

# Grade 8: Access Points

## Algebraic Reasoning

### Generate equivalent algebraic expressions.

- 1 Use the properties of integer exponents and product/quotient of powers with like bases to produce equivalent algebraic expressions limited to positive exponents and monomial bases. [MA.8.AR.1.AP.1](#)
- 2 Use the distributive property to multiply a monomial by a linear expression. [MA.8.AR.1.AP.2](#)
- 3 Rewrite the sum of two linear algebraic expressions having a common whole number monomial factor as the common factor multiplied by the sum of two linear algebraic expressions. [MA.8.AR.1.AP.3](#)

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### Solve multi-step one-variable equations and inequalities.

- 1a Identify the steps to solve a given multi-step equation in one variable, with integers coefficients. Include equations with variables on both sides. [MA.8.AR.2.AP.1A](#)
- 1b Solve multi-step equations in one variable, with integers coefficients. Include equations with variables on both sides. [MA.8.AR.2.AP.1B](#)
- 2 Select a two-step inequality from a list that represents a real-world situation and use substitution to solve. [MA.8.AR.2.AP.2](#)
- 3 Given an equation in the form of  $x^2 = p$  and  $x^3 = q$ , use tools to determine real solutions where  $p$  is a perfect square up to 144 and  $q$  is a perfect cube from  $-125$  to 125. [MA.8.AR.2.AP.3](#)

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### Extend understanding of proportional relationships to two-variable linear equations.

- 1 Given a table, a graph, or equation, determine whether a linear relationship is proportional. [MA.8.AR.3.AP.1](#)
- 2 Given a table or graph of a linear relationship, identify the slope. [MA.8.AR.3.AP.2](#)
- 3 Given a table or graph of a linear relationship, identify from a list, the equation in slope-intercept form. [MA.8.AR.3.AP.3](#)
- 4 Graph a two-variable linear equation from a table or an equation in slope-intercept form. [MA.8.AR.3.AP.4](#)
- 5 Given a real-world context, identify the slope and y-intercept of a two-variable linear equation from a table, a graph or an equation in slope-intercept form. [MA.8.AR.3.AP.5](#)

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**Develop an understanding of two-variable systems of equations.**

- 1a Given a system of two linear equations displayed on a graph, identify the solution of a system as the point where the two lines intersect. [MA.8.AR.4.AP.1A](#)
  - 1b Identify the coordinates of the point of intersection for two linear equations plotted on a coordinate plane. [MA.8.AR.4.AP.1B](#)
  - 2 Given a system of two linear equations represented graphically on the same coordinate plane, identify whether there is one solution or no solution. [MA.8.AR.4.AP.2](#)
  - 3 Given two sets of coordinates for two lines, plot the lines on a coordinate plane and describe or select the solution to a system of linear equations. [MA.8.AR.4.AP.3](#)
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**Data Analysis and Probability****Represent and investigate numerical bivariate data.**

- 1 Graph bivariate data using a scatter plot. [MA.8.DP.1.AP.1](#)
  - 2 Given a scatter plot, identify whether the patterns of association are no association, positive association, negative association, linear or nonlinear. [MA.8.DP.1.AP.2](#)
  - 3 Given a scatter plot with a linear association, use tools to draw or place a line of fit. [MA.8.DP.1.AP.3](#)
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**Represent and find probabilities of repeated experiments.**

- 1 Use a tool (table, list or tree diagram) to record results of a repeated experiment. [MA.8.DP.2.AP.1](#)
  - 2 Select the theoretical probability of an event related to a repeated experiment from a list. [MA.8.DP.2.AP.2](#)
  - 3 Compare actual results of an experiment with its theoretical probability (e.g., make a statement that describes the relationship between the actual results of an experiment with its theoretical probability [e.g., more, less, same, different, equal]). [MA.8.DP.2.AP.3](#)
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**Functions****Define, evaluate and compare functions.**

- 1a Given a set of ordered pairs, a table or mapping diagram identify whether the relationship is a function. [MA.8.F.1.AP.1A](#)
  - 1b Given a set of ordered pairs, a table or mapping diagram identify the domain and range of the relation. [MA.8.F.1.AP.1B](#)
  - 2 Given a function displayed on a graph or an equation, identify whether the function is a linear function. [MA.8.F.1.AP.2](#)
  - 3 Given a functional relationship displayed as a graph, identify where the function is increasing, decreasing or constant. [MA.8.F.1.AP.3](#)
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## Geometric Reasoning

### Develop an understanding of the Pythagorean Theorem and angle relationships involving triangles.

- 1 Find the hypotenuse of a two-dimensional right triangle using the Pythagorean Theorem. [MA.8.GR.1.AP.1](#)
  - 2 Given the Pythagorean Theorem, determine lengths/distances between two points in a coordinate system by forming right triangles, with natural number side lengths. [MA.8.GR.1.AP.2](#)
  - 3a Measure the sides of triangles to establish facts about the Triangle Inequality Theorem (i.e., the sum of two side lengths is greater than the third side). [MA.8.GR.1.AP.3A](#)
  - 3b Substitute the side lengths of a given figure into the Pythagorean Theorem to determine if a right triangle can be formed. [MA.8.GR.1.AP.3B](#)
  - 4 Identify supplementary, complementary, vertical or adjacent angle relationships. [MA.8.GR.1.AP.4](#)
  - 5 Given an image, solve simple problems involving the relationships of interior and exterior angles of a triangle. [MA.8.GR.1.AP.5](#)
  - 6 Use tools to calculate the sum of the interior angles of regular polygons when given the formula. [MA.8.GR.1.AP.6](#)
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### Understand similarity and congruence using models and transformations.

- 1 Given two figures on a coordinate plane, identify if the image is translated, rotated or reflected. [MA.8.GR.2.AP.1](#)
  - 2 Given a preimage and image describe the effect the dilation has on the two figures. [MA.8.GR.2.AP.2](#)
  - 3 Identify the coordinates of the vertices of a common polygon after a single translation, rotation or dilation on the coordinate plane. [MA.8.GR.2.AP.3](#)
  - 4 Use tools to solve mathematical problems using proportions between similar triangles. [MA.8.GR.2.AP.4](#)
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## Number Sense and Operations

### Solve problems involving rational numbers, including numbers in scientific notation, and extend the understanding of rational numbers to irrational numbers.

- 1 Locate approximations of irrational numbers on a number line. [MA.8.NSO.1.AP.1](#)
- 2 Use appropriate tools to plot, order, and compare simple square roots and cube roots for quantities less than 100. [MA.8.NSO.1.AP.2](#)
- 3 Use the properties of integer exponents and product/quotient of powers with like bases to produce equivalent expressions. [MA.8.NSO.1.AP.3](#)
- 4 Multiply a single-digit number by the power of 10 using a calculator. Identify whether the number in scientific notation represents a very large or very small quantity. [MA.8.NSO.1.AP.4](#)
- 5 Perform operations with numbers expressed in scientific notation using a calculator. [MA.8.NSO.1.AP.5](#)
- 6 Given a real-world problem, perform operations with numbers expressed in scientific notation using a calculator and interpret the answer in context. [MA.8.NSO.1.AP.6](#)
- 7 Use tools to solve multi-step mathematical problems, with four or fewer steps, involving the order of operations with rational numbers including exponents and perfect squares and/or square roots. [MA.8.NSO.1.AP.7](#)