

Key

Station 1
Evaluating Expressions and Solving Linear Equations

1. Evaluate each expression.

a. $18 \div 2 + 24 \div 6$

$$\begin{array}{r} 9 + 4 \\ \hline 13 \end{array}$$

b. $(3x)^2 - 7y^2$ when $x = 3$ and $y = -2$

$$\begin{array}{r} (9)^2 - 7(-2)^2 \\ 81 - 7(4) \\ 81 - 28 = \boxed{53} \end{array}$$

c. $-3 - 2 \cdot 4 + 18 \div 2$

$$\begin{array}{r} -3 - 8 + 9 \\ -11 + 9 \\ \hline -2 \end{array}$$

d. $m + (p - 2)^2$ when $m = 3$ and $p = -4$

$$\begin{array}{r} 3 + (-4 - 2)^2 \\ 3 + (-6)^2 \\ 3 + 36 = \boxed{39} \end{array}$$

2. Solve each equation. Answers should be in simplest form.

a. $2(x + 1) = 4 - 3(2x + 1)$

$$\begin{array}{r} 2x + 2 = 4 - 6x - 3 \\ 2x + 2 = 1 - 6x \\ +6x \quad -2 \quad -2 \quad +6x \\ 8x = -1 \\ \boxed{x = -1/8} \end{array}$$

b. $12(2x + 11) = 12(2x + 12)$

$$\begin{array}{r} 24x + 132 = 24x + 144 \\ 132 \times 144 \\ \text{no solution} \end{array}$$

c. $13 + 4x - 6 = 9x + 8 - 5x$

$$\begin{array}{r} 7 + 4x = 4x + 8 \\ 7 = 8 \\ \text{no solution} \end{array}$$

d. $\frac{1}{2}(8 - 4x) + 7 = -5(2x - 3) - 2(2 + 4x)$

$$\begin{array}{r} 4 - 2x + 7 = -10x + 15 - 4 - 8x \\ 11 - 2x = -18x + 11 \\ +2x \quad +2x \quad -11 \quad -11 \\ 0 = -16x \\ \cancel{16} \cdot \frac{0}{16} = \boxed{x = 0} \end{array}$$

Station 2
Solving for a Variable

1. Solve each equation for y . Answers should be in simplest form.

a. $8x + 4y = 16$

$$4y = -8x + 16$$

$$y = -2x + 4$$

b. $5x - 6y + 12 = 0$

$$6y = 5x + 12$$

$$y = \frac{5}{6}x + 2$$

c. $2y - 3x = -11$

$$2y = 3x - 11$$

$$y = \frac{3}{2}x - \frac{11}{2}$$

d. $x = 17 + xy$

$$-17 = -x + xy$$

$$-17 = x(-1 + y)$$

$$\frac{-17}{x} = -1 + y$$

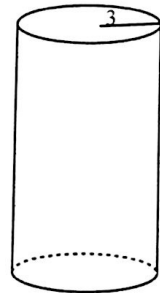
$$y = -\frac{17}{x} + 1$$

2. The formula for the volume of a cylinder is $V = \pi r^2 h$. Solve the formula for h . How tall is a cylinder with radius 3 centimeters and volume 200 cubic centimeters?

$$h = \frac{V}{\pi r^2}$$

$$h = \frac{200}{\pi(3)^2} = \frac{200}{9\pi}$$

$$h =$$



3. The formula for the area of a triangle is $A = \frac{1}{2}bh$. Solve the formula for b .

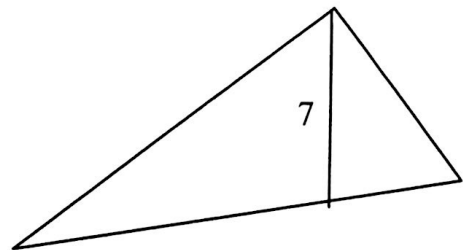
What is the base of the triangle with an area of 30 inches and a height of 7 inches?

$$A = \frac{1}{2}bh$$

$$\frac{2A}{h} = b$$

$$\frac{2(30)}{7} = b$$

$$\frac{60}{7} = b =$$



Station 3
Simplifying Radicals and Power of Exponents

1. Simplify the following radicals.

$\sqrt{45} = 3\sqrt{5}$ <small>9 5</small>	$\sqrt{81} = 9$
$\sqrt{\frac{3}{4}} = \frac{\sqrt{3}}{\sqrt{4}} = \frac{\sqrt{3}}{2}$	$\sqrt{48} = 4\sqrt{3}$ <small>16 3</small>
$\frac{4}{\sqrt{49}} = \frac{4}{7}$	$\frac{5}{\sqrt{144}} = \frac{5}{12}$

2. Simplify the following radicals.

a. $a^6 \cdot a^3$
 a^9

b. $(x^5)^2$
 x^{10}

c. $(4a^2b^3)^5$
 $256a^{10}b^{15}$

d. $\frac{x^{11}y^{10}}{x^{-3}y^{-1}}$
 $x^{14}y^{11}$

e. $-3x^{-4}y^0$
 $-3x^{-4} = \frac{-3}{x^4}$

f. $\frac{5x^3y^9}{20x^2y^{-2}}$
 $\frac{xy^{11}}{4}$ or $\frac{1}{4}xy^{11}$

g. $\frac{x^5}{x^{-2}}$
 x^7

h. $\frac{x^5y^2}{x^4y^0}$
 xy^2

i. $(x^3)^0 = 1$

Station 4 Factoring

1. Factor out the Greatest Common Factor and write the expression in Factored Form.

a) $4x^2 - 18x$ GCF = $2x(2x-9)$

Factored Form = $2x(2x-9)$

b) $3x^4 + 6$ GCF = 3

Factored Form = $3(x^4 + 2)$

c) $-8x^2 + 4x + 2$ GCF = 2

Factored Form = $2(-4x^2 + 2x + 1)$

d) $3a^3b^2 + 9ab^3$ GCF = $3ab^2$

Factored Form = $3ab^2(a^2 + 3b)$

1. Factor by finding the difference between two squares.

a) $x^2 - 36$

$(x+6)(x-6)$

b) $49x^2 - 1$

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

3. Factor the quadratic equation.

a) $x^2 - 6x - 27$

$(x-9)(x+3)$

c) $p^2 + 9p + 21$

doesn't factor

b) $c^2 - 11c + 28$

$(c-7)(c-4)$

d) $a^2 - 26a + 169$

$(a-13)(a-13)$
or $(a-13)^2$

Station 5 Linear Functions

1. Find the slope of the line through the given points. Then determine the relationship between the lines.

- a. (-2, -6) and (4, 6)

$$\frac{6 - (-6)}{4 - (-2)} = \frac{12}{6} = 2$$

- b. (5.5, 0.6) and (1.1, and 2.8)

$$\frac{2.8 - 0.6}{1.1 - 5.5} = \frac{2.2}{-4.4} = -\frac{1}{2}$$

- c. Would the lines be parallel, perpendicular, or neither? Explain your reasoning.

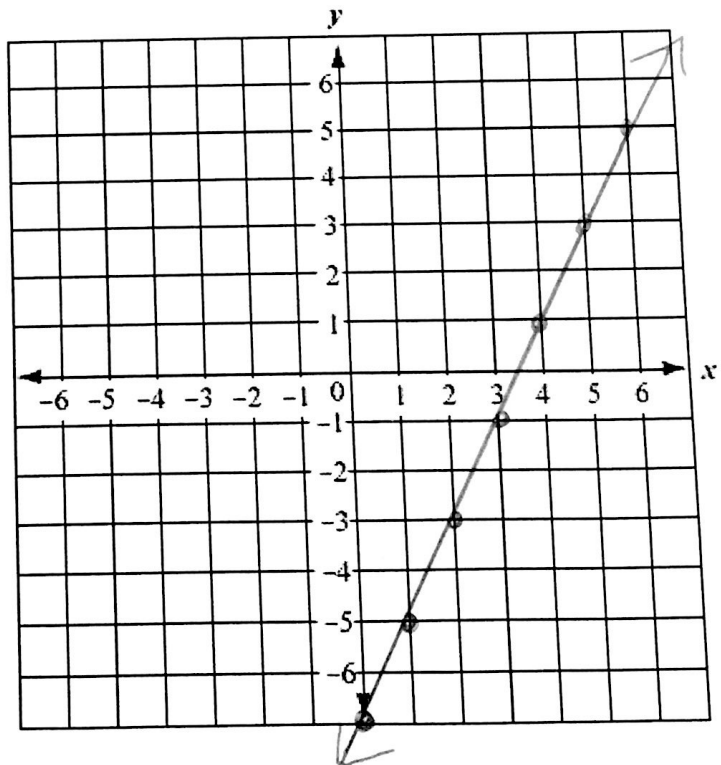
perpendicular because their slopes are opposite reciprocals.

2. Given the equation of the line, determine the slope and y-intercept. Then graph the line.

$$y = 2x - 7$$

$$m = \underline{2}$$

$$b = \underline{-7}$$



3. Given the slope and point on a line, write the equation of the line.

- Hint: You may use slope-intercept form ($y = mx + b$) or point-slope form ($y - y_1 = m(x - x_1)$).

Slope = -3, passes through (-2, -1)

$$y - (-1) = -3(x - (-2))$$

$$y + 1 = -3(x + 2)$$

$$y + 1 = -3x - 6$$

$$y = -3x - 7$$