

READINESS STANDARDS - Grade 8 Math

(8.1) Number, operation, and quantitative reasoning. The student understands that different forms of numbers are appropriate for different situations. The student is expected to	
(A) compare and order rational numbers in various forms including integers, percents, and positive and negative fractions and decimals	Improper fractions; Standard form; Negative; Positive; Integer; No-negative; Comparison terms, Greatest to least, Fastest to slowest; Rational number
(8.2) Number, operation, and quantitative reasoning. The student selects and uses appropriate operations to solve problems and justify solutions. The student is expected to	
(B) use appropriate operations to solve problems involving rational numbers in problem situations	Sum, Difference, Total, Change, Product, Dividend, Divisor, Quotient, Factor
(8.3) Patterns, relationships, and algebraic thinking. The student identifies proportional or non-proportional linear relationships in problem situations and solves problems. The student is expected to	
(B) estimate and find solutions to application problems involving percents and other proportional relationships such as similarity and rates	Unit cost, Proportional, Non-proportional, Rate, Commission, Discount
(8.4) Patterns, relationships, and algebraic thinking. The student makes connections among various representations of a numerical relationship. The student is expected to	
(A) generate a different representation of data given another representation of data (such as a table, graph, equation, or verbal description)	Variable, Algebraic expression, Evaluate, Simplify
(8.5) Patterns, relationships, and algebraic thinking. The student uses graphs, tables, and algebraic representations to make predictions and solve problems. The student is expected to	
(A) predict, find, and justify solutions to application problems using appropriate tables, graphs, and algebraic equations	Reasonable, Predict
(8.6) Geometry and spatial reasoning. The student uses transformational geometry to develop spatial sense. The student is expected to	
(A) generate similar figures using dilations including enlargements and reductions	Similar, Dilation, Enlargement, Reduction, Scale factor, Prime notation
(8.8) Measurement. The student uses procedures to determine measures of three-dimensional figures. The student is expected to	
(C) estimate measurements and use formulas to solve application problems involving lateral and total surface area and volume	Prism, Base, Volume, Cubic units, Cylinder, Base area, Lateral surface area, Total surface area
(8.9) Measurement. The student uses indirect measurement to solve problems. The student is expected to	
(A) use the Pythagorean Theorem to solve real-life problems	Hypotenuse, Side, Leg, Base, Pythagorean Theorem, Right angle, Square, Square root

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(8.9) **Measurement.** The student uses indirect measurement to solve problems. The student is expected to

(B) use proportional relationships in similar two-dimensional figures or similar three-dimensional figures to find missing measurements

Similar, Congruent, Corresponding sides, Corresponding angles

(8.11) **Probability and statistics.** The student applies concepts of theoretical and experimental probability to make predictions. The student is expected to

(A) find the probabilities of dependent and independent events

Sample space, Tree diagram, Outcome, Theoretical probability, Experimental probability, Event experiment, Simple event, Independent event, Compound event, Dependent event, Random, Complement

(8.13) **Probability and statistics.** The student evaluates predictions and conclusions based on statistical data. The student is expected to

(B) recognize misuses of graphical or numerical information and evaluate predictions and conclusions based on data analysis

Validity, Bias

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(8.1) **Number, operation, and quantitative reasoning.** The student understands that different forms of numbers are appropriate for different situations. The student is expected to

(B) select and use appropriate forms of rational numbers to solve real-life problems including those involving proportional relationships

Equivalent, Simplify, Lowest terms, Least common denominator (LCD), Greatest common factor (GCF), Simplest form, Reciprocal, Multiplicative inverse, Proportional relationships

(C) approximate (mentally and with calculators) the value of irrational numbers as they arise from problem situations (such as π , $\sqrt{2}$)

Power, Exponent, Perfect square, Square root, Radical sign, Radicand, Base, Irrational number, Rational number

(D) express numbers in scientific notation, including negative exponents, in appropriate problem situations

Scientific notation, Exponent, Power

(E) compare and order real numbers with a calculator

Real numbers, Rational numbers, Irrational numbers

(8.2) **Number, operation, and quantitative reasoning.** The student selects and uses appropriate operations to solve problems and justify solutions. The student is expected to

(A) select appropriate operations to solve problems involving rational numbers and justify the selections

Operations, Expressions, Equations, Variable, Constant

(C) evaluate a solution for reasonableness

Reasonableness, Compatible numbers, Estimation, Justify

(D) use multiplication by a given constant factor (including unit rate) to represent and solve problems involving proportional relationships including conversions between measurement systems

Proportional, Unit rate, Scale factor, Ratio, Constant rate of change

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(8.3) Patterns, relationships, and algebraic thinking. The student identifies proportional or non-proportional linear relationships in problem situations and solves problems. The student is expected to	
(A) compare and contrast proportional and non-proportional linear relationships	Proportional, Non-proportional
(8.5) Patterns, relationships, and algebraic thinking. The student uses graphs, tables, and algebraic representations to make predictions and solve problems. The student is expected to	
(B) find and evaluate an algebraic expression to determine any term in an arithmetic sequence (with a constant rate of change)	Constant rate of change, Common difference, Arithmetic sequence, Sequence, Pattern, Terms, Position, Nth term, Value of the term, Coefficient
(8.6) Geometry and spatial reasoning. The student uses transformational geometry to develop spatial sense. The student is expected to	
(B) graph dilations, reflections, and translations on a coordinate plane	Transformation, Reflection, Rotation, Translation, Horizontal, Vertical, Prime notation, Dilation, Enlargement, Reduction, Scale factor
(8.7) Geometry and spatial reasoning. The student uses geometry to model and describe the physical world. The student is expected to	
(A) draw three-dimensional figures from different perspectives	Front view, Side view, Top view, Three-dimensional, Two-dimensional
(B) use geometric concepts and properties to solve problems in fields such as art and architecture	Two-dimensional, Coordinate map
(C) use pictures or models to demonstrate the Pythagorean Theorem	Hypotenuse, Leg, Pythagorean Theorem, Right angle
(D) locate and name points on a coordinate plane using ordered pairs of rational numbers	Coordinate, Coordinate plane, Ordered pair, Origin, Quadrant, X-axis, Y-axis
(8.8) Measurement. The student uses procedures to determine measures of three-dimensional figures. The student is expected to	
(A) find lateral and total surface area of prisms, pyramids, and cylinders using [concrete] models and nets (two-dimensional models)	Prism; Pyramid; Cylinder; Lateral surface area; Total surface area, net
(B) connect models of prisms, cylinders, pyramids, spheres, and cones to formulas for volume of these objects	Prism, Base, Volume, Cubic units, Base area (B)
(8.10) Measurement. The student describes how changes in dimensions affect linear, area, and volume measures. The student is expected to	
(A) describe the resulting effects on perimeter and area when dimensions of a shape are changed proportionally	Scale factor, Dimensions, Transformation, Proportional, Dilation, Enlargement, Reduction
(B) describe the resulting effect on volume when dimensions of a solid are changed proportionally	Scale factor, Dimensions, Transformation, Proportional, Dilation, Enlargement, Reduction

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(8.11) **Probability and statistics.** The student applies concepts of theoretical and experimental probability to make predictions. The student is expected to

(B) use theoretical probabilities and experimental results to make predictions and decisions

Sample space, Tree diagram, Outcome, Theoretical probability, Experimental probability, Event, Simple event, Compound event, Independent event, Dependent event, Random, Complement

(8.12) **Probability and statistics.** The student uses statistical procedures to describe data. The student is expected to

(A) use variability (range, including interquartile range (IQR)) and select the appropriate measure of central tendency to describe a set of data and justify the choice for a particular situation

Measures of central tendency, Mean, Median, Mode, Range

(B) draw conclusions and make predictions by analyzing trends in scatterplots

Inference, Prediction, Negative correlation, Positive correlation, Trend, No correlation

(C) select and use an appropriate representation for presenting and displaying relationships among collected data, including line plots, line graphs, stem and leaf plots, circle graphs, bar graphs, box and whisker plots, histograms, and Venn diagrams, with and without the use of technology

Scale, Interval, Line plot, Line graph, Stem and leaf plot, Circle graph, Bar graph, Box and whisker plot, Histograms, Venn diagrams, Quartiles, Upper-quartile, Lower-quartile, Outlier, Median

(8.13) **Probability and statistics.** The student evaluates predictions and conclusions based on statistical data. The student is expected to

(A) evaluate methods of sampling to determine validity of an inference made from a set of data

Validity, Bias, Population, Sampling, Sample space