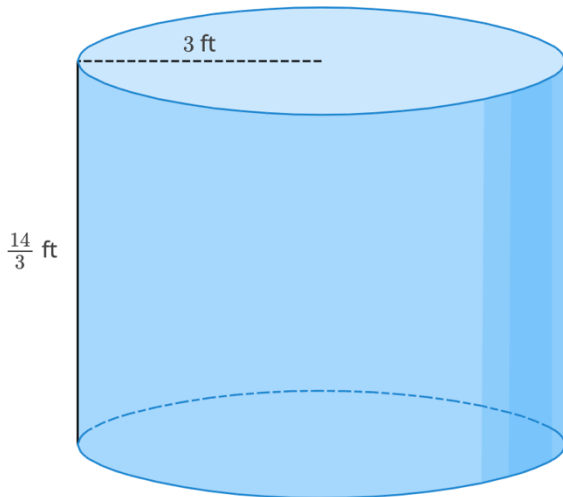


Algebra 1 Skill Gap Sample Problems

Skill 1: Finding the Volume of a Right Cylinder Given a Figure

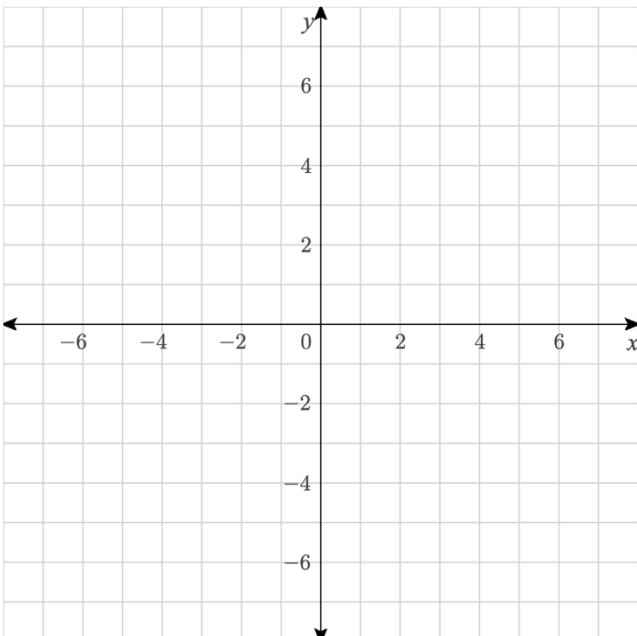
Example: Find the volume V of the right cylinder. Write the answer in terms of π .



Skill 2: Graphing a Direct Variation

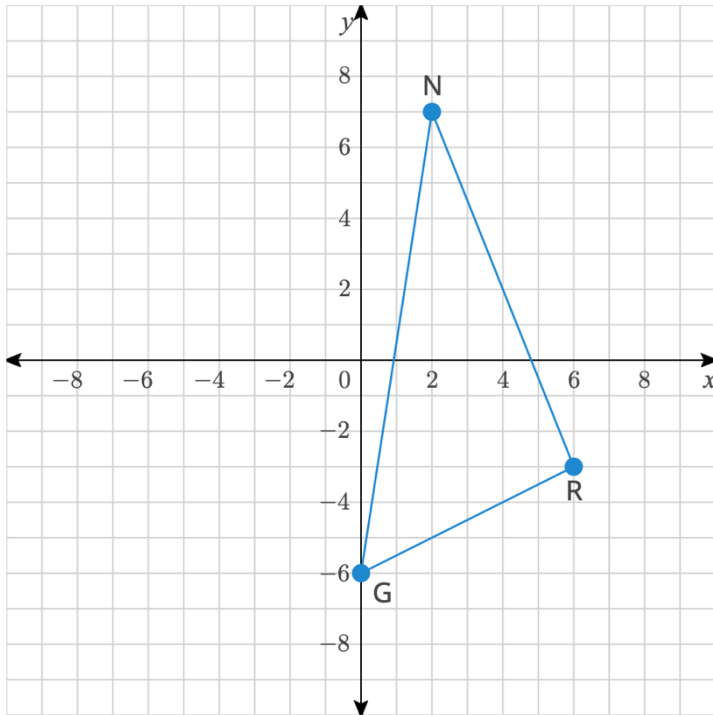
Example: Graph the direct variation.

$$y = 2x$$



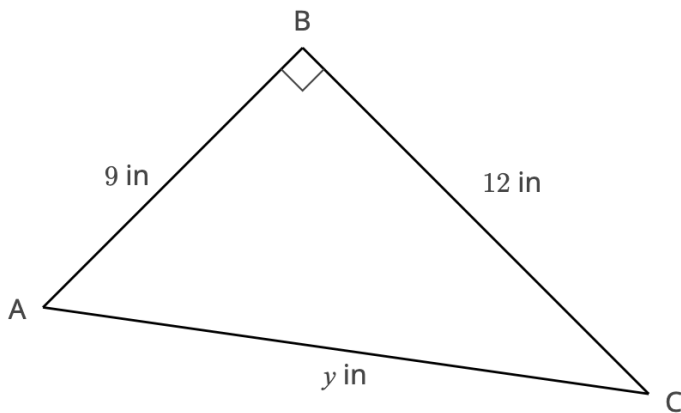
Skill 3: Graphing Translations

Example: The translation function $(x,y) \rightarrow (x-9,y)$ maps $\triangle GRN$ onto $\triangle G'R'N'$. Graph G' , R' , and N' .

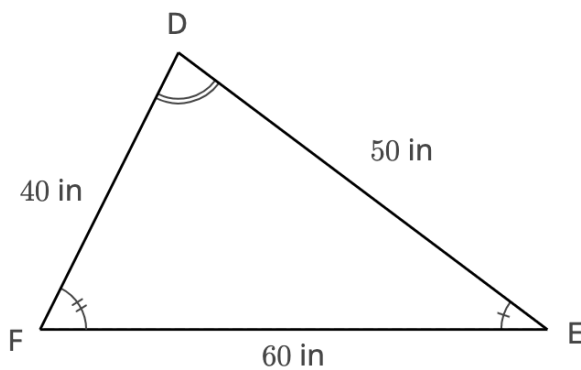
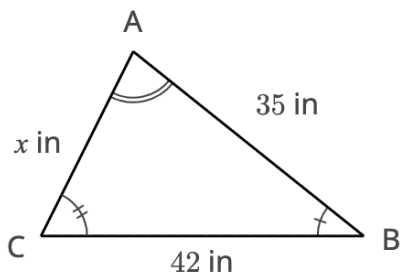


Skill 4: Finding the Length of the Hypotenuse Given Lengths of Two Legs in a Figure

Example: Find the exact length of the hypotenuse of $\triangle CAB$.

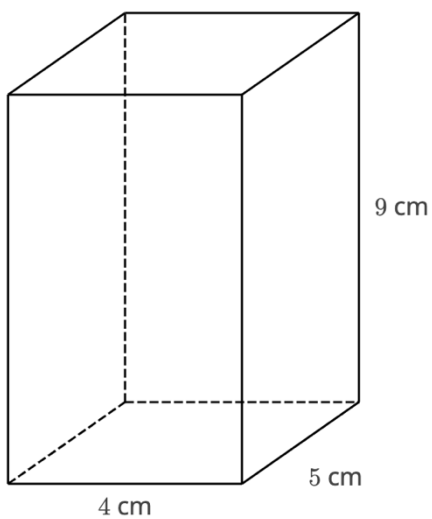


Skill 5: Finding Length of Unknown Side Given Two Similar Triangles
Example: Two similar triangles are shown below. Find the value of x .



Skill 6: Determining the Surface Area of a Cube or Right Rectangular Prism

Example: Find the surface area S of the right rectangular prism.



Skill 7: Finding Discounted Price Given Original Price and Percent Discount

Example: A \$78 item is discounted 35%. Find the discounted price.

Skill 8: Identifying the Input Given the Output and a Linear Function

Example: Find the input of the relation when the output is $y=-1$.

$$6x-3y=-15$$

Skill 9: Solving Linear Equations with Variables on Both Sides

Example: Solve the equation.

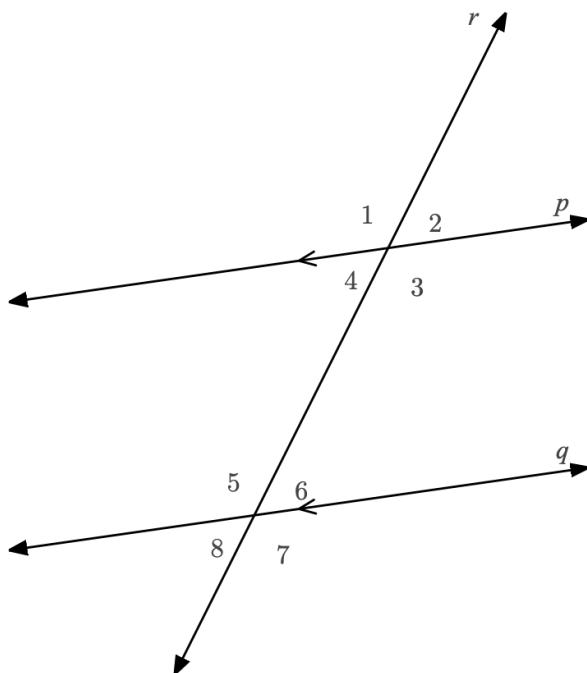
$$3-2x=-4x+15$$

Skill 10: Finding the Probability of an Event - Sample Set Given

Example: If one letter is randomly selected from the word BUILDING, find $P(I)$. Write the answer as a decimal or a fraction in simplest form.

Skill 11: Application Problem

Example: If $m\angle 3 = 108^\circ$, find $m\angle 8$.

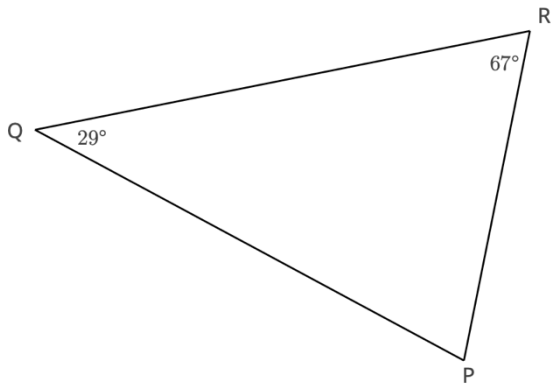


Skill 12: Using Random Samples to Make Predictions About Population

Example: Knowre Middle School is going to choose a kangaroo or a jaguar as their new mascot. Jose surveys a random sample of 50 students and 30 of the students select the jaguar. If there are 650 students in the school, predict the number of students n that will choose jaguar as the mascot.

Skill 13: Finding the Measure of a Missing Angle in a Triangle

Example: Find $m\angle P$.



Skill 14: Subtracting Multi-Digit Integers - Different Signs

Example: Evaluate. $654 - (-255)$

Geometry/Algebra 2 Skill Gap Sample Problems

Skill 1: Graphing Linear Functions in Slope-Intercept Form

Example: Graph the linear equation.

$$y = -\frac{1}{4}x - 5$$

Skill 2: Writing the Equation of a Parallel Line Through a Given Point

Example: Write an equation of a line that is parallel to $y = -\frac{1}{2}x + 12$ and passes through the point (8,-2).

Skill 3: Graphing Translated Quadratic or Absolute Value Functions

Example: Graph the function: $y = |x - 4| - 3$

Skill 4: Simplifying Power of a Quotient and Power of a Product

Example: Simplify. Assume all variables are nonzero.

$$\left(\frac{s}{xz}\right)^{-6} \cdot \left(\frac{x}{s}\right)^4$$

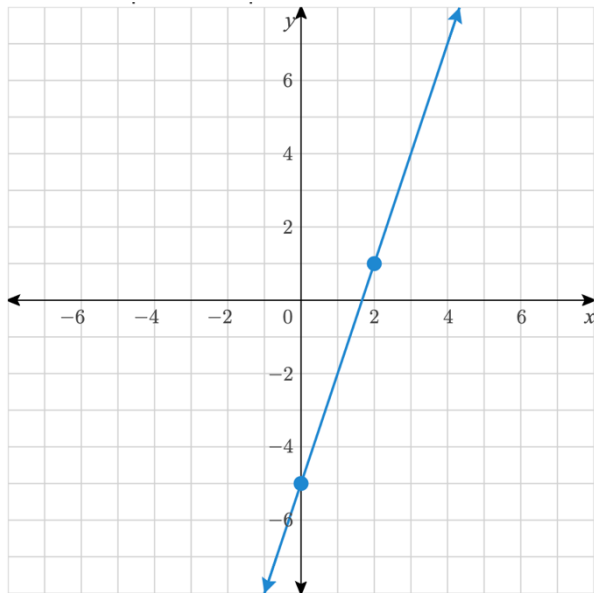
Skill 5: Solving Quadratic Equations with the Quadratic Formula - Discriminant is Irrational

Example: Solve the equation using the Quadratic Formula.

$$-x^2 + 3x + 6 = 0$$

Skill 6: Finding the Slope of a Linear Graph

Example: Write the slope m in simplest form.

**Skill 7: Solving Systems of Linear Equations Where Coefficient of a Variable is Not a Multiple of the Other**

Example: Use elimination to solve the system of equations.

$$8x - 4y = -8$$

$$9x - 6y = 12$$

Skill 8: Using Substitution and Multiplication to Solve a System of Linear Equations When One Variable is Given in Terms of the Other

Example: Use substitution to solve the system of equations.

$$y = 2x + 1$$

$$-4x + 3y = 5$$

Skill 9: Creating Equivalent Bases to Solve Exponential Equations (43%)

Example: Solve the equation for x .

$$3^{8x+13} = 243$$

Skill 10: Factoring a Quadratic When $a=1$ and c is Negative

Example: Factor.

$$x^2 + 2x - 15$$

Skill 11: Evaluating Rational Exponents with Single Base After Prime Factorization

Example: Evaluate.

$$243^{\frac{3}{5}}$$

Skill 12: Subtracting Polynomials Horizontally

Example: Subtract.

$$(3x^2 + 2x + 1) - (x^2 - 3x + 4)$$

Skill 13: Using Factoring to Solve Quadratic Equations in Standard Form with Lead Coefficient Not Equal to One

Example: Solve the equation by factoring

$$4x^2 - 12x + 9 = 0$$

Skill 14: Simplifying Square Roots with Natural Radicands

Example: Simplify. $\sqrt{27}$

Skill 15: Using the Distributive Property to Multiply Two Binomials

Example: Find the Product.

$$(7y - x)(1 + 3x)$$

Skill 16: Solving Quadratic Equations using Two Steps to Isolate the Squared Variable

Example: Solve the equation for m .

$$5m^2 + 10 = 100$$

Skill 17: Evaluating Functions Given Equation - Numeric Input

Example: Find the value of $m(5)$.

$$m(t) = (2t - 4)^2$$