Use a literature circle approach to foster analytical skills and engaging discussion.
- Understand literary elements, such as plot structure, character development, symbolism and theme.
- Understand the narrator's point of view, as well as the cultural and historical context of a novel.
- Craft a written response to each reading assignment that uses evidence to support interpretation of the text.

Writing
- Craft a detailed outline to organize arguments and supporting evidence.
- Organize essay into five distinct, well-developed sections.
- Clearly establish and maintain a purpose for every written work.
- Effectively transition between separate ideas and paragraphs.
- Incorporate quotations from the text to support arguments.
- Use appropriate tone and vocabulary in essays.
- Edit written work for grammatical and mechanical errors, style and clarity.

Vocabulary
- Study Greek and Latin root words to enrich and expand knowledge of English vocabulary.
- Build a lexicon of Classical roots to understand the meanings of advanced vocabulary across the sciences and humanities.
- Enrich reading comprehension and communication skills through the acquisition of new vocabulary.
- Understand the appropriate usage and context of newly acquired vocabulary.

Grammar

- Understand the four levels of grammar: parts of speech, parts of a sentence, phrases and clauses.
- Analyze sentences according to the four levels of grammar.
- Apply their knowledge of grammar to the punctuation, structure and syntax of sentences when writing.

Reading

- *Read some of the following: Fahrenheit 451, I Capture the Castle, A Separate Peace, Lord of the Flies, Sherlock Holmes, Jane Eyre and Ivanhoe.*
- Use a literature circle approach to discuss the novels listed above.
- Identify symbolism and theme, as well as evidence thereof.
- Discuss the novels in historical context.
- Write literary essays that are organized, include the conventions of grammar and spelling, as well as interweave quotations within body paragraphs, and develop arguments logically.
- Evaluate fiction writing from a writer's perspective and craft fictional stories with a beginning, middle and end, as well as fully-developed characters and setting.
- Read and evaluate poetry pre- and post-1900, including identification of poetic devices, theme, mood, tone and imagery.
- Study vocabulary using *Vocabulary from Classical Roots Book C and D*.

Sequence:

Trimester One

- Discuss and analyze Ray Bradbury's *Fahrenheit 451* (read over the summer)
- *Write a literary essay about Fahrenheit 451*
- *Read either Dodie Smith's I Capture the Castle or William Golding's Lord of the Flies* and John Knowles' *A Separate Peace.*
- Discuss and analyze these novels using a literature circle approach
- Write a literary essay about one of these novels in which the students use quotations from the novel to support their arguments
- *Begin Vocabulary from Classical Roots Book C*
- Study creative writing through the examination of model texts
- Write a fiction story
- Apply knowledge of grammar to essay and creative writing

Trimester Two

- *Read selections from Sir Arthur Conan Doyle's Adventures of Sherlock Holmes*
- Discuss and analyze these stories using a literature circle approach.
- Write a literary essay about *The Adventures of Sherlock Holmes* in which the students discuss what the novels reveal about racism, classism and sexism in Victorian Britain.
- *Begin to read Sir Walter Scott's Ivanhoe.*
- Discuss and analyze this novel using a literature circle approach

- *Finish Vocabulary from Classical Roots Book C and begin Vocabulary from Classical Roots Book D*
- Write a personal narrative
- Apply knowledge of grammar to essay and narrative writing

Trimester Three

- *Finish reading Sir Walter Scott's Ivanhoe.*
- Discuss and analyze this novel using a literature circle approach
- Write a literary essay about *Ivanhoe* in which the students discuss the use of symbolism and theme.
- Select and read a classic novel (of at least a hundred years old) to read.
- Discuss and analyze this novel via a literary response journal.
- *Finish Vocabulary from Classical Roots Book D*
- Study poetry analysis and read poetry from a variety of authors, time periods and cultures.
- Write poetry in a variety of formats and about a variety of topics

World Language

In keeping with the Massachusetts Foreign Language Curriculum Frameworks, Academy Hill's world language curriculum is designed to establish proficiency in the target language by the end of grade twelve. At each level of the program, students acquire more advanced vocabulary, build on grammar concepts and improve upon oral and written proficiency.

Classroom experiences include a variety of cooperative, conversational, and enrichment activities designed to provide students with as many opportunities as possible for language acquisition. Exposure to target language cultures is a strong emphasis of curriculum development. Celebrations, projects, and field trips are an integral part of the target language learning experience.

Textbooks are introduced in grades four and five to further develop language skills. The Spanish classes are currently using the "Ven Conmigo!" series published by Holt, Rinehart and Winston. As additional resources, children will use the programs, Quizlet.com to help with vocabulary practice and Rockalingua.com to help with pronunciation and vocabulary in context. The French classes use the "Discovering French" series published by McDougal Littel.

The Academy Hill world language program is reflective of the fact that language acquisition is a lifelong process. The curriculum builds a strong foundation which will continue to be expanded upon during higher levels of language study. By the end of 8th grade, students will take the National Spanish Exam and depending on the amount of time with the curriculum they should successfully colete levels 1, 2 or 3, the equivalent to high school levels 1, 2 and 3.

Spanish Grades K-4

- By the end of grade four, students will be able to identify, apply and orally articulate basic vocabulary about themselves and the world around them in the target language.

- By the end of grade four, students will be able to recognize and connect basic cultural symbols to Spanish speaking countries.
- Children will primarily listen to songs through YouTube Basho and Friends, as well as Rockalingua, as well as, play basic games and use puppets to help their vocabulary and pronunciation progress.
- In grades 3 and 4, students will have the opportunity to take the National Spanish Challenge if recommended by the teacher to show what they have learned over the years.

Spanish - Kindergarten

Winter

- "Magic words," simple polite words and courtesy expressions in Spanish
- Vocabulary to express greetings
- Introductions
- Emotions and feelings
- Cardinal numbers from 1 to 20

Spring

- Colors
- Classroom items

- Body parts
- Clothes
- Basic weather vocabulary

Spanish - First Grade

Fall

- Greetings
- Introductions
- Age
- Polite words (courtesy expressions)
- Expressing feelings
- Cardinal numbers
- Colors
- Shapes
- Classroom objects

Projects

- *Abanicos* (Spanish fans)

Culture unit

- *Día de los Muertos, colorful skulls*

Winter

- Face and body parts
- Summer and winter clothing-weather
- Food/ vocabulary I like / I do not like/Do you like?

Project

- Puppet Dialogue

Culture unit

- Three King's Day

Spring

- Food
- Family members
- Animals
- Places to go
- Cardinal numbers from 1 to 100
- Opposites

Project

- *La ciudad en español*

Culture unit

- Puerto Rico
- *El Coqui*

Spanish - Second Grade

Fall

- Greetings
- Introductions
- Age
- Talk about how they feel
- Polite words and courtesy expressions
- Cardinal numbers
- Colors
- Days of the week
- Months of the year
- Weather

Cultural unit

- Mexico: Day of the Dead, color skulls

Projects

- Weather forecast/Days wheel
- Seasons/ months wheel

Winter

- Face and body parts
- Summer and winter clothing
- Food vocabulary

Project

- Paper dolls

Culture unit

- Three King's Day

Spring

- Food
- Family members
- Animals
- Places to go
- Cardinal numbers from 1 to 100
- Opposites

Project

- *La ciudad en español Spanish City Map*

Los animales de Puerto Rico, Puerto Ricans' animals book

Culture unit

- Puerto Rico
- *El Coqui*

Spanish - Third Grade

Fall

- Greetings, introductions and age
- Talk how they feel
- Class commands
- Polite words and courtesy expressions
- Cardinal numbers
- Spanish alphabet
- Days of the week
- Months
- Seasons

Project

- Weather Wheel
- Days wheel
- Seasons and months wheel

Culture unit

- Day of the Dead, color skulls

Winter

- Colors
- Geometric shapes, adjectives
- Verb "to be" (*ser*)
- Class dictations
- Face and body parts, personal adjectives

Project

- Mask

Culture unit

- Three King's Day

Spring

- Clothing
- Verb to have (*tener*)
- Verb to wear (*llevar*)
- Expressions of size and color of nouns
- Describe what they and others are wearing
- The alphabet in Spanish
- Adjective agreement and singular object pronouns
- Action words
- Commands

Project

- Slide show, Quizlet games, Rockalingua

Culture unit

- Puerto Rico (questionnaire)

Spanish - Fourth Grade

Fall

- Courtesy expressions
- Classroom phrases and commands
- Colors
- The calendar
- Cardinal numbers 0-100
- Spanish alphabet
- Punctuation in Spanish
- Capitals and capitalization rulers
- Greetings, introducing people and responding to an introduction, asking how someone is and saying how they are (oral and written)

- *Verbs to be (ser and estar)*
- Subject pronouns
- Telling Time

Project
- *Slide Show*

Culture unit
- Spain
- *Flamenco and Rumba española*

Winter
- Conjugation of verb "to be" (*ser y estar*)
- Conjugation of verb "to have" (*tener*)
- Verb "to like" (*gustar*)
- Indirect object pronouns
- Expressions of like and dislike
- Definite and indefinite articles
- Food
- Sports
- Class subjects
- Music

Culture unit
- Twenty-one Spanish speaking countries, Rockalingua.com

Spring
- Talk about what they want, need and what is in their rooms
- Verbs to need *(necesitar),* to want *(querer)* and to have (*tener*)
- Making nouns plural
- Indefinite and definite articles
- Noun and adjective agreement
- Classroom objects
- Things in a bedroom

Culture unit
- Cinco de Mayo

Spanish I - Grades Five through Six

- By the end of Spanish I, students will be able to recognize and communicate sentences in the simple present tense, orally and in writing in the target language.
- By the end of Spanish I, students will be able to recognize and classify the twenty one Spanish speaking countries, and elements of some of their national identities, such as visual arts, music, artifacts.

- Students will take the National Spanish Challenge**,** a simple version of the National Spanish Exam, in order to show their overall comprehension and retaining of vocabulary and grammar concepts over the years. They will be placed in categories according to their experience and ability.

Spanish - Fifth Grade

Resources*:* *Adelante- ¡Ven conmigo!* Level 1A-Holt, Rinehart and Winston, 2003

Fall

- Courtesy expressions
- Classroom phrases and commands
- Verbs *ser* and *estar* (to be)
- Verbs to need *(necesitar),* to want *(querer)* and to have (*tener*)
- Sentences with two verbs
- Basic grammar terms
- Question words
- Noun and adjective agreement
- Expressions of likes and dislikes
- Telling time
- *Introduction of present tense of regular verbs ending in ar*

Culture unit

- Day of the Dead, Movie: COCO

Winter

- Talking about where they and others go during free time
- Discussing how often they and others do things
- Introduction of present tense of regular verbs ending in *er* and *ir*,
- Verbs "to go" (*ir*)
- Verb "to be" (*estar*)
- Adverbs of frequency

Culture unit

- Three King's Day, Spanish New Year- Grapes of Luck

Spring

- Phrases to talk about the weather
- Describe people physically, their personalities, nationalities, professions and occupations
- Family
- Things that a family does together
- Demonstrative pronouns

Project

- Family Slide show

Culture unit

- Cinco de mayo

Spanish - Sixth Grade

Resources*:* *Adelante- ¡Ven conmigo!* Level 1A-Holt, Rinehart and Winston, 2003
Additional Resources: *A Trip to Spain-Beginning Spanish Reader-Hayes, Elizabeth Ramsay-Verzariu, 2008, Pobre Ana Blaine Ray*

Fall

- Courtesy expressions
- Classroom phrases and commands
- Verbs *ser* and *estar* (to be)
- Descriptive adjectives
- Noun and adjective agreement
- Indirect objective pronouns
- Expressions of likes and dislikes
- Possessive adjectives
- There is and there are
- Telling time
- Prepositions
- *Present tense of regular verbs ending in ar*

Project

- Album personal
- Picasso package

Culture unit

- Mexico Independence Grito de Dolores

Winter

- Talking about where they and others go during free time
- Discussing how often they and others do things
- Present tense of regular verbs ending in *er* and *ir*,
- Verbs “to go” (*ir*)
- Verb “to be” (*estar*)
- Expressions with *para* and infinite verbs
- Adverbs of frequency
- Negation and negative words
- Two different meaning of "who" in Spanish

Culture unit

- Spain New Year, Three King’s Day

Spring

- Phrases to talk about the weather

- Describe people physically, their personalities, nationalities, professions and occupations
- Family
- Things that a family does together
- Demonstrative pronouns
- Possessives and noun and adjective agreement

Projects

- Group: "What is the weather? TV Broadcast" (research, design and orally present a segment of a news broadcast)
- Individual: Family tree

Culture unit

- Las Fallas - Spain
- Movie McFarland - Mexican Americans

Spanish II - Grades Seventh through Eighth

- By the end of Spanish II, students will be able to articulate sentences in simple present tense, present progressive, near future and past tense, in the target language.
- By the end of Spanish II, students will be able to recognize and classify the twenty-one Spanish speaking countries, nationalities and elements of their national identities such as visual arts, music, artifacts and culinary arts.
- A trip to a restaurant with authentic cruise from a Spanish speaking country.
- Students will also take the National Spanish Exam as a way to show the language that they have collectively acquired over the years in a traditional language type test with reading and listening comprehension, grammar and vocabulary sections. Depending on each student's engagement and amount of time studying Spanish, they will take levels 01, 1, 2 or 3.
- Students will also read Spanish versions of **Scholastic Magazines** Spanish versions, *Que Tal and Ahora,* in order to learn about other countries and current events in the target language.

Spanish - Seventh Grade

Resources: *En camino- ¡Ven conmigo!* Level 1B-Holt, Rinehart and Winston, 2003
Additional Resources: *Pobre Ana-Nivel 1-Book A. Blaine Ray, 2004*
National Spanish Exam resources and practice Exams, Quizlet Electronic flashcards

Fall

- Courtesy expressions
- Classroom phrases and commands
- Extensive vocabulary list of family members and keywords to describe them
- Descriptive adjectives
- Noun and adjective agreement
- Verbs *ser* and *estar* (to be)
- Verb *tener* (to have)

- Indirect object pronouns use to express likes and dislikes
- Verb *ir* (to go) to express near future plans
- Demonstrative pronouns
- Possessive adjectives

Project
- Storyboard about their favorite place

Culture unit
- Mexico - Day of the Dead y Independence Day.

Winter
- Telling time
- Prepositions
- Talking on the phone and extending and accepting invitations
- Indirect object pronouns
- Verb "to like" (*gustar*)
- Formulate an invitation
- *Verbs ending in e-ie*
- Expressions of preferences
- Proper manners and expressions on the phone
- Places
- Celebrations

Project
- Country Project

Culture unit
- Spanish New Year, Grapes of Luck

Spring
- Making plans
- Talking about getting ready
- Turning down an invitation and explain why
- Commenting on meals and food
- *Verb to have (tener)*
- Verb to have expressions
- Reflexive verbs and pronouns
- *Verb to think (pensar)*
- Verb to go (*ir*)
- Future plans (near future)
- *Verb to love/like (encantar)*
- Indirect object pronouns
- Verbs *o-ue* stem-changing verbs
- Personal articles and accessories
- Food and adjectives

Project

Las Fallas Valencia, Spain

Culture unit

- Spain: Don Quijote de la Mancha,

Spanish - Eighth Grade

Resources: *En camino- ¡Ven conmigo!* Level 1B-Holt, Rinehart and Winston, 2003
Additional Resources: *Patricia va a California-Nivel 1-Book B. Blaine Ray, 2004, Magazines Qué Tal and Ahora in Spanish, National Spanish Exam vocabulary resources and practice tests.*

Fall

- Courtesy expressions
- Classroom phrases and classroom commands
- Descriptive adjectives
- Noun and adjective agreement
- Directions
- Clothing
- Comparisons
- Verb to be (*ser* and *estar*)
- Verb to have (*tener*)
- Indirect object pronouns
- Expressions of likes and dislikes
- Verb to go (*ir*)
- Near future
- Plans
- Demonstrative pronouns

Culture unit

- Day of the Dead, Día De Los Muertos, making an altar and writing about/honoring the Dead.
- Grito de Dolores, Mexican Independence Day

Winter

- Expressing preferences
- Asking about prices
- Paying for something
- Asking for and giving an opinion
- Talking about what they and others are doing right now
- Demonstratives
- Regular and irregular verbs in present tense
- Regular and irregular verbs in present progressive
- Expressions to make comparisons

- Commands (informal)

Activity
- *Rodolfo Play in Spanish*

Culture unit
- Mexico
- *Salsa* dance

Spring
- Asking and giving an opinion
- Ask for help and respond to requests
- Telling a friend what to do
- Talk about past events
- Interrogative sentences
- Informal and formal commands
- Preterit tense
- Direct Object Pronouns (*lo, la, los, las*)
- Imperfect tense
- Preterit versus the imperfect
- Preterit with the imperfect

Project:
- Fairy Tale/book performance.

Culture unit
- *Las Fallas, Valencia Spain*
- Movie: Under the Same Moon, immigration issues/worker's rights
- Mexico

Please see appendix for sample unit lesson plans for Grades 7 / 8 Spanish

French IA and IB Grade Seven through Eight

At the end of grade eight, students will:
- perform standards mastered in grades K-6 of the original French program
- communicate in French a minimum of 90% of class time
- create phrases and sentences to communicate in the target language orally and in writing
- comprehend the grammar of the target language and integrate the information into their speech and written work
- identify cognates to determine meaning of new words
- ask and answer clarifying questions in the target language

- write simple paragraphs in the target language
- give oral presentations in the target language on the target culture or other topics
- interact appropriately in social and cultural activities
- recognize cultural components the Francophone culture
- compare and contrast grammar learned in the target language with English grammar
- make connections between information learned in other subject areas and the target language curriculum
- share knowledge of the target language outside the classroom

French IA - Grade Seven

Resources:

- Discovering French- Book 1A Bleu, McDougal Littell
- Larousse Student French Dictionary
- wordreference.com-online bilingual dictionary
- YouTube videoclips
- Songs and chants of Alain Le Lait
- National French Contest review materials and contest
- American Association of Teacher of French (AATF) websites and resources
- Teachers Pay Teachers (TPT) cultural packets and resources
- Classzone.com: online workbook, cultural prompts and practice tests

Thematic Vocabulary

- People
- Adjectives of personality, physical description, and nationality
- Room furnishings
- Prepositions of place
- Everyday objects and possessions
- Colors
- Expressions of opinion
- School subjects
- City places and buildings
- Transportation
- Directions and addresses
- Neighborhood
- Rooms in the house
- Extended family members
- Activities, sports and games
- Ordinal numbers
- Computers

Grammar and Linguistic Goals

- Singular and plural nouns
- Definite and indefinite articles
- The expression *avoir...ans*

- Adjective agreement and placement
- Use of *c'est* and *il est*
- The expression *il y a*
- The irregular verbs *avoir, faire, être, aller* and *venir*
- The negative article pas *de*
- The definite article in general statements and repeated events
- Impersonal *c'est*
- The composed past tense with the verb *avoir*
- Contractions with à and *de*
- The expression *chez*
- Stress pronouns
- The construction noun + *de* + nouns
- Possession with *de*
- Possessive adjectives
- *Aller* + infinitive

Culture and Contests

- Teenagers in France
- Haïti
- Mopeds and scooters
- School in France
- French cities and their buildings
- Important cities of the French-speaking world

National Contest Participation and Trips

- Le Grand Concours: National French Contest of the American Association of Teachers of French (AATF)
- Un voyage à la Pâtisserie Lenox et Smith College: language and culture trip to Northampton to explore French art work and to enjoy authentic French pastries (postponed)

French IB - Grade Eight

Resources:

- *Discovering French*- Book 1B Bleu, McDougal Littell
- *Discovering French*- Book 2 Blanc, McDougal Littell (supplementary resource)
- French Two Years, Amsco (supplementary resource)
- Le Vol de la Joconde, Amsco or Easy French Reader, McGraw-Hill
- Larousse Student French Dictionary
- wordreference.com-online bilingual dictionary
- National French Contest review materials and test
- YouTube videoclips
- Songs and chants of Alain Le Lait
- American Association of Teacher of French (AATF) websites and resources

- Teachers Pay Teachers (TPT) cultural packets and resources
- Classzone.com: online workbook, cultural prompts and practice tests

Vocabulary

- Clothing and accessories
- Descriptive adjectives
- Adjectives that precede the noun
- Expressions of opinion
- Stores that sell clothes
- Regular -re and -ir verbs
- Numbers 100 - 1000
- Money-related expressions
- Expressions avoir envie de and besoin de
- Weekend activities
- Summer and winter sports
- Household chores
- Means of transportation
- Divisions of time
- Periods of future time
- Verbs of movement
- Adverbs of sequence
- Periods of past time
- Foods and beverages
- Verbs of preference
- Quantities
- Fruits and vegetables
- Meals
- Verbs for asking for service
- Place settings
- Verbs using indirect objects

Grammar

- The irregular verbs mettre, boire, pouvoir, devoir, prendre, connaitre, dire, écrire and voir
- Stem-changing verbs
- Demonstrative adjectives
- Interrogative adjectives
- The pronoun on
- Comparisons with adjectives
- The imperative
- The passe compose with avoir and etre
- The imperfect
- Faire de + sports
- Expressions with avoir
- Ne...jamais and other negative constructions

- Quelqu'un and quelquechose
- Partitive articles
- object pronouns

Culture and Trips

- Les Grands Magasins
- French fashion and shopping
- Money and French teenagers
- Winter sports in France and Quebec
- Leisure activities
- Meals in France
- School cafeteria in France
- Restaurants and Cuisine
- Le province de Québec: culture, food, art, and geography

National Contest Participation and Trips

- Le Grand Concours: National French Contest of the American Association of Teachers of French (AATF)
- Un voyage à Québec: language and culture trip to Quebec City organized by Immersion Tours (postponed)

APPENDIX

Examples of Instructional Plans
Content Area: Science
Grade Level: Pre-Kindergarten
Content/Skill (as listed in the AHS Curriculum Scope/Sequence):

a. Explore science tools
b. b. Observe plant growth

AHS Curriculum Scope/Sequence Page Number: 4-5

Introduction to Concept	Student Activity	Differentiation/ Personalization	Student Outcome
• Read a book to introduce oak trees. • Visit the outdoor classroom for a nature walk and made observations of acorns on the ground and trees. • Hold a circle discussion about the life cycle of an oak tree. • Guided Discovery for use of magnifying	• Collect acorns and oak leaves for observation and investigation inside the classroom. • Use magnifying glass and tweezers at the Discovery Table to investigate acorns. • Place acorns into the rice table for searching. • Act out the growth of a tree.	• Sort acorns found by top, bottom or both. • Placed sequencing cards in order of growth cycle. • Provided appropriate books for readers. • Included relevant props to Prop Box for students to use during Dramatic Play.	• Students can use tools correctly- Discovery Table, magnifying glass, tweezers, acorns, leaves. • Students can identify parts of an acorn. • Students can demonstrate the growth of a tree. 

Examples of Instructional Plans
Content Area: Social Studies and Literacy Integration
Grade Level: Kindergarten
Content/Skill (as listed in the AHS Curriculum Scope/Sequence):
Language:
- Demonstrate developmentally appropriate command of Standard English grammar when writing and speaking
- Recognize the distinguishing features of a sentence
Speaking and Listening:
- Participate in group discussions both as speakers and listeners
- Show engagement through asking questions and contributing to discussions
Social Studies:
- Tell personal stories in chronological order

- Use “because” in personal stories and in retelling events
- Make connections between themselves and their classroom community

AHS Curriculum Scope/Sequence Page Number: Social Studies, p 112-113, Literacy p 139-141

Introduction to Concept	Student Activity	Differentiation/ Personalization	Student Outcome
• Our beginning of the year biography project takes a week and offers students a way to learn about each other while working on speaking and listening skills, doing higher level thinking, making connections, and developing a learning community. • To start the year and our unit on ourselves and families we discussed ways we can learn about other people. • Students worked together to brainstorm different questions they could ask a friend to learn more about them. We discussed at length the differences between questions and statements and noticed the question words	• Students each took turns being interviewed by their peers over the course of several days. Students were able to ask questions from the list we developed together or ask new questions. We focused on follow- up questions, for example if a student answered that they have two pets, a student might think to ask what kinds of pets or what their names are. • Students worked on listening to their friends’ responses to avoid asking the same questions more than once and to notice similarities between themselves and their peers.	• Potential questions were listed on chart paper so that early readers could read those questions. • Images were drawn next to many of the questions to prompt emerging readers about the questions. • Students encouraged to ask questions to make connections between themselves and others. • Students given the opportunity to share more information about themselves. • Each student is able to have their biography displayed in the hall to help other members of the school learn about our class.	Students are able to: • Ask questions starting with question words • Answer questions in full sentences • Add “because” and give a reason in some answers • Share interesting facts and favorites about their friends • Discuss connections between peers and themselves. • See their portrait and biography in the hall and direct their friends and families to read to learn more about the members of our class community.

we use at the beginning of most questions.			

Examples of Instructional Plans

Content Area: Science
Grade Level: Kindergarten
Content/Skill (as listed in the AHS Curriculum Scope/Sequence):

- Identify the 5 senses and sort which experiences utilize each sense.

AHS Curriculum Scope/Sequence Page Number: p. 72-73

Introduction to Concept	Student Activity	Differentiation/ Personalization	Student Outcome
• The students learn all about the five senses through multi-sensory activities. They learn more in-depth about their eyes, tongue, ears, and skin and how these body parts work to help them use their five senses. This is a culminating activity about the five senses.	• The teacher explains that she has a big problem. She went to make coffee this morning but wasn't sure which container held sugar and which container held salt. • The students have to use their knowledge of five senses to figure out which cup holds salt and which cup holds sugar. They had to create a hypothesis about which cup held sugar. • They first learn about what sugar and salt look like under a microscope. Then, they begin observing what	• Images were drawn next to each sense on their chart if they were not able to read the words. • They were able to draw pictures and label or write full sentences. • Students are encouraged to discuss in partners or small groups. These groups are strategically put together based on abilities.	Students are able to: • Create a hypothesis and check their hypothesis with observations • Use their chart to write full sentences about their observations. • Have positive discussions about their observations in small groups where they practice speaking and listening. • Write a conclusion to their experiment.

	the two substances look like with magnifying glasses. They discuss record their observations in a chart. They continue the experiment by observing, discussing, and recording the other senses. They smell each cup, listen to it shake in the cup, touch a few grains of each substance and discuss the size, and finally they taste a few grains of each. When they are done, they write their conclusion of which cup held sugar and which cup held salt and write if their hypothesis was correct or incorrect.		

Examples of Instructional Plans

Content Area: Science

Grade Level: 1

Content/Skill (as listed in the AHS Curriculum Scope/Sequence):

- Recognize that animals (including humans) and plants are living things that grow, reproduce, and need food, air, and water.
- Differentiate between living and nonliving things. Group both living and nonliving things according to the characteristics that they share.

AHS Curriculum Scope/Sequence Page Numbers: 73-74

Introduction to Concept	Student Activity	Differentiation/ Personalization	Student Outcome
• Students will how to classify different animals based on their characteristics. • Students will learn about different habitats and why certain animals need specific habitats to survive. • Students will learn about adaptations of animals over time and how these adaptations help them survive. • Students will learn about the ways animals move. • Students will learn about food chains and how these food chains affect the animal's survival.	• Students will choose an animal that is of interest to them. • Students will look for appropriate leveled books in the library with teacher guidance. • Students will write in a graphic organizer about their animal based on specific categories such as life cycle, habitat, adaptations, classification, and diet. • Students will use their notes to write a research report.	• Students are able to choose from a list of age-appropriate projects based on their interests to display their work including a puppet show, animal wax museum, and diorama. • Students have different report requirements based on skill. Some students are simply filling out a graphic organizer while others are writing a simple five-paragraph report.	• Students will write about their animal in their own words and include the main information they have been studying. • Students will be able to explain in detail about their animal that they researched. • Students will be able to share that information in a variety of ways with other peers.

Examples of Instructional Plans

Content Area: Social Studies and Literacy Integration

Grade Level: 1

Content/Skill (as listed in the AHS Curriculum Scope/Sequence):

- Explain that Americans have a variety of different religious, community, and family celebrations and customs, and describe celebrations or customs held by members of the class and their families.
- Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.

AHS Curriculum Scope/Sequence Page Number: Literacy p. 141-143, Social Studies p. 114-115

Introduction to Concept	Student Activity	Differentiation/ Personalization	Student Outcome
• In December, the students learn about different winter holidays around the world. They learn that people celebrate many winter holidays with similar themes. They also learn how families celebrate the same holiday, but their traditions might be very different.	• After learning about different holidays around the world, the students have to go home and interview their own families about the winter holidays they celebrate and traditions they have. As a class, they come up with questions to ask family members. • The students bring their information the following week. They use their interviews to fill out a graphic organizer about their own family winter holidays and traditions. • They use the graphic organizer to create a report and a visual aid to present to the class.	• Students can have their family member help them write answers to their questions. • Students can use the graphic organizer to help them with their visual aid if they are not ready to write a full report. • The visual aid can be any type of model, poster, costume, play, etc. based on what the student feels comfortable creating.	Students will be able to: • Come up with questions that include the 5 W's. • Write a report about their family traditions. • Create a visual aid to share alongside their report. • Learn about their own family traditions and customs as well as their peers.

Examples of Instructional Plans

Content Area: Science

Grade Level: 2

Content/Skill (as listed in the AHS Curriculum Scope/Sequence): Identify different bird species, Identify the parts of a bird (beak, wings, eyes, eggs), Describe the size and weight of different birds

AHS Curriculum Scope/Sequence Page Number: 74-75

Introduction to Concept	Student Activity	Differentiation/ Personalization	Student Outcome
• Read aloud All Birds are Not Alike • Discuss if they agreed or disagreed and why • Fill bird feeders observing different seed types/shapes/size • Introduce observation recording sheets	• View and observe birds through the classroom window each morning • Record on observation sheets different types of birds • Write down I wonder… questions to discuss with the class • Write down observations • Discuss as we are observing beaks, wings, flight	• Use pictures of birds to help with identifying • Provide books and computers to help with solving I wonder questions • Provide scaffolding for designing I wonder questions • Provide pre-question activities to develop critical thinking	• Students can identify male and female birds at our school • Students can predict which birds will eat which food depending on beak shape • Students will compare and contrast physical characteristics of birds • Students will share their knowledge of identifying with visitors from other classes

Examples of Instructional Plans

Content Area: Science

Grade Level: 3

Content/Skill (as listed in the AHS Curriculum Scope/Sequence):

- Recognize that the earth is part of a system called the "solar system" that includes the sun (a star), planets, and many moons.
- Recognize that the earth revolves around (orbits) the sun in a year's time and that the earth rotates on its axis once approximately every 24 hours. Make connections between the rotation of the earth and day/night, and the apparent movement of the sun, moon, and stars across the sky. Recognize the observable effects of rotation and revolution (apparent movements of sun, moon, planets, and stars.)
- Explain how the tilt of the earth and its revolution around the sun result in an uneven heating of the earth, which in turn causes the seasons.

AHS Curriculum Scope/Sequence Page Number: 76-77

Introduction to Concept	Student Activity	Differentiation/ Personalization	Student Outcome
• After examining solar system's	• Once students sign up for the	• Explain that the students can think	• Celebrate finished calendar with

planets and their rotation periods, and closely examining the Earth's tilt, rotation period, and revolution period, show students the following chart comparing Earth to Mars. • Earth Mars Tilt • 23.5 degrees 25 degrees Rotation period • 24 hours • 24 hours 40 min Revolution period • 365 ¼ days • 670 sols Diameter 12,750 km • 6790 km • Discuss chart allowing students to generate questions and answers with guidance. Make sure students notice the similarity in the tilt, the slight difference in rotation period, the word sol, what is a sol, why do we need a different word for the rotation period of Mars, why not just call it a day, the difference in size of the planets.	teams and understands their team's mission, circulate and assist teams as necessary, making sure all team members are engaged, and that they are working cooperatively, sharing ideas and respecting each other's opinions. • If one team finishes their work before other teams, allow them to join other teams to help finish the production of the calendar. When all teams are finished, students should glue illustrations to template grids, as well as add month and holiday names to templates.	of their talents and interests, and sign up for one of the following teams. • Math Team- Decides how to divide the Mars seasons into months. How many sols will be in each month? What needs to be done about half sols? Would half sols work, or what would that do to time? Then, create a template grid for each month and fill in the numbers of the sols on each template grid. • Art Team- Examine photographs of Mars taken from rovers, and construct thoughtful illustrations for each month of the Mars calendar. • Research Team- Use computers, books, and Nasa brochures to research and answer questions the other teams generate. Sample questions that may need to be answered: when was Mars first	students. Allow students to share what they observe, especially about the number of sols in each month. Then say, "Now that we have finished, let's display our work to help others think about what a year on Mars would be like. With our display, we will need to post information explaining what we thought about to make this calendar." • Divide students back into their original teams. Help them brainstorm the steps they took to create the calendar. Then have each group write a paragraph explaining their work to post with the calendar. • When calendar and paragraphs are completed, teacher should assess work for student understanding of why Mars has longer revolution period than Earth,

• Ask the students, "Are there seasons on Mars like there are on Earth? Why or why not?" Students should realize that due to the tilt of Mars, there would be seasons just like on Earth. • Then ask, "How long would each season last on Mars?" Let students discuss and problem solve together in groups. As most students this age do not yet know the formal algorithm for long division, encourage students to think of creative ways to place 670 sols in four groups. • Examples include giving each season 100 sols, leaving 270 sols to divide up, then giving each season 50 sols, leaving 70 sols to divide up, next giving each season 10 sols, leaving 30 sols to divide up, etc. Let students know that is is acceptable to		noticed by humans, what is the high and low temperature on Mars for each season, how did the months on earth get their names, when did the rovers first land on Mars, where are the rovers now, who is in charge of the Mars missions at Nasa. • Creativity Team- creates thoughtful names for the Mars months and create new holidays for the Mars calendar.	why Mars has seasons much like Earth, and what constitutes a day, month, and year.

round their final answer to the nearest whole sol, or nearest easy to think about fraction (½ instead of ⅖.) • Tell the students, "remember, humans are planning to travel to Mars in the near future. We have read about Nasa's Orion program, as well as private companies ambitions for Mars. When humans arrive, they will need a way to keep track of time. On Earth, as well as clocks and watches, we use calendars to keep track of time and schedule activities. What would a calendar for Mars look like? We are going to split into groups to create a prototype Mars calendar."			

Examples of Instructional Plans

Content Area: Science

Grade Level: 4/5

Content/Skill (as listed in the AHS Curriculum Scope/Sequence): The Book Support Challenge: Engineering- defining and developing an engineering problem, developing possible solutions, optimizing the design solution.

AHS Curriculum Scope/Sequence Page Number: 78-87

Introduction to Concept	Student Activity	Differentiation/ Personalization	Student Outcome
• Students are given a scenario to a problem: they need to create a way to raise a book four inches above table height. The pages must be able to be turned freely so that they can be read. • Vocabulary introduced includes criteria, constraints, iteration. • Students are also introduced to the ideas of center of gravity and stable vs. strong structures. • Students work together in groups of 3-4. Materials supplied to each group includes 100 3x5 index cards, 50 rubber bands, and 50 jumbo paper clips. Students work in groups to create the book support. After each attempt, ideas are shared with the entire class.	• Students work in small groups to create their book support. They must collaborate with each other and compromise to reach consensus on how to build their book support.	• Students are able to select which aspect of the project they are most comfortable with. Some students will be more comfortable sketching ideas, while others will take an active part in construction. Students may also choose to record materials used and the cost to their group of their materials. Finally, a plan for sharing and answering questions about the construction design as well as problems still faced will be created by other students.	• Students will work in a small group in the manner of scientists, collaborating and redesigning their solutions to the problem based on input from others and observations. • They will develop an understanding of the vocabulary used, as well as the process followed by scientists in design creation.

Examples of Instructional Plans

Content Area: Science (Biology) Grade Level: 7th/8th

Content/Skill (as listed in the AHS Curriculum Scope/Sequence):
DNA Structure and Protein Synthesis - genetic engineering debate, linking these concepts to real world scenarios

AHS Curriculum Scope/Sequence Page Number: 92-112

Introduction to Concept	Student Activity	Differentiation/ Personalization	Student Outcome
• (Students are previously established in background of DNA structure and steps in translation of a protein) • Genetic engineering vocabulary established, via in-class discussion, videos, and virtual labs • Key terms: PCR, gel electrophoresis, restriction/ligation, transmission vectors, cloning, genetically modified organism • Students will watch selections of IQ2 GMO debate to see format of debate, and examples of salient arguments • Students will assess presented arguments themselves and brainstorm ideas and opinions in open discussion prior to selecting sides	• Students will choose side of debate FOR or AGAINST GMOs • Each student is supplied a debate outline with various debate aspects to fill in with facts/arguments (i.e., facts for side, anticipated attacks, questions to pose to opposition, philosophical/ethical arguments, etc.). Sources are to be cited for all facts • Students will fill in their debate sheet as weekend homework, then arrive in class with their group to compile their materials on a Google Doc. • Three class periods are allocated to compiling info of group mates and diving deeper into researching strongest points • In addition, groups create opening and closing statements (3-4 and 1-2	• Students are able to select the side they want, there are also three moderator positions available moderators will still fill in a debate outline for either side they choose, and in lieu of an opening statement, will construct a summary of two paragraphs for the other side they did not outline as well. This ensures baseline knowledge of both sides and hopefully mitigates any bias • Moderators control flow of discussion and have a bell to use to limit speaking time • Differentiation among debate participants can be varied.	• The goal of this 4 day project (3 days prep, 1 day debate) is to ingrain the process and potentials of genetic engineering into the minds of the students • In order to impress the moderators (and the teacher who has veto power over them if need be!) students should be able to talk fluently of the mechanisms of genetic engineering and link real-world research and scenarios to their understanding of DNA and protein synthesis • Students will learn to assess the legitimacy of sources in their research, as there are plenty of illegitimate sources on the

	minutes respectively) • Debate format: Opening statements (3-4min each) → Q+A from both sides and moderators → Closing statements (1-2min each) → moderator conferral + judgment	Groups assign various roles and specific arguments to research • During the debate at least three talking points are required per participant, yet the open format allows those with more to say this capacity	controversial topic of GMOs on the internet, students will develop an appreciation for the efficacy and depth of biological science by diving into research on topics of their choosing

Examples of Instructional Plans
Content Area: Physical Education
Grade Level: 3rd
Content/Skill (as listed in the AHS Curriculum Scope/Sequence):
Basketball

AHS Curriculum Scope/Sequence Page Number: 45-46

Introduction to Concept	Student Activity	Differentiation/ Personalization	Student Outcome

The teacher will:
• Review past skills learned in past
• Learn history of the game as to where it was invented and where it is widely played
• Practice skills such as dribbling, passing and shooting.
• Learn the proper rules of the game to play correctly and safe
	• The students will participate in activities that will allow the students to practice and refine skills regarding to basketball.
	• Activities such as,
	  • Knockout
	  • King/Queen of the Court
	  • Pass Attack
	  • Steal the Bacon
		• Students who are proficient in basketball will often get paired together in order to encourage each other to get better.
		• Students who find shooting a basketball too easy can have the height of the rim adjusted higher and will be encouraged to shoot further away.
		• Students who find shooting a basketball to hard
			• The Students will be able to:
			  • Shoot a basketball with proper form
			  • Pass to a teammate
			  • Dribble without committing a penalty in an open space

		can have the rim lowered and can be giving a lighter basketball to shoot.	

Examples of Instructional Plans

Content Area: Literacy

Grade Level: 4

Content/Skill (as listed in the AHS Curriculum Scope/Sequence):

● Write a variety of pieces including poetry, opinion, narrative, informational, and business letter.

● Use and explain meaning of figurative language such as similes

AHS Curriculum Scope/Sequence Page Number: 147-148

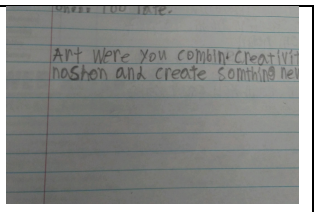
Introduction to Concept	Student Activity	Differentiation/ Personalization	Student Outcome
• Teacher will review with students what is the definition of a simile. Using the poem "Hamster, Hamster" from the book *Werewolf Club Rules* by Joseph Coelho students will locate similes used and describe how they are formed and adjectives used.	• Students are given a packet of Post-It notes and go outside to the playground. Here they hunt for things that can be described by using a simile, and then label it by writing a complete sentence simile on the Post- It, such as "The grass is as green as a dragon." After ample time to label objects, students are asked to retrieve at least three Post-Its that are not their own. Students can retrieve more as the supply allows. Once back in the	• Students who struggled to write their own similes have access to many examples from other students. • More capable students can be encouraged to add more colorful words and descriptions to their poem or to create a second poem. • Students create their poem to coincide with their own interests. • Students may chose to illustrate their poem using materials they select.	• Students will exhibit an understanding of similes. • Students will use at least three similes in the creation of their poem.

	classroom, each student places Post-It notes onto a sheet of plain paper. They are then directed to compose a poem using the similes collected. They may change words, order of words, add more similes, and/or remove similes to make the poem fit their taste. Students share poems at their tables, making revisions as desired and edits as needed. Final versions are written and illustrated.	• Students who need support with revision and editing can receive help from peers as well as from the teacher. • Students may type or use a text-to-type program as needed.	

Examples of Instructional Plans
Content Area: Literacy
Grade Level: 5
Content/Skill (as listed in the AHS Curriculum Scope/Sequence): Writing an introduction

AHS Curriculum Scope/Sequence Page Number: 148-149

Introduction to Concept	Student Activity	Differentiation/ Personalization	Student Outcome
• Students will begin with a discussion of how a writer grabs the audience's attention. The word "hook" will be used and defined.	• Over the course of two class periods, students will write hooks, examine hooks written by their classmates, and give opinions on	• Spelling does not count until the hook is in final form in a graded assignment. Editing will have been done, and students will have a chance to	• Students will be able to compose an effective hook without using and first-person pronouns, i.e. "I," "me," or "my."

	the effectiveness of the hooks.	correct spelling before grading occurs. • Talk-to-text programs can be used during composition. • Hooks may be typed. • A general topic is given, but students have the option to interpret the topic however they wish.	 "Art: where you combine creativity and imagination and create something new." - Grade 5 student

Examples of Instructional Plans

Content Area: History
Grade Level: 5
Content/Skill (as listed in the AHS Curriculum Scope/Sequence): Historians and History / Historiography 1- 3 Class periods

AHS Curriculum Scope/Sequence Page Number: 120-123

Introduction to Concept	Student Activity	Differentiation/ Personalization	Student Outcome
• Materials Needed: 1. Archival gloves for each student. 2. An older or unusual modern object, book, paper, etc. Historical artifact, one per student. • Students will answer the question, "where are historical objects and papers stored?"	• Students will begin in the science lab or similar setting. • Students will be asked to imagine they have entered an archive. Each student may only bring in a pencil and must be gloved. • Students are given a handout and asked to respond to the questions in the history notebook or lab journal.	• Students needing accommodations can have the questions read to them. • Students may use the notebook computer to voice type or type responses. • Students with physical differences can be given specific objects. Extension Activities: ▪ Invite an archivist or	▪ Students will be able to understand what an archive is, articulate typical rules for an archive and understand the role of archives in historical research and inquiry. ▪ Students will be able to use context clues, deductive and inductive reasoning and general knowledge to

The concept of an archive is introduced and definition given to write in the history notebook. • Students will begin with a discussion and brainstorming activity in a round-robin format to answer the question, "how do historians determine what an object is?" • The teacher will lead the class in reviewing, discarding and consolidating results with the original contributors consent. This builds trust and validates student input. • Teacher will review and explain rules for the hands-on activity and relate the importance of following rules to care for objects. • n.b. - Some historical sites provide 'loaner' reproduction	• *Optional:* Students may move from one station to another to extend the lesson over more than one class period. • Teacher will prompt students with, "does this make sense?" or "why do you think that" or "is it similar to anything you may have seen?" 1. Describe the object - measure, sketch/draw, use words ▪ Does it resemble something you have seen before? ▪ What is the object made from? ▪ Is this a common material? 2. Is this an everyday or special object? ▪ Do you think this was an expensive object? ▪ Would many or few people have owned this object? ▪ Where would this object be used? 3. Do we still use this object? ▪ Why or why not?	local historical expert to speak about artifacts and their importance. ▪ Some students may have family collections to archive and organize. Some students may choose to visit an archive. These are found in many public libraries and historical societies. ▪ Some students may wish to bring in an object from home to share with classmates or for help in determining use and purpose. Across the Curriculum: ▪ Arts: Students can prepare a museum-type label and the class can host an actual or virtual museum. ▪ Literacy: Students can engage in writing across the curriculum and create a story about the	make an informed guess about the age, use and purpose of an historical artifact. ▪ Students will be able to recall the steps in this inquiry to do analysis of other primary sources such as documents, art, music, photographs, films, etc., in future lessons.

objects for class study. • Objects provided: ●grapefruit spoon ● fish fork ● iced tea spoon ● Victrola, 45 or LP record. ● triangular can opener ● 19th century book ● railroad spike ● transistor radio or Walkman or cassette tape ● floppy disk ● metal ice tray ● rabbit ears antenna ● slides or slide tray ● inkwell	▪ What makes this object interesting? . Where could you learn more about this object? **This object is:**	object or its owners. ▪ Science: Students can write the results in a lab report format.	

Examples of Instructional Plans

Content Area: Literacy
Grade Level: 6-7
Content/Skill (as listed in the AHS Curriculum Scope/Sequence):
Read literature across genres.

- Understand literary elements, such as setting, plot structure, character development, symbolism and theme.
- Craft a written response and creative project based on a piece of literature.

AHS Curriculum Scope/Sequence Page Number: 150-152

Introduction to Concept	Student Activity	Differentiation/ Personalization	Student Outcome
• Teacher will: ▪ distribute summer reading	• Students will: ▪ select two pieces of	• Students will: • select books to read from a list	• Students will have a completed,

packet that includes overview of summer reading assignment, reading list, project list, and detailed description of written assignment. • Teacher will, as needed,: ▪ reiterate meaning of literary terms related to summer assignment: setting, plot, character development, symbolism, and theme. ▪ introduce reading list and clarify genres, which include classic fiction, modern fiction, science fiction, realistic fiction, historical fiction, and nonfiction (biographies, autobiographies, scientific literature, and works about art, archeology, and music). ▪ introduce list of creative	literature from reading list according to their interests ▪ read self-selected titles ▪ write a review of one of the titles, identifying genre, setting, characters, plot, symbolism, and theme ▪ design and complete a self- selected creative project on the second title they read ▪ bring review and project to school in September	that is differentiated by both ability and interest • select a project type that reflects their particular interests, talents, skill levels, and/or knowledge base. Projects will range from: ▪ writing a play ▪ writing a song ▪ writing a poem ▪ writing and illustrating a children's book ▪ creating a game ▪ writing a promotion campaign for a movie about a book ▪ creating a video promotion for a book ▪ converting a book into a puppet show ▪ making scale drawings or a relief map of a setting in the book ▪ cooking a food mentioned in a book ▪ composing a correspondence between characters ▪ turning a character or	edited book review, submitted with rough and final drafts. • Students will have a completed project with title, author, and own name on identifying label.

projects, reiterating expectations and providing examples. ▪ introduce written portion (book review) of summer assignment and provide examples. • Teacher will remind students in August of summer reading assignment. • Teacher will provide time and space in September for students to share their work.		event into a fairy tale ▪ writing a recommendation as if you are a literary agent	

Examples of Instructional Plans
Content Area: Spanish
Grade Level: 7-8
Content/Skill (as listed in the AHS Curriculum Scope/Sequence):
Students will be able to articulate and create sentences in the present, present progressive and near future and past.

AHS Curriculum Scope/Sequence Page Number: 162-165

Introduction to Concept	Student Activity	Differentiation/ Personalization	Student Outcome
• Students are read a short fairy tale in Spanish with pictures and asked basic comprehension and vocabulary questions in Spanish by teacher. • Students are given their own	• Students are given a chart to fill in after reading it. The sections of the chart are WORDS I LEARNED (by context or pictures.) GUESSES, and NO IDEA (Words I have to look up.) • Students then create 5 questions based on the	• The book selected by the teacher is first read to match each particular student level. Using the same story and theme, the students must change	• Students will be able to ask, and answer questions in Spanish, both in writing and orally. • They will be able to recognize

short, basic fable or fairytale picture book they are already familiar with, but written in Spanish. For example, The Little Red Hen (La Gallinita Roja) or Three Little Pigs. (Los Tres Cerditos) • The students read the book quietly and then out loud to themselves.	book and provide a complete sentence answer. • Student creates a Quizlet with the new words they learned, guessed or figured out and share it with the rest of the class to practice. • Student then reads book aloud to the class twice and asks the comprehension questions after the words have been studied on Quizlet. • Students then categorize the word on their list and any other important words by verb, noun, adjective.	6 nouns, 5 verbs and 5 adjectives in the story to help them learn and use new vocabulary in a familiar context. Nouns classified as masculine and feminine and verbs by conjugation and tense. • They must use a slideshow or PowerPoint and put pictures or animation to help express the meaning. • As they did before, they create a Quizlet with the important new vocabulary and images to share with the other students to learn. • Student also creates 5 comprehension questions about the story. • Student then reads their	verbs, nouns and adjectives as well as their forms, tenses and conjugations. • They will learn new vocabulary and be able to use it in a context that will help them grasp it and understand it.

		new version of the tale and asks the comprehensi on questions they created to the class.	

Examples of Instructional Plans
Content Area: (i.e. Math, Literacy, Science, Social Studies, Spanish, French, Classics/Latin, Music, Art, PE)
Grade Level: 4
Content/Skill (as listed in the AHS Curriculum Scope/Sequence): Thinking Skills

AHS Curriculum Scope/Sequence Page Number: G/T Appendix

Introduction to Concept	Student Activity	Differentiation/ Personalization	Student Outcome
Unit Title: ***Reasoning*** *Unit includes:* *Deductive *Inductive *Inference *Syllogisms *Venn Diagrams -Intersecting -Sets & subsets *Analogous relationships - Pictorial - Mathematical - Verbal * Sequences -Pattern -Trend -Function ***Part 1.*** Deductive and Inductive *Direct instruction:* >*Explain* inductive and deductive *Inductive – specific to general	***Students will:*** engage in two critical thinking puzzles over the course of one class period. *Puzzles include:* *Deductive puzzles (process of elimination) with a story, clues, and a grid 5x5 or greater. Increasing in difficulty as the sessions go by. Series of 4 lessons culminates in students making their own puzzles of the types used in class. *Suggested Resources:* Logic: Thinker Sheets, Becky Daniel, Good Apple Inc. 1989.	*Differentiation by readiness:* Done when classroom teacher is taking a group for differentiated work in language arts. *Differentiation by interest:* Applications to favorite subjects *Differentiation by product and process:* students choose the type of puzzles they make based on those they have done with instruction.	*Formative:* Completed puzzles *Summative:* Puzzles they create

*Deductive - general to specific. It's when you go from a lot of information to one specific answer. >*Visual support:* Draw two triangles on the board to match inductive & deductive. >*Memory help:* Pointing to the inverted triangle *Deductive is when you go down from a lot of information to one important piece. Deductive and down both start with the letter d. *Inductive is when you start with only a little information. It's kind of like a diving board and a swimming pool. You start on the tip and jump into all of the information. >When you put them both together you get reasoning. Good reasoning which solves problems and saves a lot of time over random thought. *Draw the two triangles together like an hourglass as the above is said. >*Analogy:* Detectives on TV - Sometimes	Orbiting with Logic, Bonnie Risby, Prufrock Press, 2005. Mind Benders: Book 4, Michael Baker, Critical Thinking Co. 2005.		

there is a big mess at the crime scene and that detective has to figure out what all is important and what is not. Sometimes there is just one little thing like a hair. >*Question:* Which one is deductive and which one is inductive? How do you know?			

Forum/GMS Umbrella Topics

2018 - 2019

	Trimester 1	**Trimester 2**	**Trimester 3**
6th Grade	ORIGINS	Triumph/Tragedy	
7th Grade	ORIGINS	Triumph/Tragedy	Capstone
8th Grade	ORIGINS	Triumph/Tragedy	Capstone

2018-2019

GMS	Person of the Day

2019 - 2020

	Trimester 1	**Trimester 2**	**Trimester 3**
6th Grade			
7th Grade			Capstone
8th Grade			Capstone

2019-2020

GMS	Person of the Day

2020 - 2021

	Trimester 1	**Trimester 2**	**Trimester 3**
6th Grade			
7th Grade			Capstone
8th Grade			Capstone

2020-2021

GMS	Person of the Day

Early Learners 2021-2022

Month	Themes
September	Back to School All About Me Fall/Autumn Apples
October	Fire Safety Community Helpers Pumpkins Halloween
November	Five Senses Shapes My Family Thanksgiving
December	Gingerbread Winter Holidays around the World
January	Snowmen Hibernation and Polar Animals Sports Transportation
February	Groundhog's Day Valentine's Day Dental Health
March	Dr. Seuss Weather Farm Zoo Dinosaurs
April	Space Reptiles/Amphibians Reduce, Reuse and Recycle
May	Our Growing Garden Insects Picnic/Camping Ocean/Beach
June	Summer Fun

TRIMESTER 1: MATH

	SEPTEMBER	OCTOBER	NOVEMBER
Kindergarten	Same, Different Sets Number Order	Numbers to 10 Tens and Ones Number Bonds, Spanish numbers 1-10	Compare Numbers Addition Counting On Subtraction, Basic Spanish Addition-Subtraction
Grade 1	Numbers to 10 Number Bonds Ordinal Numbers	Addition to 10 Subtraction to 10, Addition, subtraction in Spanish	Numbers to 40 Greater than/Less than, more than-less than in Spanish
Grade 2	Numbers to 1000 Ordinal Numbers Greater than/Less than, numbers one to thousand in Spanish	Addition and Subtraction with/out renaming	Addition and Subtraction with/out renaming Intro to multiplication/division (2 and 3 tables)
Grade 3	Numbers to 10,000 Ordinal Numbers, numbers one to a thousand in Spanish	Addition/subtraction Review renaming Bar models- two step word problems	Addition/subtraction Review renaming Bar models- two step word problems Multiplication/division Review (2, 3, 4, 5, 10)
Grade 3	Review Addition and Subtraction	Multiplication Basic Spanish multiplication,	Division
Grade 4	Review Operations How to read a word problem	Introduction to Fractions Types of bar models Sprints mental math	Topics in Fractions Word problems and bar models Sprints mental math
Grade 5	Whole number operations, place value to billions Word problems and bar models Sprints mental math	Fractions - the four operations Word problems and bar models Sprints mental math	Ratios/percentage Real world math applications Word problems and bar models Sprints mental math
SCHOLARS 6	Review grade 5 Objectives	Operations with Integers, writing and	Proportions, percents, equations with

		solving equations	fractions and decimals
SCHOLARS 7	Pre-algebra review, order of operations, writing expressions and equations	Inequalities, proportions, percents	Relations and functions, linear equations
SCHOLARS 8	History of Math- DEI focus on lesser known mathematicians across cultures, Intro to Geometry, reasoning and proof	Lines	Triangles

TRIMESTER 2: MATH

	DECEMBER	JANUARY	FEBRUARY
Kindergarten	Subtraction Counting Back Shapes Patterns	Length Weight Size Capacity	Addition and Subtraction Numbers to 40, Numbers to 40 in Spanish
Grade 1	Money, Asking cost in Spanish, dollars and cents	Length and weight	Intro to Multiplication And division
Grade 2	Money, Asking cost in Spanish, dollars and cents	Length and weight, Length weight terms in Spanish,	Multiplication And division (5, 10 tables)
Grade 3	Money Asking cost in Spanish, dollars and cents	Length and weight Length weight terms in Spanish, decimals	Review Multiplication/division Build on Bar models, area/perimeter
Grade 4	Introduction to decimals Word problems and bar models	Decimals Word problems and bar models	Rate Word problems and bar models
Grade 5	Decimals Word problems and bar models Sprints mental math	Percentage Word problems and bar models Sprints mental math	Interest and Rate Word problems and bar models Sprints mental math
SCHOLARS 6	Exponents, writing and simplifying expressions	Graphing, functions	Linear equations
SCHOLARS 7	Probability, exponential functions	Factoring and multiplying polynomials	Quadratic functions
SCHOLARS 8	Quadrilaterals	Similarity	Right triangle/ trigonometric ratios

TRIMESTER 3: MATH

	MARCH	APRIL	MAY
Kindergarten	Ordering More/Less Time	Numbers to 100, numbers to 50 in Spanish	Even/Odd Fractions
Grade 1	Mental math fractions	Time to the hour/half hour, telling time in Spanish	Geometry (shapes), shapes in Spanish
Grade 2	Mental math with addition/subtraction fractions	Time to the 5 minute Elapsed time Capsity	Geometry Area/Perimeter, Shapes in Spanish
Grade 3	Mental math with addition/subtraction fractions	Time to the minute Elapsed time Capsity	Geometry Area/Perimeter Symmetry in art
Grade 4	Money and currency Word problems and bar models Sprints mental math	Units of measure Word problems and bar models Sprints mental math	Graphing Word problems and bar models Sprints mental math
Grade 5	Statistics Word problems and bar models Sprints mental math	Geometry and Shapes Word problems and bar models Sprints mental math	Volume and Geometry Tessellations and Symmetry Sprints mental math
SCHOLARS 6	area, volume	radicals	Non-linear equations
SCHOLARS 7	Radical functions, trigonometric ratios	sequences	Rational functions
SCHOLARS 8	Area and volume	Circles	Transformations

TRIMESTER 1: SCIENCE

	SEPTEMBER	OCTOBER	NOVEMBER
Kindergarten	Five Senses	Apples, Pumpkins	Map Skills
Grade 1	None	STEM Forces and Motion	None
Grade 2	Magnets	None	None
Grade 3	Oceans	Oceans	Oceans
Grade 4	Weather and Climate Clouds and Seasons	Weather and Winds Weather Predictions	Weather Storms and Disasters
Grade 5	Introduction to scientific procedure Earth basic systems	Geology and mechanical weathering Introduction to scientific methods	Geology and chemical weathering Experimentation and data collection and lab reports
SCHOLARS 6	Bones, muscles, skin	Nutrition, digestion,	Circulation, respiration, excretion
SCHOLARS 7	Microscopes, cell parts and functions	Chemical reactions within cells	Cell division and the cell cycle, asexual reproduction, meiosis
SCHOLARS 8	Microscopes, cell parts and functions	Chemical reactions within cells	Cell division and the cell cycle, asexual reproduction, meiosis

TRIMESTER 2: SCIENCE

	DECEMBER	JANUARY	FEBRUARY
Kindergarten	Winter,	Weather, weather in Spanish	States of Matter
Grade 1	None	Animals	Animals
Grade 2	None	Rocks/Volcanoes/ Earthquakes	None
Grade 3	Book Support	Space, planets in Spanish	Space
Grade 4	Engineering and infrastructure - automobiles, trains, ships	Engineering and infrastructure - tunnels, bridges,	Engineering and infrastructure- electricity, gas, water, computer networks STEM Careers
Grade 5	Simple machines and experimental design	Simple Machines Simple machines in the Ancient world	Simple machines Catapult Simple machines in the modern world STEM careers
SCHOLARS 6	Nervous system, reproduction	Immunity and disease	Animal kingdom, sponges, worms
SCHOLARS 7	Genes and patterns of heredity	DNA and RNA, Protein synthesis	Modern genetics and DNA technology
SCHOLARS 8	Genes and patterns of heredity	DNA and RNA, Protein synthesis	Modern genetics and DNA technology

TRIMESTER 3: SCIENCE

	MARCH	APRIL	MAY
Kindergarten	----	Spring	Insects, Living vs Nonliving
Grade 1	None	Heat, Light, Sound	Plants
Grade 2	Birds	Birds	Birds
Grade 3	Electricity	Electricity	none
Grade 4	Microorganisms Microscope and Parts	Microorganisms Illustrations and descriptions	Microorganisms Classifying and comparing objects
Grade 5	Ecology and Environment Systems and interdependence	Ecology and Environment Environmental Politics	Ecology and Environment Environmental action
SCHOLARS 6	Mollusks, arthropods, fish,	Birds, mammals, animales in Spanish	Animal behavior
SCHOLARS 7	Velocity, speed, acceleration	Momentum, Newton's Three Laws of Motion	Newton's Three Laws of Motion
SCHOLARS 8	Velocity, speed, acceleration	Momentum, Newton's Three Laws of Motion	Newton's Three Laws of Motion

TRIMESTER 1: SOCIAL STUDIES

	SEPTEMBER	OCTOBER	NOVEMBER
Kindergarten	Getting to know classmates/school School Community	Farms	Thanksgiving Now vs. Long Ago
Grade 1	Continent/country/city/town	None	Families
Grade 2	School social skills Flat Stanley Compass Rose Continents/Oceans Continent/country/city/town	Africa (each continent we look at culture, geography, landforms/waterways, art, music, people) Economics (how to run a business)	North America
Grade 3	Social Skills Exploration of N. America	Life in the Colonial Days	Conflicts leading up to the Revolutionary War
Grade 4	Geography of North America and indigenous peoples	Early settlements and Massachusetts history	Regional political and economic differences War of 1812 Enslaved people and slavery
Grade 5	History and Historians Enslaved people and slavery	U.S. Civil War - Pre Civil War - Causes - Viewpoints Enslaved people and slavery	U.S. Civil War - War begins Enslaved people and slavery
SCHOLARS 6	Historian's Craft What is History?	Columbian Expo Consumerism Primary Source Lab	Diversity and Immigrants Oppressed Groups
SCHOLARS 7	-Contemporary news/social topics -Paraphrasing/ Summarizing skills -What is history?	Theodore Roosevelt And Taft: Foreign Relations and World Power Woodrow Wilson	World War I
SCHOLARS 8	New Deal: Part II	New Deal: Part II	Rise of

	--Mexican-Americans --Native Americans --Women --African Americans --Artists and Culture --Labor issues, unions, etc.	--Mexican-Americans --Native Americans --Women --African Americans --Artists and Culture --Labor issues, unions, etc.	Totalitarianism in Europe--Italy, Spain, Germany, USSR, Japan Spanish: *Movie Under the Same Moon. Cesar Chavez, Mexican Union activist.*

TRIMESTER 2: SOCIAL STUDIES

	DECEMBER	JANUARY	FEBRUARY
Kindergarten	Economics/Money Producers and Consumers	Respect Helping Others Famous People	Respect Same and Different
Grade 1	Holidays Around the World	None	Biographies
Grade 2	Antarctica	Landforms and waterways	South America
Grade 3	Early Government	Early Government	Lewis and Clark
Grade 4	Revolutionary War Geography	Constitution and Crisis Enslaved people and slavery Abolitionism	Early Republic and Federalism Enslaved people and slavery
Grade 5	Civil War -Major Milestones and key events Role of telegraph, railroad and media	U.S. Civil War - Life at home - Life as a child - Life as a soldier	Reconstruction Enslaved people and slavery Moral choices
SCHOLARS 6	Reform and Reformers Turn of Century Hull House	National History Day Muckraking and Journalism	Progressivism and Its Allies National History Day
SCHOLARS 7			
SCHOLARS 8			

TRIMESTER 3: SOCIAL STUDIES

	MARCH	**APRIL**	**MAY**
Kindergarten	Respect Same and Different		Community Helpers
Grade 1	None	National Symbols	Economics
Grade 2	Australia	Europe	Asia
Grade 3	Lewis and Clark	Native Americans	Native Americans
Grade 4	Early Republic Enslaved people and slavery	Jacksonian America Enslaved people and slavery	Political Conflict and international relations
Grade 5	Reconstruction Era Freed people Immigration	Reconstruction Era and growth of cities Immigration	Summary of Changes in the social, economic and political landscape
SCHOLARS 6	Spanish American War National History Day	Expansionism	Roosevelt - Taft - WW1 Year in Review
SCHOLARS 7			
SCHOLARS 8			

TRIMESTER 1: LANGUAGE ARTS/LITERACY

	SEPTEMBER	OCTOBER	NOVEMBER
Kindergarten	Handwriting Letters/sounds	Handwriting Letters/sounds CVC (consonant-vowel-consonant) words Writing sounds/words and labeling pictures	Handwriting CVC words Stretching/sounding out words and labeling pictures
Grade 1	Handwriting Common nouns Sentences	Handwriting Adjectives Predicting Non fiction Short stories	Handwriting Verbs Opinion writing setting/character Non fiction
Grade 2	Handwriting Common nouns Sentences Slipping in the question Predicting Capitalization Punctuation (continues all year)	Handwriting Proper nouns Adjectives Slipping in the question Supporting our ideas Non fiction Story writing (problem/solution) Onomatopoeia Alliteration	Handwriting Verbs Supporting our ideas (verbally and written) Opinion writing setting/character Non fiction
Grade 3	Cursive Native American Stories Review of complete sentences Spelling and/or vocabulary Parts of speech Nouns Adjectives Adverbs Interjections	Cursive Native American Stories Introduction of paragraphs Good topic sentence Spelling and/or vocabulary Parts of Speech Pronouns Verbs Action Helping Verb phrase Linking	Cursive Topic sentences Supporting details Wrap up Native American stories Colonial times books Spelling and/or vocabulary Parts of speech Prepositions Conjunctions
Grade 4	Analysis of written work to identify setting, plot, theme, genre.	Introduction to stems, roots and etymology Analysis of characters and author intent and	Caesar's English word study 3 to 5 paragraph essays

	Paragraph writing. Writing for a specific audience, such as business letter	purpose in literature. 3 to 5 paragraph essays for a specific purpose Introduction to 8 parts of speech	Proper use of punctuation Revolutionary War books as historical fiction 8 parts of speech
Grade 5	Caesar's English Recognize 8 parts of speech Linking verbs Webs to Outline Book study and introduction to literary analysis Poetry as creative expression	Caesar's English Sentence types - simple, compound, complex Structure of a 5-paragraph essay Poetry forms and functions	Caesar's English 8 parts of speech Clauses Caesar's English 5-paragraph essay Reading with purpose and critique Writing process and revisions
SCHOLARS 6	Hero's Journey through Summer reading/ Hobbit Grammar Nouns Vocab Essay	Hobbit Grammar Adjectives Vocab Topic Sentences & Supporting Details	*Hobbit* Grammar Verbs Vocab from Classical Roots Writing from Research
SCHOLARS 7	Review of Parts of Speech, Level I Classical Roots Vocabulary *To Kill a Mockingbird* Paragraph structure	Review of Parts of the Sentence, Level II Classical Roots Vocabulary *To Kill a Mockingbird* Paragraph structure	Phrases, Level III *To Kill a Mockingbird* Classical Roots Vocabulary
SCHOLARS 8	Review of Parts of Speech, Level I *Fahrenheit 451*	Review of Parts of the Sentence, Level II 5-par essay	Phrases, Level III *Lord of the Flies* *A Separate Peace*

TRIMESTER 2: LANGUAGE ARTS/LITERACY

	DECEMBER	**JANUARY**	**FEBRUARY**
Kindergarten	Handwriting Small moment stories (stretching words, writing 1-3 sentences)	Handwriting Nursery Rhymes Retelling	Handwriting Reader's Theater Fluency How-To books
Grade 1	Review nouns, adj, verbs Details in sentences	How-To Writing Fluency Retelling	Non-fiction writing Fluency Retelling
Grade 2	Review nouns, adj, verbs Adverbs Dictionary	Poetry Alliteration Rhyming Fluency	Beginning of a story (hooking the audience) Middle of a story (small problems/big problem) Summary
Grade 3	Continuation of paragraphs Cursive Parts of speech Interjections Adverbs Writing conventions, Spelling/vocabulary Colonial times books	Continuation of paragraphs, Cursive Parts of a sentence Subject Predicate Writing conventions Spelling/vocabulary Colonial times books Read alouds of various books such as *The Year of Miss Agnes*	Continuation of paragraphs, Cursive Types of a sentence Declarative Interrogative Imperative Exclamatory Writing conventions Spelling/vocabulary Colonial times books Read alouds of various books such as *Star Girl*
Grade 4	Caesar's English Identifying 8 parts of speech and proper usage Introduction to literary analysis.	Caesar's English 8 parts of speech Editing, proofreading and tools to enhance writing Understanding critique	Caesar's English Subject and object Pronouns Literary genres Book Review
Grade 5	Caesar's English Introduction to editing and revision conventions 5 paragraph essay	Caesar's English Proper use of titles and quotations and plagiarism Phrases and clauses	Caesar's English Explore individual voice and style through 5 paragraph biographical essay

	Literary criticism of selected work	5 paragraph essay to include narrative, compare/contrast and opinion, and standard writing conventions. Short stories and multicultural literature	Appositives Ongoing multicultural biographies as personal reflection and narrative Short stories and multicultural literature
SCHOLARS 6	Hobbit Grammar Notecards Verbs Vocab from Classical Roots Writing from research	Hobbit Grammar Notecards Adverbs Vocab from Classical Roots Writing from Research	Grammar Notecards Which vs that Vocab from Classical Roots Shakespeare (TBD) From Paragraph to Essay
SCHOLARS 7			
SCHOLARS 8			

TRIMESTER 3: LANGUAGE ARTS/LITERACY

	MARCH	**APRIL**	**MAY**
Kindergarten	Nonfiction writing Digraphs Word Families	Digraphs Spring stories Writer's workshop	Problem and Solution Simple story writing Class books
Grade 1	Non-fiction writing Sentence structure	Story writing Beginning, Middle, End Illustrating Summarizing	Story writing Beginning, Middle, End Illustrating Summarizing
Grade 2	Ending of a story (tying it all in) Fictional story writing	Fairy tales Fractured tales Perspective Theatre Illustrating	Invitations Friendly letters Fairy tales Fractured tales Perspective Theatre
Grade 3	Biographies Continuation of paragraphs Cursive Types of a sentence Declarative Interrogative Imperative Exclamatory Writing conventions Spelling/vocabulary Colonial times books Read alouds of books such as *A Friendship for Today*	Biographies Continuation of paragraphs Cursive Types of a sentence Declarative Interrogative Imperative Exclamatory Writing conventions Spelling/vocabulary Colonial times books Read alouds of books such as *A Friendship*	Biographies Continuation of paragraphs Cursive Types of a sentence Declarative Interrogative Imperative Exclamatory Writing conventions Spelling/vocabulary Colonial times books Read alouds of books such as A Friendship
Grade 4	Caesar's English Introduction to myths 8 parts of speech and diagram a sentence Introduction to small group discussion based on a novel Performance reading of selected piece	Caesar's English Regional, national and international myths and origin stories Small group discussion based on a novel Grammar review and application	Caesar's English Regional, national and international myths and origin stories Small group discussion based on a novel
Grade 5	Caesar's English	Caesar's English	Caesar's English

	Nonfiction 5 paragraph essay Author Study Term Project Literature circles based on selected work Review of grammatical conventions and parts of speech	Nonfiction 5 paragraph essay Author Study Term Project Literature circles based on selected work Culminating activity for grammatical conventions and parts of speech	Nonfiction 5 paragraph essay Author Study Term Project Writing across the curriculum - topics in history or science
SCHOLARS 6	Shakespeare (TBD) Grammar Through Conjunctions in Magic Lens Vocab from Classical Roots Finish Book Persuasive Writing	Magic Lens To Interjections Vocab Classical Roots Book A Speeches and Arguments	American Writers 19th C Vocab Classical Roots lessons 9/10 Literary Criticism Year in Review
SCHOLARS 7			
SCHOLARS 8			