

**4th grade National Education Standards
“Batter Up”**

Mathematics

- 1) Work flexibly with fractions, decimals and percents to solve problems.
- 2) Compare and order fractions, decimals and percents efficiently and find their approximate locations on a number line.
- 3) Understand and use ratios and proportions to represent quantitative relationships.
- 4) Understand the meanings and effects of arithmetic operations with fractions, decimals and integers.
- 5) Use the associative and commutative properties of addition and multiplication and the distributive property of multiplication over addition to simplify computations with integers, fractions and decimals.
- 6) Select appropriate methods and tools for computing with fractions and decimals from among mental computation, estimation, calculators or computers and paper and pencil, depending on the situation, and apply the selected methods.
- 7) Develop and analyze algorithms for computing with fractions, decimals and integers and develop fluency in their use.
- 8) Develop and use strategies to estimate the results of rational-number computations and judge the reasonableness of the results.
- 9) Develop, analyze and explain methods for solving problems involving proportions, such as scaling and finding equivalent ratios.
- 10) Represent, analyze and generalize a variety of patterns with tables, graphs, words and, when possible, symbolic rules.
- 11) Relate and compare different forms of representation for a relationship.
- 12) Use graphs to analyze the nature of changes in quantities in linear relationships.
- 13) Precisely describe, classify and understand relationships among two- and three-dimensional objects using their defining properties.
- 14) Understand relationships among the angles, side lengths, perimeters, areas and volumes of similar objects.
- 15) Create and critique inductive and deductive arguments concerning geometric ideas and relationships, such as congruence, similarity and the Pythagorean relationship.

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- 16) Draw geometric objects with specified properties, such as side lengths or angle measurements.
- 17) Use geometric models to represent and explain numerical and algebraic relationships.
- 18) Recognize and apply geometric ideas and relationships in areas outside the mathematics classroom, such as art, science and everyday life.
- 19) Understand, select and use units of appropriate size and type to measure angles, perimeter, area, surface area and volume.
- 20) Select and apply techniques and tools to accurately find length, area, volume and angle measures to appropriate levels of precision.
- 21) Develop and use formulas to determine the circumference of circles and the areas of triangles, parallelograms, trapezoids and circles and develop strategies to find the area of more complex shapes.
- 22) Solve problems involving scale factors, using ratio and proportion.
- 23) Formulate questions, design studies and collect data about a characteristic shared by two populations or different characteristics within one population.
- 24) Select, create and use appropriate graphical representations of data, histograms, box plots and scatterplots.
- 25) Discuss and understand the correspondence between data sets and their graphical representations, especially histograms, stem-and-leaf plots, and scatterplots.
- 26) Build new mathematical knowledge through problem solving.
- 27) Solve problems that arise in mathematics and in other contexts.
- 28) Apply and adapt a variety of appropriate strategies to solve problems
- 29) Monitor and reflect on the process of mathematical problem solving.
- 30) Make and investigate mathematical conjectures.
- 31) Develop and evaluate mathematical arguments and proofs.
- 32) Select and use various types of reasoning and methods of proof.
- 33) Organize and consolidate their mathematical thinking through communication.
- 34) Communicate their mathematical thinking coherently and clearly to peers, teachers and others.

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- 35) Analyze and evaluate the mathematical thinking and strategies of others
- 36) Use the language of mathematics to express mathematical ideas precisely.
- 37) Recognize and use connections among mathematical ideas.
- 38) Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.
- 39) Recognize and apply mathematics in contexts outside of mathematics.
- 40) Create and use representations to organize, record and communicate mathematical ideas.
- 41) Select, apply and translate among mathematical representations to solve problems.

Technology

- 1) Students demonstrate a sound understanding of the nature and operation of technological systems.
- 2) Students are proficient in the use of technology.
- 3) Students practice responsible use of technology systems, information and software.
- 4) Students use technology tools to advance learning, increase productivity and promote creativity.
- 5) Students use productivity tools in constructing technology-enhanced models, prepare publications and produce other creative works.
- 6) Students use telecommunications to collaborate, publish and interact with peers, experts and other audiences.
- 7) Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
- 8) Students use technology to locate, evaluate and collect information from a variety of sources.
- 9) Students use technology tools to process data and reports results.
- 10) Students use technology resources to solving problems and making informed decisions.
- 11) Students employ technology in the development of strategies for solving problems in the real world.

Language Arts

- 1) Students read a wide range of print and non-print texts to build an understanding of texts, of themselves and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.
- 2) Students adjust their use of spoken, written and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audience and for different purposes.
- 3) Students conduct research on issues and interests by generating ideas and questions and by posing problems. They gather, evaluate and synthesize data from a variety of sources (e.g. print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.
- 4) Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.
- 5) Students use spoken, written and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion and the exchange of information).

Theater Arts

- 1) Students individually and in groups, create characters, environments and actions that create tension and suspense.
- 2) Students in an ensemble, interact as the invented characters.
- 3) Students apply research from print and non-print sources to script writing, acting, design and directing choices.

Visual Arts

- 1) Students integrate visual, spatial and temporal concepts with content to communicate intended meaning in their artworks.
- 2) Students use subjects, themes and symbols that demonstrate knowledge of contexts, values and aesthetics that communicate intended meaning in artworks.