

USD 312

Grade 7 Mathematics

Standard 1: Students will use number sense in a variety of situations.

Indicators of Performance:

Students will -

- S 1. generate and/or solve real-world problems using equivalent representations of rational numbers and simple algebraic expressions
- 05SN 2. know and explain what happens to the product or quotient when a number is multiplied or divided by a number between zero and one or a number greater than one
- 05S 3. uses properties of the rational number system and π to explain reasoning, and to formulate and solve real-world problems (including the following properties: commutative, associative, distributive and substitution; additive and multiplicative identities; additive and multiplicative inverses; multiplicative property of zero; transitive, reflexive and symmetric; transitive property of inequality; addition property of inequality)
- SN 4. use various estimation strategies and explains how they were used to estimate rational number quantities and the irrational number π

Standard 2: Students will use computation in a variety of situations.

Indicators of Performance:

Students will -

- SN 1. perform and explain these computational procedures: add and subtract decimals from ten millions place through hundred thousandths place; multiply and divide a four-digit number by a two-digit number using numbers from thousands place through thousandths place; multiply and divide using numbers from thousands place through thousandths place by 10, 100, 1000, .1, .01, .001, or single-digit multiples of each; add, subtract, multiply, and divide fractions and expresses answers in simplest form
- 2. perform and explain these computational procedures: adds integers; adds, subtracts, and multiplies fractions (including mixed numbers) expressing answers in simplest form
- 05SN 3. simplify and evaluate positive rational numbers raised to positive whole number powers; find the roots of perfect whole number squares
- S 4. find percentages of rational numbers

S preceding an indicator means it is a state assessed item.

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USD 312

Grade 7 Mathematics

- S 5. generates and/or solve one- and two-step real-world problems using addition, subtraction, multiplication, and division of rational numbers with a special emphasis on fractions and expressing answers in simplest form

Standard 3: Students will use algebraic concepts in a variety of situations.

Indicators of Performance:

Students will -

- S 1. identify, state, and continue a pattern presented in various formats including numeric, algebraic, visual, verbal, kinesthetic, and written using these attributes: counting numbers including perfect squares, cubes, and factors and multiples; positive rational numbers including arithmetic and geometric sequences
2. generate a pattern
3. extend a pattern when given a rule of one or two simultaneous operations changes (addition, subtraction, multiplication, division) between consecutive terms
4. recognize the same general pattern presented in different representations
5. recognize multiple representations of the same pattern
- S 6. state the rule to find the n th term of a pattern with one operational change (addition or subtraction) between consecutive terms
- S 7. know the mathematical relationship between ratios, proportions, and percents and how to solve for a missing term in a proportion with positive rational number solutions and monomials
- S 8. evaluate simple algebraic expressions (including formulas) using positive rational numbers
- 05SN 9. evaluate formulas using substitution
10. understand the symbols for less than, greater than, equal to, not equal to
- S 11. represent real-world problems using variables and symbols to write linear expressions, one- or two-step equations, or one-step inequalities
- 05S 12. convert between numerical, tabular, graphical and verbal rules used to represent relationships
- S 13. use the mathematical modeling process to make inferences about real-world situations when the mathematical model used to represent the situation is given
- 05S 14. identify mathematical models to show the relationship between two or more things

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15. know, explain, and use the following to represent mathematical concepts, procedures, and relations: graphs using concrete objects; frequency tables; bar graphs; line graphs; circle graphs; Venn diagrams; line plots, charts, tables; single stem-and-leaf plots; and scatter plots

Standard 4: Students will use geometry in a variety of situations.

Indicators of Performance:

Students will -

- S 1. identify corresponding parts of similar and congruent triangles and quadrilaterals
- 05S 2. apply angle and side properties of squares, rectangles, triangles, trapezoids, and parallelograms
- 05S 3. classify triangles as scalene, isosceles, equilateral, acute, right, obtuse, and equiangular, and polygons as regular, irregular, and/or by the number of sides
- 05S 4. use symbols for perpendicular, parallel, triangle, and right angle
- 05S 5. use drawings to recognize or compare geometric figures
- 6. determine the radius or diameter of a circle
- S 7. know and use perimeter and area formulas for circles, squares, rectangles, triangles, and parallelograms
- S 8. use given measurement formulas to find: surface area of cubes; volume of rectangular prisms
- 05SN 9. use given measurement formulas to find the surface area of rectangular prisms
- S 10. solve real-world problems by: finding perimeter and area of two-dimensional composite figures of circles, squares, rectangles, and triangles
- 05S 11. apply various measurement techniques and use appropriate tools, units of measure and degree of accuracy to find accurate rational number representations for length, volume, surface area, area, perimeter, weight, temperature and time
- 05S 12. use appropriate units to describe rate as a unit of measure (like miles per hour)
- 05S 13. find missing angle measurements in triangles and quadrilaterals
- 05S 14. perform conversions within the standard or metric measurement system
- 05S 15. recognize, describe and perform single and multiple transformations on two-dimensional figures
- 05S 16. recognize and draw three-dimensional shapes as they would appear from a variety of visual perspectives

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- 05SN 17. use the coordinate plane to: identify in which quadrant or on which axis a point lies when given the coordinates of the point; graph or identify points on the coordinate plane in all four quadrants; determine if a given point is on the line given the graph of the line; list up to five coordinate pairs on the graph of a line and then state the pattern that exists; find the distance between the points on a number line by computing the absolute value of their difference
- S 18. determine the actual dimensions and/or measurements of a figure represented in a scale drawing

Standard 5: Students will use statistics in a variety of situations.

Indicators of Performance:

Students will -

- 05S 1. describe the probability of events using fractions, decimals, and percents
- 05S 2. determine the measures of central tendency (mean, median, mode) and the range for a rational number data set containing an even or odd number of data points
- S 3. organize, display, and read quantitative and qualitative data in a clear, organized, and accurate manner including a title, labels, categories, and rational number intervals using these data displays: frequency tables; bar, line, and circle graphs; Venn diagrams or other pictorial displays; charts and tables; stem-and-leaf plots (single); scatter plots; box-and-whiskers plots
- S 4. recognize and explain: misleading representations of data; the effects of scale or interval changes on graphs of data sets

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