

Fourth Grade

English Language Arts

Fourth grade students continue to build on their ability to think within, beyond, and about fiction and non-fiction texts. Fourth grade students learn to identify and interpret various literary techniques and identify and compare story elements by engaging with challenging and engaging novel studies through written responses, group discussions, and group projects. Students have a shared literacy experience with the following novels: **Bridge to Terabithia, The Fighting Ground, and Phantom Tollbooth.**

Fourth grade students progress as writers by having a variety of experiences and support as they draft summaries, narratives, responses to literature, informative, persuasive, comparative and contrast essays, in addition to, an extensive science oriented research report. We use Culham's 6+1 Traits of Writing as our writing model of instruction & assessment to guide our fourth grade writers. This model provides a common language for us to communicate about the characteristics of writing. The traits are: Ideas, Organization, Voice, Word Choice, Sentence Fluency, Conventions, and Presentation. Utilizing these traits establishes a clear vision of what good writing looks like.

Fourth grade students continue to build on their prior learning of grammar, spelling, and vocabulary development.

Essential Questions:

- How do I become a great reader?
- What does it mean to “go below the surface of the obvious” when reading?
- What is a good writer?
- How does the writing process help my writing?

Learning Outcomes:

Reading Foundational Skills

- Students will be able to identify and apply appropriate word analysis and vocabulary strategies (word patterns, structural analysis) to identify unfamiliar words.
- Students will begin to use etymologies to construct meaning of new words.

Literature

- Students will be able to analyze the main idea and supporting details in a wide variety of texts (varying in genre and complexity).
- Students will be able to determine story elements (explicit and implicit) and be able to identify conflict, resolution, and character motives, and develop an increasing awareness of how universal themes play out in literature.

- Students will be able to identify multiple points of view within a given text and evaluate the author's use of various literary techniques.

Informational Text

- Students will be able to search for, use, and summarize informational text features and text structures to organize or categorize information, to answer questions, or to perform specific tasks.
- Students will be able to critique and analyze text structure (sequence, cause/effect, compare/contrast and problem/solution) to predict meaning to deepen understanding.

Writing

- Students will be able to develop and strengthen their writing by planning, revising, editing, and publishing.
- Students will be able to write multi-paragraph opinion pieces, informative/explanatory texts, narratives and responses to literature.
- Students will be able to increasingly transfer their learning of grammar and spelling conventions to their own writing.

Resources Used: Culham's 6+1 Writing Traits, Caesar's English Volume 1, Junior Great Books, Novel Study, Modern Curriculum Press Spelling Curriculum

Math

Level 4

Learning Outcomes:

Numbers Through Millions

- Recognizes, writes, orders & compares numbers up to nine digits
- Able to compare and order whole numbers by rounding through a million
- Writes numbers in expanded notation

Addition and Subtraction

- Estimates sums and differences
- Applies addition and subtraction properties
- Evaluates expressions using parenthesis

- Solves equations and equalities

Multiplication and Division

- Relates multiplication and division
- Divides with remainders
- Evaluates expressions using all four operations
- Writes equations by comparing expressions
- Able to recall with automaticity multiplication and division facts up to 12

Algebra and Functions

- Writes and evaluates expressions containing variables
- Uses function tables
- Writes function rules using variables
- Solves multiplication problems involving multiplying multiple digit numbers (multiplying a 3 digit number by a two digit number)
- Estimates products by rounding factors
- Uses facts and patterns to multiply mentally

Division and Number Theory

- Solves division problems involving multi-digit numbers
- Able to find quotients with and without remainders
- Uses facts and patterns to divide mentally
- Able to find factors of numbers to 50
- Determines whether a number is prime or composite
- Determines prime factors of composite numbers

Fractions:

- understanding equal parts, fractional parts of figures & sets
- Equivalent, comparing and simplifying fractions
- Renaming mixed numbers
- Addition, subtraction, multiplication and division of fractions (primary goal)

- Factorization
- Renaming fractions as decimals

Measurement & negative Numbers

- When you convert larger units to smaller units, you multiply. When you convert smaller units to larger units, you divide
- For every positive number, there is an opposite negative number

Decimals

- The relationship between fractions & decimals
- Comparing & ordering decimals
- Addition & subtraction of decimals
- Estimating decimals

Graphs & Algebra

- Students use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.
- Graphing functions & equations
- Coordinate grids

Statistics & Probability

- Use of line plots, coordinate graphs, tables, and charts to display and organize data
- Mean, median, mode & range
- Making predictions & outcomes with probability

Geometry & Measurement

- Define & classify plane figures. Describe and model solid figures by relating them to plane figures.
- Make drawing, measure, and use formulas to show how perimeter and area relate.

Resources Used: Math in Focus, Modern Curriculum Press Math Resources

Level 5 Math

Math Level 5 covers concepts including number theory and fractions, equivalence in fractions and decimals, algebra, adding and subtracting fractions and mixed numbers, multiplying and dividing fractions, operations with decimals, data and graphs, geometry, measurement, percentages, integers, and coordinate planes.

The goal is to provide a safe learning environment where every student feels comfortable to participate and ask questions. Students will be guided through developing good strategies for study habits, note taking skills, and computation. Curriculum will be enriched beyond the basic scope and sequence to encourage students to develop a better understanding of the "big picture."

Essential Questions:

How do we translate written problems into numbers and symbols and vice-versa?

How can numbers be expressed in a variety of ways including fractions, decimals, percentages, equations and graphs?

Why is mastery of basic mathematical actions critical to future understanding of more advanced concepts?

Learning Outcomes:

Number Theory and Fractions

- Writes any number as a product of its prime factors
- Uses exponents to show multiples of a factor
- Identifies fractions and mixed numbers as points on a number line
- Renames fractions as mixed numbers to show simplest form

Equivalence between Fractions and Decimals

- Recognizes the relationship between place value in numbers and decimals and powers of 10
- Understands that numbers can be represented in the forms of fractions and decimals

Algebra

- ☐ Uses variables to represent potential solutions of problems
- ☐ Uses the Distributive, Commutative, Associative, Identity, and Equality Properties to solve equations

Add and Subtract Fractions and Mixed Numbers

- ☐ Adds fractions using equivalency to make common denominators
- ☐ Regroups as needed when adding and subtracting mixed numbers

Multiply and Divide Fractions

- Realizes that the product of two fractions results in a number of less value than either fraction
- Recognizes that division is another way of writing multiplication and applies this to rewrite division problems with fractions as multiplication problems

Operations with Decimals

- Understands that a decimal is the same as a fraction with a denominator of a power of 10
- Adds and subtracts decimals like whole numbers by lining up the decimal points
- Multiplies and divides decimals like whole numbers and places decimal point correctly in the resulting answer

Data and Graphs

- Uses a letter to represent an unknown number
- Writes and evaluates simple algebraic expressions in one variable by substitution
- Identifies and graphs ordered pairs in the four quadrants of the coordinate plane
- Solves problems involving linear functions with integer values; writes the equation; and graphs the resulting ordered pairs of integers on a grid.
- Identifies ordered pairs of data from a graph and interprets the meaning of the data in terms of the situation depicted by the graph
- Knows how to write ordered pairs correctly

Geometry and Measurement

- Knows that the sum of the angles of any triangle is 180 degrees and the sum of the angles of any quadrilateral is 360 degrees and uses this information to solve problems
- Measures, identifies, and draws angles, perpendicular and parallel lines, rectangles, and triangles by using appropriate tools
- Derives and uses the formula for the area of a triangle and of a parallelogram by comparing each with the formula for the area of a rectangle
- Constructs a cube and a rectangular box from two-dimensional patterns and uses these patterns to compute the surface area for these objects
- Understands the concept of volume and uses the appropriate units in common

measuring systems to compute the volume of rectangular solids

Percent

- Interprets percentages as a part of a hundred
- Finds decimal and percent equivalents for common fractions and explains why they represent the same value
- Computes a given percent of a whole number
- Identifies and represents on a number line decimals, fractions, mixed numbers, and positive and negative integers
- Adds, subtracts, multiplies, and divides with decimals
- Uses percentages and fractions to analyze and compare data sets of different sizes

Integers

- Adds with negative integers and subtracts positive integers from negative integers; verifies the reasonableness of the results
- Solves problems involving linear functions with integer values; writes the equation; and graphs the resulting ordered pairs of integers on a grid

Coordinate Plane

- Graphs ordered pairs and functions in the coordinate plane
- Completes a table of values for a given function, and chooses an equation for a given function table
- Graphs formulas and linear equations, and uses graphs to solve problems
- Writes equations for linear functions

Text: *Math in Focus - Singapore Math: Level 5*

Level 6 Math

Math students study the following topics:

- Operations with fractions and decimals
- Operations with integers with the goal of gaining automaticity
- Write and simplify expressions and solve one and two step equations with applications

- Simplify ratios and unit rates
- Write and solve proportions algebraically
- Percent/fraction/decimal equivalencies
- Percent markup and discount applications
- Collect, organize, and analyze data
- Identify geometric figures based on angle relationships
- Use information to construct triangles and quadrilaterals
- Apply algebra to formulas of polygons, circles and solids - perimeter, area, circumference, and surface area
- Coordinate geometry - graphing points, linear equations, and functions

A sample of enrichment topics and applications in Level 6 math may include:

- Problem solving: California Math League (CML)
- Problem solving: Math Olympiads for Elementary and Middle School (MOEMS)
- Mathematician Investigation
- Constructions of solids

Essential Questions:

- How do we translate verbal ideas to the language of mathematics?
- What are the different ways of communicating mathematics with clarity?
- How is balance relevant to mathematics?

Learning Outcomes:

- Students learn essential vocabulary and communicate using mathematical rhetoric.
- Students develop an appreciation for number systems and will be able to classify types of numbers in the real and imaginary number systems.
- Students develop fluency of operations with fractions, decimals, integers, and percent/fraction/decimal equivalencies.
- Students make connections between mathematical ideas, unknowns, and real world applications.
- Students practice basic algebraic concepts of writing, evaluating, and solving expressions and equations.
- Students exercise deductive reasoning, critical thinking, and flexible thinking

to apply core concepts to word problems and new mathematical experiences.

Text: *Big Ideas: Course 1 Advanced*

Social Studies:

Fourth grade students begin their social studies journey with a geography unit that will help orient and deepen their understanding of the themes of change that are presented throughout the year. Fourth grade students then move into a study of the Age of Exploration and pre-Columbian cultures. The culture and history of the Native American Nations and their encounters with early American explorers is examined from a variety of perspectives. Fourth grade students study the Early American Colonies and the political, religious, social, and economic institutions that developed during this period. Fourth grade students explore the causes, course, and consequences of the American Revolution and of the people and events associated with the development of the United States Constitution.

Geography

Essential Questions:

- How do geography, climate, and natural resources affect the way people live and work? OR How does where you live influence how you live?
- How do maps and globes reflect history, politics, and economics?
- What effect do people have on their environment?

Learning Outcomes:

- Students learn how the geography, climate, and natural resources of a region influence the economy and lifestyle of the people living there.
 - The students will learn about maps of locales, regions, and the world that demonstrate understanding of relative location, direction, size, and shape.
 - Students will locate and describe varying landforms and geographic features.
 - Students will examine the ways historical events have been influenced by physical and human geographic factors in local, regional, national, and global settings.
 - Students will identify the early land and sea routes to their states and European settlements noting the importance of geographical features.
 - Students can explain the use of the coordinate grid system of latitude and longitude to determine location.
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Age of Exploration

Essential Questions:

- What happens when different cultures meet?
- What caused Europeans to take such risky journeys?
- How was the world changed by the explorations of European nations?

Learning Outcomes:

- Students reconstruct the literal meaning of a historical passage by identifying who was involved, what happened, what events led to the developments, and what consequences or outcomes followed.
- Students will compare and contrast differing sets of ideas, values, personalities, behaviors, and institutions by identifying likenesses and differences.
- The students will analyze and explain the ways groups, societies, and cultures address human needs and concerns.
- The students are able to analyze cause & effect relationships and multiple causation, including the importance of the individual, the influence of ideas, and the role of chance.
- Students consider multiple perspectives of various peoples in the past by demonstrating differing motives, beliefs, interests, hopes, and fears.
- Students participate in reenactments of the encounters between Native Americans and explorers.
- Students identify the major European Explorers during the Age of Exploration.
- Students analyze the major reasons for exploration during the Age of Exploration.

Colonial America

Essential Questions:

- Why do people settle in new areas?
- How do change, diversity, and conflict relate to this nation's quest for and preservation of freedom?
- How would life be different if you lived in each of the Southern, Middle, and Northern colonies?

Learning Outcomes:

- Students understand the influence of location and physical setting on the founding of the original 13 colonies.
- The students are able to identify on a map the locations of the colonies.

- Students are able to compare and contrast the primary industry, major cities, and geographic features of each region.
 - Students are able to describe the political, religious, social, and economic institutions that evolved in the colonial era.
 - Students are able to describe the impacts of the English, Dutch, and French colonies that grew in North America as they searched for a Northwest Passage to Asia.
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Revolutionary War

Essential Questions:

- What are some things people are willing to fight for?
- What is fair treatment?
- What defines a Revolution?
- Why do people form governments?

Learning Outcomes:

- Students can explain the causes of the American Revolution.
 - The students understand the principles articulated in the drafting and signing of the Declaration of Independence.
 - The students understand the Revolution's effects on different social groups.
 - The students can identify and describe significant historical periods and patterns of change within and across cultures.
 - Students explore and in-depth look at the social, political and economic reasons people were willing to fight for.
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U.S. Government

Essential Questions:

- What is power?
- Where is the balance between personal freedoms and the common good?
- How does our country's court system affect the lives of citizens?
- How do the structures and functions of the U.S. government interrelate?
- How are governments created, structured, maintained, and changed?

Learning Outcomes:

- Students compare how groups have governed themselves in the past.
- Identify and explain the basic functions of the three branches of government.

- Students will understand how the Constitution is designed to secure our liberty by a system of balancing power between the three branches of government and the people.

Resources Used: The History of Us Volumes 1-3, Interact: Learning Through Experience Simulations

Science

Learning Outcomes:

1. Students will compare eye anatomy structures and functions and recognize these features in a cow's eye dissection.
2. Students will contrast the colors of the visible spectrum (400 nm-700 nm) and which cones are activated by which wavelengths.
3. Students will contrast ultraviolet wavelengths as shorter than visible wavelengths.
4. Students will contrast infrared wavelengths as longer than visible light.
5. Students will experiment with the concept of phosphorescence.
6. Students will examine white light as all colors as demonstrated by diffraction gratings.
7. Students will apply the law of reflection (and diffuse versus specular reflections).
8. Students will demonstrate through experimentation the brain retains a visual image for a fraction of a second.
9. Students will examine the concept of refraction.
10. Students will contrast concave and convex lenses.
11. Students will design and develop their own science fair project based on the scientific method.
12. Students will demonstrate that sound is produced by vibrations of particles.
13. Students will conclude that with sound vibrations the shorter the wavelength, the higher the frequency, and frequency is measured in Hertz.
14. Students will apply the speed of sound in air at sea level and how to estimate the distance of a lightning strike.
15. Students will compare the hearing range for humans (and other animals).

16. Students will differentiate between typical sounds and their decibel measures of sound intensity (volume).
17. Students will compare the structures and functions of ear anatomy.
18. Students will analyze echoes as sound reflections.
19. Students will apply sound concepts in a variety of laboratory experiments.
20. Students will classify leaves according to shapes, margins, and leaf arrangements.
21. Students will contrast the differences between monocotyledons, dicotyledons and conifers (angiosperms and gymnosperms).
22. Students will examine the basic formula for photosynthesis, and its oxygen contribution.
23. Students will compare the transport functions of the xylem and phloem (and the role of the cambium).
24. Students will simulate applications of dendrochronology.

Visual Arts

In fourth grade, students identify and apply the elements of art and principles of design. Students will be formally introduced to the concept of abstraction and learn that expressive qualities are not restricted to any particular style. Emphasis will be placed on the ability of students to value their own emerging style. Fourth graders will learn about art history.

Essential Questions:

- What tools do artists use to express their ideas?
- What are unique ways to use materials and processes?
- How might you demonstrate how to create a work of art using a variety of techniques?

Envision and Critique to Reflect:

The critique process informs judgments about artistic and aesthetic merits in works of art. The processes and philosophies of art and design inform interpretations in works of art. Students will have thoughtful conversations while describing what they see in the artwork based on process, techniques, elements and principles of art using appropriate art vocabulary to support their objective commentary.

Sample Activity: "Surreal Me"

Part 1: Acrylic painting

Part 2: "The real me" -Collage

Goal: To seemingly intertwine realism with surrealism in how we see ourselves and how we dream of ourselves. Students will explore surrealism concepts while recording what they see from direct observation in the mirror. Students will examine how past cultures and throughout art history animals, dreams and reality have been explored in art making.

Part 1: Surreal Me...Self-portrait as an animal.

Objective: Through the qualities of acrylic painting students will learn brush techniques, painting skills and color theory to build up a painting as they look closely and think imaginatively in creating a self-portrait as an animal.

Part 2: Collage...Self Portrait.

Objective: Through the qualities of collage materials students will learn that principles of design and elements of art contribute to developing a successful composition in arranging their self-portrait collage.

Artist: Salvador Dali, Native American animal spirits

Spanish

In our 4th grade Spanish program, we teach using curriculum and methodologies which will best help students meet the National Standards for Foreign Language Learning as well as meet the standards for foreign language listening, speaking, reading, writing, and cultural literacy.

Goals include: enhancement of reading, writing, speaking, and listening skills in English and Spanish, development of higher order cognitive skills, promoting global awareness and cross-cultural understanding, and development of increased functional proficiency.

Essential Questions:

- Who am I and how can I get to know you?
- What strategies can I use to communicate more effectively?

Learning Outcomes:

- Students will complete a thorough review of greetings, numbers, telling time, dates, identifying and describing objects, and talking about the weather and seasons.
- Students will name the parts of the body, head, and face, and practicing telling and asking people what hurts.
- Students will describe clothing, talk about how clothes look and fit, discuss prices, and tell to whom things belong.
- Students will talk about what they and others look like, personalities, and compare people, places, and things.

- Students will name the places inside and outside the home, talk about different rooms in a house, and describe where something is located.
- Students will learn and talk about items in the kitchen and describe activities, talk about having to do chores, and talk about activities they have just finished.
- Students will name the items used at the table and foods, talk about putting and bringing things, talk about different kinds of foods and drinks for each meal, discuss their personal preferences, and describe what belongs to them and others.

Music

Essential question:

How do you create music with modern technology?

Learning Outcomes:

Students will understand that:

Musical options will be enhanced using modern music technology.

Students will know that:

Having access to multiple sonic timbres will enhance creativity.

Students will be able to:

Analyze and differentiate between sonic textures.

Interpret modern technology to expand the creative awareness.

Reconstruct musical sounds they have heard in the past to create music.

Express themselves in new and creative ways.

Compose and create music.

Technology

Our 4th grade students learn through experiential, inquiry-based projects. There are four parts to each project. (1) Learning: students explore fundamental science concepts and gain knowledge to apply in the engineering process; (2) Doing: students think, brainstorm, and design to begin the engineering design process; (3) Making: students build, test, redesign, rebuild and retest their own designs; and (4) Writing: Students keep their own engineering notebook. In this notebook they will record observations, make predictions, record results of their plans, constructions and experiments. They will collect data, draw designs and reflect on their experiences.

Essential Questions:

- What is the design process and how is it used in engineering, animating, and programming?
- What are the 6 simple machines and can they really be used to make all of the machines in the world?

Learning Outcomes:

Students will understand:

- The purpose and uses of the engineering design process
- The 6 simple machines and how they relate to the design of other machines
- The purpose of an engineering notebook to articulate and share knowledge
- How to think flexibly and be persistent

Students will be able to:

- Use the engineering design process to innovate, design and build
- Innovate solutions
- Think analytically and critically by applying knowledge to new circumstances
- Think algorithmically to perform simple drag-n-drop programming
- Use technology to create simple animations
- Work collaboratively
- Reflect on their learning and articulate their reflections

Physical Education

Students within this age range will have mastered many locomotor and non-locomotor skills and be able to manipulate objects in a variety of ways. Students will play cooperatively and come up with group goals and support when necessary, as well as be able to work and play independently when given the chance. Understanding how exercise, movement, and fitness play a role in their health and wellness in general is an overarching principle that is important to understand at this time.

As this age group progresses, the idea of linking in social appropriateness and sportsmanship becomes very important to a sense of team, self, and school community. Individuality becomes more important and students start to gain a greater confidence with more time. Long-term fitness and sport performance goals become easier and clearer as the student grows into their own individual. The connections of movements to other movement patterns or sports becomes more clear

with time, and the connection of exercise and exertion to overall health and wellness also should be more clear.

Essential Questions:

- What physical and social skills are necessary to have a successful game or experience in physical education class?
- What are good examples of sportsmanship? Should sportsmanship look different in different sports/games?
- Can you be a leader without being overly vocal or "bossy"?
- Does this game/sport/activity relate to any other? How is it similar? How is it different? What skills overlap?
- How do you know that you are improving?

Learning Outcomes:

Students will be able to:

- Define appropriate rules, class, structure, and procedures for PE class.
- Apply given rules for class.
- Demonstrate willingness to participate in PE.
- Demonstrate sportsmanship and mutual respect for others regardless of any differences.
- Understand basic ways of how PE affects overall health and wellness as well as how physical activity improves academic performance.
- Demonstrate ability of positive social interaction within our class structure.
- Demonstrate the ability to agree on a common goal with a group.
- Display the ability to perform age appropriate locomotor and physical manipulation skills.
- Show participation and skill competency in aerobic, anaerobic, strength, endurance, sport and other physical exertion activities.
- Show flexibility, understanding, and compassion for others in all aspects of PE class.