

Kansas College & Career Ready Standards

8th Grade Math

THE NUMBER SYSTEM

Part 1: Know that there are numbers that are not rational, and approximate them by rational numbers.

- ✓ Identify rational and irrational numbers.
- ✓ Convert repeating decimals to rational numbers.
- ✓ Find approximations for irrational numbers.

Mathematical Practices

Make sense of problems and persevere in solving them.

Reason abstractly and quantitatively.

Construct viable arguments and critique the reasoning of others.

Model with mathematics.

Use appropriate tools strategically.

Attend to precision.

Look for and make use of structure.

Look for and express regularity in repeated reasoning.

GEOMETRY

Part 1: Understand congruence and similarity using physical models, transparencies or geometry software.

- ✓ Identify congruent parts in rotations, reflections and translations.
- ✓ Identify transformations that move a figure onto a congruent figure.
- ✓ Use coordinates to describe translations, reflections and rotations.
- ✓ Use coordinates to describe dilations.
- ✓ Compare ratios of side lengths to decide if two figures are similar.
- ✓ Identify the scale factor that enlarges or reduces a figure to match a similar figure.
- ✓ Identify transformations that move a figure onto a similar figure.
- ✓ Justify and calculate angle measures in triangles and line figures.
- ✓ Justify the angle-angle criterion of similar triangles.

Part 2: Understand and apply the Pythagorean Theorem.

- ✓ Explain a proof of the Pythagorean Theorem and its converse.
- ✓ Use the Pythagorean Theorem to find lengths.
- ✓ Use the Pythagorean Theorem to find distance between points.

Part 3: Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.

- ✓ Apply the formula for volume of a cone.
- ✓ Apply the formula for volume of a cylinder.
- ✓ Apply the formula for volume of a sphere.
- ✓ Apply formulas to find volumes of combined solids.

EXPRESSIONS AND EQUATIONS & FUNCTIONS

Part 1: Work with radicals and integer exponents.

- ✓ Simplify and evaluate numerical expressions with integer exponents.
- ✓ Develop and apply properties of exponents.
- ✓ Use square root and cube roots.
- ✓ Evaluate square roots and cube roots.
- ✓ Convert between standard notation and scientific notation.
- ✓ Use scientific notation to compare relative sizes of numbers.
- ✓ Perform operations on numbers in scientific notation.
- ✓ Use scientific notation to solve problems.
- ✓ Convert measurement results to appropriate units.

Part 2: Understand the connections between proportional relationships, lines and linear equations.

- ✓ Graph proportional relationships.
- ✓ Compare two representations of a proportional relationship.
- ✓ Use similar triangles to verify that a line has constant slope.
- ✓ Relate linear equations to slopes and intercepts.

Part 3: Analyze and solve linear equations and pairs of simultaneous linear equations.

- ✓ Simplify and solve linear equations by writing equivalent forms.
- ✓ Identify or write equations with 0, 1 or infinitely many solutions,
- ✓ Simplify and solve linear equations with rational coefficients.
- ✓ Identify the solution to a system of two linear equations as the intersection point.
- ✓ Solve systems of two linear equations algebraically.
- ✓ Estimate the solution to two linear equations by graphing.
- ✓ Solve problems involving systems of two linear equations.

Part 4: Define, evaluate and compare functions.

- ✓ Understand that a function is a rule.
- ✓ Compare two representations of a function.
- ✓ Decide if a function is linear or non-linear.

Part 5: Use functions to model relationships between quantities.

- ✓ Identify rate of change from a graph, table or description.
- ✓ Identify initial value of a function from a graph, table or description.
- ✓ Write a function from the rate of change and initial value.
- ✓ Describe features of a non-linear function from its graph.
- ✓ Sketch a graph from a verbal description of its features.

STATISTICS AND PROBABILITY

Part 1: Investigate patterns of association in bivariate data.

- ✓ Construct scatter plots.
- ✓ Interpret scatter plots.
- ✓ For data that appear to be linear, estimate a line of best fit.
- ✓ Informally assess the fit of a linear model.
- ✓ Interpret a linear model for real-world data.
- ✓ Compare frequencies and relative frequencies from two-way tables.