10TH GRADE MATH (GEOMETRY) SCOPE AND SEQUENCE

EARLY FIRST QUARTER

Measurement

E. Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision.

F. Write and solve real-world, multi-step problems involving money, elapsed time and temperature, and verify reasonableness of solutions.

Geometry and Spatial Sense

A. Formally define geometric figures.

C. Recognize and apply angle relationships in situations involving intersecting lines, perpendicular lines and parallel lines.

Patterns, Functions and Algebra

F. Solve and graph linear equations and inequalities.

Mathematical Processes

A. Formulate a problem or mathematical model in response to a specific need or situation, determine information required to solve the problem; choose method for obtaining this information, and set limits for acceptable solution.

C. Recognize and use connections between equivalent representations and related procedures for a mathematical concept; e.g., zero of a function and the *x*-intercept of the graph of the function, apply proportional thinking when measuring, describing functions, and comparing probabilities.

E. Use a variety of mathematical representations flexibly and appropriately to organize, record and communicate mathematical ideas.

F. Use precise mathematical language and notations to represent problem situations and mathematical ideas.

G. Write clearly and coherently about mathematical thinking and ideas.

H. Locate and interpret mathematical information accurately, and communicate ideas, processes and solutions in a complete and easily understood manner.

LATE FIRST QUARTER

Measurement

E. Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision.

F. Write and solve real-world, multi-step problems involving money, elapsed time and temperature, and verify reasonableness of solutions.

Geometry and Spatial Sense

A. Formally define geometric figures.

G. Prove or disprove conjectures and solve problems involving two and three-dimensional objects represented within a coordinate system.

H. Establish the validity of conjectures about geometric objects, their properties and relationships by counterexample, inductive and deductive reasoning, and critiquing arguments made by others.

Patterns, Functions and Algebra

D. Use algebraic representations, such as tables, graphs, expressions, functions and inequalities, to model and solve problem situations.

Mathematical Processes

A. Formulate a problem or mathematical model in response to a specific need or situation, determine information required to solve the problem; choose method for obtaining this information, and set limits for acceptable solution.

C. Recognize and use connections between equivalent representations and related procedures for a mathematical concept; e.g., zero of a function and the *x*-intercept of the graph of the function, apply proportional thinking when measuring, describing functions, and comparing probabilities.

E. Use a variety of mathematical representations flexibly and appropriately to organize, record and communicate mathematical ideas.

F. Use precise mathematical language and notations to represent problem situations and mathematical ideas.

G. Write clearly and coherently about mathematical thinking and ideas.

H. Locate and interpret mathematical information accurately, and communicate ideas, processes and solutions in a complete and easily understood manner.

EARLY SECOND QUARTER

Number, Number Sense and Operations

D. Connect physical, verbal and symbolic representations of integers, rational numbers and irrational numbers.

Measurement

E. Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision.

F. Write and solve real-world, multi-step problems involving money, elapsed time and temperature, and verify reasonableness of solutions.

Geometry and Spatial Sense

A. Formally define geometric figures.

D. Use coordinate geometry to represent and examine the properties of geometric figures.

F. Represent and model transformations in a coordinate plane and describe the results.

H. Establish the validity of conjectures about geometric objects, their properties and relationships by counterexample, inductive and deductive reasoning, and critiquing arguments made by others.

Mathematical Processes

A. Formulate a problem or mathematical model in response to a specific need or situation, determine information required to solve the problem; choose method for obtaining this information, and set limits for acceptable solution.

C. Recognize and use connections between equivalent representations and related procedures for a mathematical concept; e.g., zero of a function and the *x*-intercept of the graph of the function, apply proportional thinking when measuring, describing functions, and comparing probabilities.

E. Use a variety of mathematical representations flexibly and appropriately to organize, record and communicate mathematical ideas.

F. Use precise mathematical language and notations to represent problem situations and mathematical ideas.

G. Write clearly and coherently about mathematical thinking and ideas.

H. Locate and interpret mathematical information accurately, and communicate ideas, processes and solutions in a complete and easily understood manner.

LATE SECOND QUARTER

Number, Number Sense and Operations

F. Explain the effects of operations on the magnitude of quantities.

G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.

Measurement

E. Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision.

F. Write and solve real-world, multi-step problems involving money, elapsed time and temperature, and verify reasonableness of solutions.

Geometry and Spatial Sense

A. Formally define geometric figures.

B. Describe and apply the properties of similar and congruent figures; and justify conjectures involving similarity and congruence.

E. Draw and construct representations of two– and three-dimensional geometric objects using a variety of tools, such as straightedge, compass and technology.

Patterns, Functions and Algebra

J. Describe and interpret rates of change from graphical and numerical data.

Data Analysis and Probability

A. Create, interpret and use graphical displays and statistical measures to describe data; e.g., box-and-whisker plots, histograms, scatter plots, measures of center and variability.

C. Compare the characteristics of the mean, median and mode for a given set of data, and explain which measure of center best represents the data.

Mathematical Processes

A. Formulate a problem or mathematical model in response to a specific need or situation, determine information required to solve the problem; choose method for obtaining this information, and set limits for acceptable solution.

C. Recognize and use connections between equivalent representations and related procedures for a mathematical concept; e.g., zero of a function and the *x*-intercept of the graph of the function, apply proportional thinking when measuring, describing functions, and comparing probabilities.

E. Use a variety of mathematical representations flexibly and appropriately to organize, record and communicate mathematical ideas.

F. Use precise mathematical language and notations to represent problem situations and mathematical ideas.

G. Write clearly and coherently about mathematical thinking and ideas.

H. Locate and interpret mathematical information accurately, and communicate ideas, processes and solutions in a complete and easily understood manner.

10TH GRADE MATH (GEOMETRY) SCOPE AND SEQUENCE

EARLY THIRD QUARTER

Measurement

C. Apply indirect measurement techniques, tools and formulas, as appropriate, to find perimeter, circumference and area of circles, triangles, quadrilaterals and composite shapes, and to find volume of prisms, cylinders, and pyramids.

D. Use proportional reasoning and apply indirect measurement techniques, including right triangle trigonometry and properties of similar triangles, to solve problems involving measurements and rates.

E. Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision.

F. Write and solve real-world, multi-step problems involving money, elapsed time and temperature, and verify reasonableness of solutions.

Geometry and Spatial Sense

A. Formally define geometric figures.

I. Use right triangle trigonometric relationships to determine lengths and angle measures.

Patterns, Functions and Algebra

H. Solve systems of linear equations involving two variables graphically and symbolically.

Data Analysis and Probability

A. Create, interpret and use graphical displays and statistical measures to describe data; e.g., box-and-whisker plots, histograms, scatter plots, measures of center and variability.

B. Evaluate different graphical representations of the same data to determine which is the most appropriate representation for an identified purpose.

D. Find, use and interpret measures of center and spread, such as mean and quartiles, and use those measures to compare and draw conclusions about sets of data.

E. Evaluate the validity of claims and predictions that are based on data by examining the appropriateness of the data collection and analysis.

F. Construct convincing arguments based on analysis of data and interpretation of graphs.

Mathematical Processes

A. Formulate a problem or mathematical model in response to a specific need or situation, determine information required to solve the problem; choose method for obtaining this information, and set limits for acceptable solution.

C. Recognize and use connections between equivalent representations and related procedures for a mathematical concept; e.g., zero of a function and the *x*-intercept of the graph of the function, apply proportional thinking when measuring, describing functions, and comparing probabilities.

E. Use a variety of mathematical representations flexibly and appropriately to organize, record and communicate mathematical ideas.

F. Use precise mathematical language and notations to represent problem situations and mathematical ideas.

G. Write clearly and coherently about mathematical thinking and ideas.

H. Locate and interpret mathematical information accurately, and communicate ideas, processes and solutions in a complete and easily understood manner.

LATE THIRD QUARTER

Measurement

A. Solve increasingly complex non-routine measurement problems and check for reasonableness of results.

B. Use formulas to find surface area and volume for specified three-dimensional objects accurate to a specified level of precision.

D. Use proportional reasoning and apply indirect measurement techniques, including right triangle trigonometry and properties of similar triangles, to solve problems involving measurements and rates.

E. Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision.

F. Write and solve real-world, multi-step problems involving money, elapsed time and temperature, and verify reasonableness of solutions.

Geometry and Spatial Sense

A. Formally define geometric figures.

Patterns, Functions and Algebra

B. Identify and classify functions as linear or nonlinear, and contrast their properties using tables, graphs or equations.

G. Solve quadratic equations with real roots by graphing, formula and factoring.

Data Analysis and Probability

G. Describe sampling methods and analyze the effects of method chosen on how well the resulting sample represents the population.

K. Make predictions based on theoretical probabilities and experimental results.

Mathematical Processes

A. Formulate a problem or mathematical model in response to a specific need or situation, determine information required to solve the problem; choose method for obtaining this information, and set limits for acceptable solution.

C. Recognize and use connections between equivalent representations and related procedures for a mathematical concept; e.g., zero of a function and the *x*-intercept of the graph of the function, apply proportional thinking when measuring, describing functions, and comparing probabilities.

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F. Use precise mathematical language and notations to represent problem situations and mathematical ideas.

G. Write clearly and coherently about mathematical thinking and ideas.

H. Locate and interpret mathematical information accurately, and communicate ideas, processes and solutions in a complete and easily understood manner.

EARLY FOURTH QUARTER

Measurement

B. Use formulas to find surface area and volume for specified three-dimensional objects accurate to a specified level of precision.

C. Apply indirect measurement techniques, tools and formulas, as appropriate, to find perimeter, circumference and area of circles, triangles, quadrilaterals and composite shapes, and to find volume of prisms, cylinders, and pyramids.

E. Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision.

F. Write and solve real-world, multi-step problems involving money, elapsed time and temperature, and verify reasonableness of solutions.

Geometry and Spatial Sense

A. Formally define geometric figures.

Data Analysis and Probability

I. Design an experiment to test a theoretical probability, and record and explain results.

J. Compute probabilities of compound events, independent events, and simple dependent events.

Mathematical Processes

A. Formulate a problem or mathematical model in response to a specific need or situation, determine information required to solve the problem; choose method for obtaining this information, and set limits for acceptable solution.

C. Recognize and use connections between equivalent representations and related procedures for a mathematical concept; e.g., zero of a function and the *x*-intercept of the graph of the function, apply proportional thinking when measuring, describing functions, and comparing probabilities.

E. Use a variety of mathematical representations flexibly and appropriately to organize, record and communicate mathematical ideas.

F. Use precise mathematical language and notations to represent problem situations and mathematical ideas.

G. Write clearly and coherently about mathematical thinking and ideas.

H. Locate and interpret mathematical information accurately, and communicate ideas, processes and solutions in a complete and easily understood manner.

LATE FOURTH QUARTER

Number, Number Sense and Operations

I. Estimate, compute and solve problems involving scientific notation, square roots and numbers with integer exponents.

Measurement

E. Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision.

F. Write and solve real-world, multi-step problems involving money, elapsed time and temperature, and verify reasonableness of solutions.

Geometry and Spatial Sense

A. Formally define geometric figures.

Patterns, Functions and Algebra

B. Identify and classify functions as linear or nonlinear, and contrast their properties using tables, graphs or equations.

Data Analysis and Probability

G. Describe sampling methods and analyze the effects of method chosen on how well the resulting sample represents the population.

I. Design an experiment to test a theoretical probability, and record and explain results.

K. Make predictions based on theoretical probabilities and experimental results.

Mathematical Processes

A. Formulate a problem or mathematical model in response to a specific need or situation, determine information required to solve the problem; choose method for obtaining this information, and set limits for acceptable solution.

C. Recognize and use connections between equivalent representations and related procedures for a mathematical concept; e.g., zero of a function and the *x*-intercept of the graph of the function, apply proportional thinking when measuring, describing functions, and comparing probabilities.

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