



# AKS

ACADEMIC KNOWLEDGE AND SKILLS  
GWINNETT COUNTY PUBLIC SCHOOLS

## 4TH GRADE

2018-19 COMPLETE AKS

Gwinnett's curriculum for grades K-12 is called the Academic Knowledge and Skills (AKS) and is aligned to the state-adopted Georgia Standards of Excellence (GSE) in Language Arts, Mathematics, Science, and Social Studies for elementary school students. Gwinnett's AKS is a rigorous curriculum that prepares students for college and 21st century careers in a globally competitive future. The AKS for each grade level spells out the essential things students are expected to know and be able to do in that grade or subject. The AKS offers a solid base on which teachers build rich learning experiences. Teachers use curriculum guides, technology, and instructional resources to teach the AKS and to make sure every student is learning to his or her potential.

The Academic Knowledge and Skills curriculum was developed by our teachers, with input from our parents and community, in response to Gwinnett County Public Schools' mission statement:

*The mission of Gwinnett County Public Schools is to pursue excellence in academic knowledge, skills, and behavior for each student resulting in measured improvement against local, national, and world-class standards.*

In this booklet, you will find a complete list of the AKS for 4th grade. We encourage you to talk to your child about what he or she is learning.

**WELCOME TO 4TH GRADE!**





## **About the Academic Knowledge and Skills (AKS) Curriculum**

The AKS is Gwinnett's custom, Board-approved curriculum that spells out the essential things students are expected to know and be able to do for each subject at each grade level. Because the AKS details exactly what a student is expected to learn, teachers can tailor the classroom experience to meet individual needs. Gwinnett's AKS is a rigorous curriculum that sets a strong foundation, building year by year to prepare students for college and 21st century careers in a globally competitive future. The AKS includes all of the state's standards, including the state-adopted Georgia Standards of Excellence (GSE) in the areas of Mathematics, Language Arts, Science, and Social Studies for elementary students. The alignment of the AKS with standardized assessments ensures that Gwinnett students are well prepared for these measures of achievement. The AKS curriculum is aligned with state-mandated standards, assuring that students are prepared for state tests in core subjects for grades 3–5, part of the Georgia Milestones Assessment System (Milestones).

Since its inception in 1996, the AKS has reflected the collective wisdom of thousands of educators and community members who worked together to determine what students need to know and be able to do in order to be successful at the next grade level and in the future. This investment by GCPS' stakeholders has ensured that the AKS curriculum remains a rigorous and relevant blueprint for student learning in Gwinnett. As part of that ongoing effort, the GEMS Oversight Committee—made up of community and GCPS staff members—meets annually to review proposed additions, deletions, and changes to the AKS that come out of school and community surveys. Following validation by the committee, recommendations are submitted to the superintendent for approval by the School Board, with implementation the following school year.

## **About Testing in 4th Grade**

Gwinnett County Public Schools measures student achievement in a number of ways to ensure students are learning the curriculum. Our assessment program helps teachers monitor students' academic progress. Assessment data and information pinpoints students' strengths and weaknesses. This focus allows teachers to plan targeted instruction that promotes each student's success. The Georgia Department of Education has implemented the Georgia Milestones Assessment System (Georgia Milestones) which is a comprehensive assessment program. Students in grade 4 take an end-of-grade assessment in Language Arts and Mathematics. Learn more about testing on the GCPS website, or talk to your child's teacher.

## **Notes about this Booklet**

- This book includes the AKS for 4th grade. AKS booklets are available for other grade levels (K–8 and combined grades for high school) and by core academic subject (Language Arts, Mathematics, Science, and Social Studies) and Career and Technical Education. In addition, comprehensive books (blue cover) include the AKS for all elementary school grade levels (K–5) as well as the AKS in middle grades (6–8) and for high school (9–12). These booklets are posted in PDF form on the district website. Go to [www.gwinnett.k12.ga.us](http://www.gwinnett.k12.ga.us). From the pull-down menu on the left, select “I want to... Get a copy of... The AKS.”
- Parents also can find online PDFs of grade-level brochures (grades K–8) with a more general overview of what students will learn, available services, promotion requirements, and grade-level testing. The Choice Book serves this purpose for high school students, providing an overview of the high school experience, high school and postsecondary planning tools, and a “course catalog.” Parents receive a printed copy of their student's grade-level AKS brochure (K–8) at the start of the school year, and rising 9th graders receive a printed copy of The Choice Book later in the year.

## Character Education

The school system supports a mandate from the Georgia General Assembly requiring all schools to teach character education. Society and culture are tied together through common threads that guide the way we live, work, and learn. These common beliefs are taught at home and reinforced by the community, schools, religious institutions, and youth service groups. These basic tenets guide the way Gwinnett County teachers teach and the way the school system conducts the business of teaching and learning. Character education is thoroughly embedded in the AKS curriculum. Traits emphasized in the curriculum include the following:

|             |              |              |              |             |               |
|-------------|--------------|--------------|--------------|-------------|---------------|
| courage     | respect for  | self-control | generosity   | respect for | creativity    |
| patriotism  | others       | courtesy     | punctuality  | environment | sportsmanship |
| citizenship | cooperation  | compassion   | cleanliness  | respect for | loyalty       |
| honesty     | kindness     | tolerance    | cheerfulness | creator     | perseverance  |
| fairness    | self-respect | diligence    | school pride | patience    | virtue        |

## Parent Involvement

Research shows that when parents are involved in their children's education at home, their children do better in school. When parents are involved at school, their children's achievement increases and the schools they attend become even stronger. Be There is a national movement that inspires parents to become more involved in their child's education and their public schools. Teachable moments are everywhere. You can be your child's favorite teacher by connecting in meaningful ways as you go through the ordinary routines of the day... driving in the car, preparing a meal, shopping, or doing chores. Below and in your child's AKS brochure, you will find tips for helping your child have a successful 4th grade experience. Look for more helpful tipsheets and other resources on the school system website and your local school website.



## Suggestions for Helping Your Child Achieve Academically

The school system encourages parents to be an active part of their child's education. The following are just a few ways you can be involved:

- **Review the AKS** for your child's grade. You also can access the AKS on the system's website— [www.gwinnett.k12.ga.us](http://www.gwinnett.k12.ga.us).
- **Ask to see your child's work.**
- **Support your child** and communicate that his or her academic success is important to you.
- **Read and write with your child often.** Remind students to edit the entire sentence and paragraph when they write and to use complete sentences with appropriate grammar and spelling.
- **Ask children to show their work** in their assignments, making sure they answer the question asked, not just provide information that may or may not be relevant.
- **Participate in parent-teacher conferences.**

## Share these Keys to School Success with Your Child

- ☞ **Be prepared each day.** Have the needed materials and assignments for each class.
- ☞ **Stay organized.** Keep your desk, notebooks, book bag, and home study area neatly arranged.
- ☞ **Use an agenda book or calendar** to keep track of assignments and due dates. Check it every day.
- ☞ **Give your best effort** to both homework and in-class assignments. Complete assignments and turn them in on time.
- ☞ **Review your work** from each class every evening, even if you don't have a homework assignment due the next day.
- ☞ **Study** for every test and quiz.
- ☞ **Ask your teacher questions** if you do not understand a lesson or an assignment.
- ☞ **Get involved** in at least one extracurricular activity.

## 4th Grade Language Arts

### Language Arts

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#### A - Reading Literary Text

- refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text
- determine a theme of a story, drama, or poem from details in the text; summarize the text
- describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text (e.g., a character's thoughts, words, or actions)
- determine the meaning of words and phrases as they are used in a text, including those that allude to significant characters found in mythology (e.g., Herculean)
- explain major differences between poems, drama, and prose, and refer to the structural elements of poems (e.g., verse, rhythm, meter) and drama (e.g., casts of characters, settings, descriptions, dialogue, stage directions) when writing or speaking about a text
- compare and contrast the point of view from which different stories are narrated, including the difference between first- and third-person narrations
- make connections between the text of a story or drama and a visual or oral presentation of the text, identifying similarities and differences
- compare and contrast the treatment of similar themes and topics (e.g., opposition of good and evil) and patterns of events (e.g., the quest) in stories, myths, and traditional literature from different cultures
- read and comprehend literature, including stories, dramas, and poetry, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range by the end of grade 4

#### B - Reading Informational Text

- refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text
- determine the main idea of a text and explain how it is supported by key details; summarize the text
- explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text
- determine the meaning of general academic language and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area
- describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text
- compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided

## 4th Grade Language Arts

### **B - Reading Informational Text** *(continued)*

- interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on web pages) and explain how the information contributes to an understanding of the text in which it appears
- explain how an author uses reasons and evidence to support particular points in a text
- integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably
- read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range by the end of grade 4

### **C - Reading Foundation**

- know and apply grade-level phonics and word analysis skills in decoding words
- read with sufficient accuracy and fluency to support comprehension

### **D - Writing**

- write opinion pieces on topics or texts, supporting a point of view with reasons and information
- write informative/explanatory texts to examine a topic and convey ideas and information clearly
- write narratives to develop real or imagined experiences or events, using effective technique, descriptive details, and clear event sequences
- produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience
- develop and strengthen writing as needed by planning, revising, and editing, with guidance and support from peers and adults
- use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills, with some guidance and support from adults
- conduct short research projects that build knowledge through investigation of different aspects of a topic
- recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources
- draw evidence from literary or informational texts to support analysis, reflection, and research

## 4th Grade Language Arts

### D - Writing *(continued)*

- write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences

### E - Speaking and Listening

- engage effectively in a range of collaborative discussions (e.g., one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly
- paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally
- identify the reasons and evidence a speaker provides to support particular points
- report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace
- add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes
- differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion); use formal English when appropriate to task and situation

### F - Language

- demonstrate command of the conventions of standard English grammar and usage when writing or speaking
- demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing
- use knowledge of language and its conventions when writing, speaking, reading, or listening
- determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies
- demonstrate understanding of figurative language, word relationships, and nuances in word meanings
- acquire and use accurately grade-appropriate general academic and domain-specific vocabulary, including words and phrases that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and words and phrases basic to a particular topic (e.g., wildlife, conservation, and endangered when discussing animal preservation)

## Language Arts Grade 4 Enrich

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### A - Reading Literary Text

- refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text
- determine the meaning of words and phrases as they are used in a text, including those that allude to significant characters found in mythology (e.g., Herculean)
- explain major differences between poems, drama, and prose, and refer to the structural elements of poems (e.g., verse, rhythm, meter) and drama (e.g., casts of characters, settings, descriptions, dialogue, stage directions) when writing or speaking about
- compare and contrast the point of view from which different stories are narrated, including the difference between first- and third-person narrations

### B - Reading Informational Text

- refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text
- determine the meaning of general academic language and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area
- describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text
- compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided
- read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range by the end of grade 4



## Mathematics

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### A - Operations and Algebraic Thinking

- explain that a multiplicative comparison is a situation in which one quantity is multiplied by a specified number to get another quantity; interpret a multiplication equation as a comparison (e.g., interpret  $35 = 5 \times 7$  as a statement that 35 is 5 times as many as 7 and 7 times as many as 5); represent verbal statements of multiplicative comparisons as multiplication equations
- solve multiplication and division word problems involving multiplicative comparison using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison
- solve multi-step word problems with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a symbol or letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding
- find all factor pairs for a whole number in the range 1 - 100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1 - 100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite
- generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. Explain informally why the numbers will continue to alternate in this way (e.g., given the rule "ADD 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers)

### B - Number and Operations in Base Ten

- explain that in a multi-digit whole number, a digit in any one place represents ten times what it represents in the place to its right (e.g., recognize that  $700 \div 70 = 10$  by applying concepts of place value and division)
- read and write multi-digit whole numbers using base ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons
- use place value understanding to round whole numbers to any place using tools such as a number line and/or charts
- add and subtract multi-digit whole numbers fluently using the standard algorithm
- multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain multiplication calculations by using equations, rectangular arrays, and/or area models

## 4th Grade Mathematics

### B - Number and Operations in Base Ten *(continued)*

- find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models

### C - Number and Operations: Fractions

- explain why two or more fractions are equivalent to a fraction ( $n \times \frac{a}{n} \times b$ ) ex:  $\frac{1}{4} = \frac{3 \times 1}{3 \times 4}$  by using visual fraction models. Focus attention on how the number and size of the parts differ even though the fractions themselves are the same size; use this principle to recognize and generate equivalent fractions
- compare two fractions with different numerators and different denominators (e.g., by using virtual fraction models, by creating common denominators or numerators, or by comparing to a benchmark fraction such as  $\frac{1}{2}$ ); recognize that comparisons are valid only when the two fractions refer to the same whole; record the results of comparisons with symbols  $>$ ,  $=$ , or  $<$
- recognize that a fraction  $\frac{a}{b}$  with  $a > 1$  as a sum of unit fractions  $\frac{1}{b}$
- model and explain addition and subtraction of fractions as joining and separating parts referring to the same whole
- decompose a fraction, by using a visual fraction model, into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation and justify reasoning using visual fraction models (e.g.,  $\frac{3}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$ ;  $\frac{3}{8} = \frac{1}{8} + \frac{2}{8}$ ;  $2 \frac{1}{8} = 1 + 1 + \frac{1}{8}$ ;  $\frac{8}{8} = \frac{7}{8} + \frac{1}{8}$ )
- add and subtract mixed numbers with like denominators (e.g., by replacing each mixed number with an equivalent fraction and/or by using properties of operations and the relationship between addition and subtraction)
- solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators by using visual fraction models and equations to represent the problem
- apply and extend previous understanding of multiplication to multiply a fraction by a whole number (e.g., by using a visual such as a number line or area model)
- recognize a fraction  $\frac{a}{b}$  as a multiple of  $\frac{1}{b}$  (e.g., use a visual fraction model to represent  $\frac{5}{4}$  as the product  $5 \times (\frac{1}{4})$ , recording the conclusion by the equation  $\frac{5}{4} = 5 \times (\frac{1}{4})$ )
- understand a multiple of  $\frac{a}{b}$  as a multiple of  $\frac{1}{b}$ , and use this understanding to multiply a fraction by a whole number (e.g., use a visual fraction model to express  $3 \times (\frac{2}{5})$  as  $6 \times (\frac{1}{5})$ , recognizing this product as  $\frac{6}{5}$ ; (In general,  $n \times (\frac{a}{b}) = (n \times a)/b$ )

## 4th Grade Mathematics

### C - Number and Operations: Fractions *(continued)*

- solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. (e.g., if each person at a party will eat  $\frac{3}{8}$  of a pound of roast beef and there will be five people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?)
- express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100 (e.g., express  $\frac{3}{10}$  as  $\frac{30}{100}$  and add  $\frac{3}{10} + \frac{4}{100} = \frac{34}{100}$ )
- use decimal notation for fractions with denominators 10 or 100 (e.g., rewrite 0.62 as  $\frac{62}{100}$ ; describe a length as 0.62 meters; locate 0.62 on a number line diagram)
- compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions (e.g., by using a visual model)

### D - Measurement and Data

- know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Understand the relationship between gallons, cups, quarts, and pints. Express larger units in terms of smaller units within the same measurement system. Record measurement equivalents in a two column table
- use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale
- apply the area and perimeter formulas for rectangles in real-world and mathematical problems (e.g., find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor)
- make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ) Solve problems involving addition and subtraction of fractions with common denominators by using information presented in line plots (e.g., from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection)

### E - Geometry

- recognize angles as geometric shapes that are formed wherever two rays share a common endpoint and understand concepts of angle measurement

## 4th Grade Mathematics

### E - Geometry *(continued)*

- recognize that an angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle; an angle that turns through  $\frac{1}{360}$  of a circle is called a "one-degree angle", and can be used to measure angles
- recognize that an angle that turns through "n" one-degree angles is said to have an angle measure of "n" degrees
- measure and draw angles using tools such as a protractor or angle ruler
- recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems (e.g., by using an equation with a symbol or letter for the unknown angle measure)
- recognize area as additive; find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying the technique to solve real-world problems
- draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines and identify these in two-dimensional figures
- classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles
- recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry

## Mathematics Grade 4 Enrich

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### A - Operations and Algebraic Thinking

- solve multi-step word problems with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted; represent these problems using equations with a symbol or letter standing for the unknown quantity; assess the reasonableness of answers using mental computation and estimation strategies, including rounding
- find all factor pairs for a whole number in the range 1–100; recognize that a whole number is a multiple of each of its factors; determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number; determine whether a given whole number in the range 1–100 is prime or composite

### B - Number and Operations: Fractions

- compare two fractions with different numerators and different denominators; recognize that comparisons are valid only when the two fractions refer to the same whole; record the results of comparisons with symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions
- add and subtract mixed numbers with like denominators
- solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators by using visual fraction models and equations to represent the problem
- understand a multiple of  $a/b$  as a multiple of  $1/b$ , and use this understanding to multiply a fraction by a whole number
- solve word problems involving multiplication of a fraction by a whole number

### C - Measurement and Data

- know relative sizes of measurement units within one system of units, including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec; understand the relationship between gallons, cups, quarts and pints; express larger units in terms of smaller units within the same measurement system; record measurement equivalents in a two column table
- use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit; represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale
- recognize area as additive; find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying the technique to solve real world problems

## 4th Grade Mathematics

### C - Measurement and Data *(continued)*

- make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ); solve problems involving addition and subtraction of fractions with common denominators by using information presented in line plots

### D - Geometry

- classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size; recognize right triangles as a category, and identify right triangles

## 4th Grade Science

### Science

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#### A - Physical Science

- obtain, evaluate, and communicate information about the nature of light and how light interacts with objects
- obtain, evaluate, and communicate information about the relationship between balanced and unbalanced forces
- obtain, evaluate, and communicate information about how sound is produced and changed and how sound and/or light can be used to communicate

#### B - Life Science

- obtain, evaluate, and communicate information about the roles of organisms and the flow of energy within an ecosystem

#### C - Earth Science

- obtain, evaluate, and communicate information to demonstrate the water cycle
- obtain, evaluate, and communicate information using weather charts/maps and collect weather data to predict weather events and infer weather patterns
- obtain, evaluate, and communicate information to compare and contrast the physical attributes of stars and planets
- obtain, evaluate, and communicate information to model the effects of the position and motion of Earth and the moon in relation to the sun as observed from Earth

## 4th Grade Science

### Science Grade 4 Enrich

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#### A - Content

- communicate a scenario to demonstrate the effect of a change on an ecosystem
- develop a model using data illustrating and describing changes to the flow of energy in an ecosystem when plants or animals become scarce, extinct, or over-abundant
- plan and carry out an investigation on the effects of balanced and unbalanced forces on an object and communicate the results
- plan and carry out investigations to observe the flow of energy in water as it changes states from solid (i.e., ice) to liquid (i.e., water) to gas (i.e., water vapor) and changes from gas to liquid to solid
- interpret data from weather maps to identify fronts (i.e., warm, cold, and stationary), temperature, and precipitation to make an informed prediction about tomorrow's weather
- construct a model of how Earth's tilt and consistent orbit affects seasonal changes
- evaluate strengths and limitations of models of our solar system in describing relative size, order, appearance and composition of planets and the sun
- plan and carry out investigations to observe and record how light interacts with various materials to classify them as opaque, transparent, or translucent
- plan and carry out an investigation utilizing everyday materials to explore examples of when light is refracted
- plan and carry out an investigation utilizing everyday objects to produce sound and predict the effects of changing the strength or speed of vibrations
- design, construct, and explain how a device can communicate across a distance using light and/or sound



## 4th Grade Science

### **STEM Exploratory/Grade 4**

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#### **A - Technology, Programming, and Robotics**

- create algorithms, or series of ordered steps, to solve problems
- decompose a problem, into smaller, more manageable parts
- collect, analyze, and represent data effectively
- demonstrate an understanding of how information is represented, stored, and processed by a computer
- demonstrate dispositions amenable to open-ended problem solving and programming (e.g., comfort with complexity, persistence brainstorming, adaptability, patience, propensity to tinker, creativity, accepting challenge)
- use hands-on learning and the physical environment to explore computing concepts
- write programs using block-based programming languages
- locate and debug errors in a program
- read a program and translate it into English; explain how a particular program functions
- modify and create animations, and present work to teammates
- design, code, test, and execute a program that corresponds to a set of specifications
- implement problem solutions using a programming language, including sequence, iteration (i.e., simple and nested loops), and conditional statements

#### **B - Science**

- obtain, evaluate, and communicate information about the roles of organisms and the flow of energy within an ecosystem
- obtain, evaluate, and communicate information about the relationship between balanced and unbalanced forces
- obtain, evaluate, and communicate information to model the effects of the position and motion of Earth and the moon in relation to the sun as observed from Earth
- obtain, evaluate, and communicate information about the nature of light and how light interacts with objects

## 4th Grade Science

### C - Math

- read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form; compare two multi-digit numbers based on meanings of the digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons
- solve multiplication and division word problems involving multiplicative comparison using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison
- solve multi-step word problems with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted; represent these problems using equations with a symbol or letter standing for the unknown quantity; assess the reasonableness of answers using mental computation and estimation strategies, including rounding
- generate a number or shape pattern that follows a given rule; identify apparent features of the pattern that were not explicit in the rule itself; explain informally why the numbers will continue to alternate in this way (e.g., given the rule “ADD 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers)
- recognize angles as geometric shapes that are formed wherever two rays share a common endpoint and understand concepts of angle measurement
- classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size; recognize right triangles as a category, and identify right triangles
- recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts; identify line-symmetric figures and draw lines of symmetry

## 4th Grade Social Studies

### Social Studies

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#### A - Map and Globe Skills

- use cardinal directions
- use intermediate directions
- use a letter/number grid system to determine location
- compare and contrast the categories of natural, cultural, and political features found on maps
- use inch-to-inch map scale to determine distance on a map
- use map key/legend to acquire information from historical, physical, political, resource, product, and economic maps
- use a map to explain impact of geography on historical and current events
- draw conclusions and make generalizations based on information from maps
- use latitude and longitude to determine location
- use graphic scales to determine distances on a map
- compare maps of the same place at different points in time and from different perspectives to determine changes, identify trends, and generalize about activities
- compare maps with data sets (e.g., charts, tables, graphs) and/or readings to draw conclusions and make generalizations

#### B - Information Processing Skills

- compare similarities and differences
- organize items chronologically
- identify issues and/or problems and alternative solutions
- distinguish between fact and opinion
- identify main idea, detail, sequence of events, and cause and effect in a social studies context
- identify and use primary and secondary sources
- interpret timelines

## **4th Grade Social Studies**

### **B - Information Processing Skills** *(continued)*

- identify social studies reference resources to use for a specific purpose
- construct charts and tables
- analyze artifacts
- draw conclusions and make generalizations
- analyze graphs and diagrams
- translate dates into centuries, eras, or ages
- formulate appropriate research questions
- determine adequacy and/or relevancy of information
- check for consistency of information
- interpret political cartoons

### **C - American Revolution**

- explain the causes, major events, and results of the American Revolution
- describe how physical systems affect human systems
- locate important physical and man-made features related to the American Revolution on a map
- use the basic economic concepts of trade, opportunity cost, specialization, voluntary exchange, productivity, and price incentives to illustrate their impact on the American Revolution

### **D - A New Nation**

- analyze the challenges faced by the framers of the U.S. Constitution
- locate important physical and man-made features related to the new nation on a map
- describe the structure of government and the Bill of Rights
- describe the meaning of the founding documents and principles of the new nation
- explain the importance of freedoms guaranteed by the First Amendment to the U.S. Constitution

## **4th Grade Social Studies**

### **E - Westward Expansion**

- explain westward expansion in America
- locate important physical and man-made features related to westward expansion on a map
- use basic economic concepts of trade, opportunity cost, specialization, voluntary exchange, productivity, and price incentives to illustrate their impact on westward expansion in the United States

### **F - Reform Movements**

- examine the main ideas of the abolitionist and suffrage movements

### **G - The Civil War**

- explain the causes, major events, and consequences of the Civil War
- locate important physical and man-made features related to the Civil War on a map

### **H - Reconstruction**

- analyze the effects of Reconstruction on American life

### **I - Personal Finance**

- identify the elements of a personal budget (i.e., income, expenditures, and saving) and explain why personal spending and saving decisions are important

## 4th Grade Fine Arts

### General Music

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#### A - Skills and Techniques/Performance

- sing, alone and with others, a varied repertoire of music
- perform on instruments, alone and with others, a varied repertoire of music
- read and notate music

#### B - Creative Expression and Communication

- improvise melodies, variations, and accompaniments
- compose and arrange music within specified guidelines

#### C - Critical Analysis/Investigation

- listen to, analyze, and describe music
- evaluate music and music performances

#### D - Cultural and Historical Context

- understand relationships between music, the other arts, and disciplines outside the arts
- understand music in relation to history and culture
- move, alone and with others, to a varied repertoire of music

## 4th Grade Fine Arts

### Theatre Arts

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#### A - Creating

- organize, design, and refine theatrical work
- develop scripts through theatrical techniques

#### B - Performing

- act by communicating and sustaining roles in formal and informal environments
- execute artistic and technical elements of theatre

#### C - Responding

- engage actively and appropriately as an audience member
- critique various aspects of theatre and other media

#### D - Connecting

- explore how theatre connects to life experience, careers, and other content
- examine the role of theatre in a societal, cultural, and historical context

## 4th Grade Fine Arts

### Visual Arts

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#### A - Creating

- engage in the creative process to generate and visualize ideas by using subject matter and symbols to communicate meaning
- create works of art based on selected themes
- understand and apply media, techniques, processes, and concepts of two-dimensional art
- understand and apply media, techniques, processes, and concepts of three-dimensional art
- demonstrate an understanding of the safe and appropriate use of materials, tools, and equipment for a variety of artistic processes

#### B - Presenting

- plan and participate in appropriate exhibition(s) of works of art to develop identity of self as artist

#### C - Responding

- use a variety of approaches for art criticism and to critique personal works of art and the artwork of others to enhance visual literacy

#### D - Connecting

- investigate and discover the personal relationships of artists to community, culture, and the world through making and studying art
- integrate information from other disciplines (e.g. math, science, ela, social studies) to enhance the understanding and production of works of art
- develop life skills (e.g., collaboration, creativity, critical thinking, communication) through the study and production of art



## 4th Grade Foreign Language

### **Modern Languages Level A**

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#### **A - Basic Oral and Listening Communication**

- use common greetings and expressions
- respond to classroom instruction and directions
- explore feelings and emotions
- explore likes and dislikes

#### **B - Vocabulary Development**

- recognize and use the alphabet
- recognize and count numerals
- recognize and name selected colors
- recognize and name selected shapes
- recognize and name days of the week and months of the year
- recognize and name seasons and basic weather vocabulary
- recognize and name classroom objects
- recognize and name immediate family members
- recognize and name selected articles of clothing
- recognize and name selected parts of the body
- recognize and name rooms in the house
- recognize and name selected foods and beverages
- recognize and name selected animals

#### **C - Culture**

- name countries where the target language is spoken
- explore holidays and traditional celebrations of the target language cultures

## **4th Grade Foreign Language**

### **C - Culture** *(continued)*

- explore significant people from the target language cultures

### **D - Connections, Comparisons, and Communities**

- explore connections to student learning in other subject areas
- explore and compare basic language features
- explore comparisons of the target culture(s) with the students' culture
- explore where students can encounter the target language beyond the classroom setting

## 4th Grade Foreign Language

### Modern Languages Level B

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#### A - Basic Communication

- comprehend and respond appropriately to greetings, farewells, and basic social situations
- respond to classroom instruction and directions
- express feelings and emotions
- express likes and dislikes
- count, identify, and manipulate numbers
- integrate alphabet into a variety of activities
- recognize, name, and sequence days of the week and months of the year
- use basic weather vocabulary and organize the months of the year by season
- identify and describe immediate and extended family members
- identify and use phrases to describe clothing
- recognize time by hour, half-hour, quarter-hour, and digital format
- identify selected parts of the body
- identify and describe classroom objects and their uses
- identify rooms of a house and basic furniture
- identify, classify, and describe various food and beverages
- identify household pets and domestic, farm, and zoo animals
- identify means of transportation
- identify selected professions and places in the community

#### B - Culture

- locate and name target language countries on a map or globe

## **4th Grade Foreign Language**

### **B - Culture** *(continued)*

- identify holidays and traditional celebrations of the target language cultures
- explore similarities and differences among a variety of cultures
- explore national symbols and features of target language countries
- identify significant people from the target language cultures

### **C - Connections, Comparisons, and Communities**

- identify connections to student learning in other subject areas
- identify and compare basic language features
- identify comparisons of the target culture(s) with the students' culture
- identify where students can encounter the target language beyond the classroom setting

## 4th Grade Foreign Language

### Modern Languages Level C

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#### A - Basic Communication

- use common courtesy expressions in a variety of social situations
- respond to classroom instruction and directions
- describe a variety of emotions and feelings
- describe likes and dislikes
- perform simple math operations
- manipulate common sequences such as alphabet, calendar, and seasons
- classify and describe vocabulary related to food, clothing, weather, family, animals, home, transportation, and sports
- recognize and use time by hour, half-hour, quarter-hour, and digital format
- read and comprehend short narratives and passages
- construct simple sentences and short narratives

#### B - Culture

- locate and name target language countries on a map or globe
- name and describe holidays and traditional celebrations of the target language cultures
- compare and contrast similarities and differences among a variety of cultures
- describe national symbols and features of target language countries
- identify and research an area of interest pertaining to the target language and/or culture

#### C - Connections, Comparisons, and Communities

- identify connections to student learning in other subject areas
- identify and compare basic language features
- identify comparisons of the target culture(s) with the students' culture

## **4th Grade Foreign Language**

### **C - Connections, Comparisons, and Communities** *(continued)*

- identify where students can encounter the target language beyond the classroom setting

## 4th Grade Health and PE

### Health

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#### A - First Aid

- comprehend concepts, related to health promotion and first aid, to enhance health
- demonstrate the ability to practice first aid procedures for an emergency with bleeding

#### B - Safety

- demonstrate the ability to use decision-making skills to enhance personal safety and to prevent unintentional injuries

#### C - Personal Care

- demonstrate the ability to use decision-making skills related to personal care to enhance health

#### D - Disease Prevention

- comprehend concepts, related to health promotion and disease prevention, to enhance health

#### E - Tobacco, Alcohol, and Other Drugs

- comprehend concepts, related to tobacco, alcohol and drug use, to enhance health
- analyze the influence of media/technology and other factors on the use of tobacco, alcohol, and other drugs on the body

#### F - Nutrition

- comprehend concepts, related to nutritional health promotion, to enhance health
- demonstrate the ability to use nutritional goal-setting skills to enhance short- and long-term effects of diet and physical activity on health
- demonstrate the ability to advocate for personal, family, and community health

#### G - Emotional Expression/Mental Health

- analyze the influence of family, peers, culture, and media/technology on health behaviors
- demonstrate the ability to use interpersonal communication skills to enhance health
- demonstrate the ability to use decision-making skills to enhance health
- demonstrate the ability to practice health-enhancing behaviors and to avoid or reduce conflict

## **4th Grade Health and PE**

### **H - Family Life**

- comprehend anatomical concepts, related to health promotion and disease prevention, to enhance health
- demonstrate the ability to access valid information and products and services, related to maturity, to enhance health

### **I - Anatomy and Physiology**

- comprehend concepts, related to health promotion and disease prevention, to enhance health



## 4th Grade Health and PE

### Physical Education

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#### A - Fitness

- participate regularly in physical activity in order to achieve a healthy level of physical fitness
- achieve and maintain a health-enhancing level of physical fitness

#### B - Motor Skills and Movement Patterns

- demonstrate competency in motor skills and movement patterns needed to perform a variety of activities

#### C - Movement Concepts and Principles

- demonstrate an understanding of movement concepts, principles, strategies, and tactics as they apply to the learning and performance of physical activities

#### D - Personal and Social Behavior

- exhibit responsible personal and social behavior that respects self and others in physical-activity settings
- value physical activity for health, enjoyment, challenge, self-expression, and/or social interaction







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