

<p><b>1.</b></p> $5x(3x) = 5x(x \cdot 3)$ <p>is an example of which property?</p> <p>(a) Associative property of addition</p> <p>(b) Commutative property of addition</p> <p>(c) Associative property of multiplication</p> <p><b>(d) Commutative property of multiplication</b></p>	<p><b>2. Evaluate</b></p> $\begin{aligned} & -15 - (-10) \\ & = -15 + 10 \\ & = -5 \end{aligned}$
<p><b>3. Evaluate</b></p> $\left(-\frac{2}{7}\right)\left(-\frac{21}{4}\right)$ $= 3/2$	<p><b>4. Evaluate</b></p> $\begin{aligned} & \frac{3}{7} - \frac{12}{21} \\ & = 9/21 - 12/21 \\ & = -3/21 \\ & = -1/7 \end{aligned}$

5. For  $a = -4$  and  $b = -7$ , find

$$a^2 - 4b$$

$$= (-4)^2 - 4(-7)$$
$$= 16 + 28$$

$$= 44$$

6. For  $a = -5$  and  $b = 6$ , find

$$|3a - b|$$

$$= |3(-5) - 6|$$

$$= |-15 - 6|$$

$$= |-21|$$

$$= 21$$

7. Simplify

$$7(x + 2) + 3(x - 2)$$

$$= 7x + 14 + 3x + -6$$

$$= 7x + 3x + 14 + -6$$

$$= 10x + 8$$

$$= 10x + 8$$

8. Simplify

$$5m + 8 - (2m - 4)$$

$$= 5m + 8 + -1(2m + -4)$$

$$= 5m + 8 + -2m + 4$$

$$= 5m + -2m + 8 + 4$$

$$= 3m + 12$$

**9. Solve**

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

$$(1/5) \cdot 5x = (1/4) \cdot (1/5)$$

$$1 \cdot x = 1/20$$

$$x = 1/20$$

**10. Solve**

$$3x + 2 = 20$$

$$3x + 2 - 2 = 20 - 2$$

$$3x = 18$$

$$(3x)/3 = 18/3$$

$$x = 6$$

**11. Solve**

$$6(2x - 5) = 3x + 6$$

$$12x - 30 = 3x + 6$$

$$12x - 30 - 3x = 3x + 6 - 3x$$

$$9x - 30 = 6$$

$$9x - 30 + 30 = 6 + 30$$

$$9x = 36$$

$$(9x)/9 = 36/9$$

$$x = 4$$

**12. Solve**

$$5x - \frac{1}{3} = \frac{5}{6}$$

$$6(5x - 1/3) = 6 \cdot (5/6)$$

$$30x - 2 = 5$$

$$30x - 2 + 2 = 5 + 2$$

$$30x = 7$$

$$(30x)/30 = 7/30$$

$$x = 7/30$$

**13.** Five less than twice a number is equal to the number. What is the number?

Let  $x =$  the number

$$2x - 5 = x$$

$$2x - 5 + 5 = x + 5$$

$$2x = x + 5$$

$$2x - x = x + 5 - x$$

$$x = 5$$

The number is 5.

**14.** Find three consecutive numbers whose sum is 105.

Let  $x =$  the 1<sup>st</sup> number

$x + 1 =$  the 2<sup>nd</sup> number

$x + 2 =$  the 3<sup>rd</sup> number

$$x + x + 1 + x + 2 = 105$$

$$3x + 3 = 105$$

$$3x + 3 - 3 = 105 - 3$$

$$3x = 102$$

$$(3x)/3 = 102/3$$

$$x = 34$$

$$x + 1 = 35$$

$$x + 2 = 36$$

The three numbers are 34, 35, and 36.

**15.** Solve

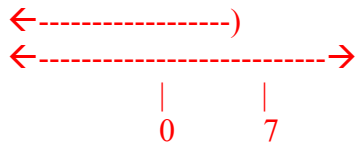
$$3x + 2 < 23$$

$$3x + 2 - 2 < 23 - 2$$

$$3x < 21$$

$$(3x)/3 < 21/3$$

$$x < 7$$



$$(-\infty, 7)$$

**16.** Solve

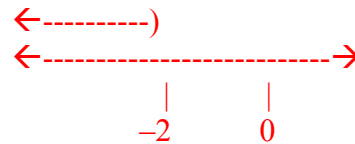
$$7 - 7x > 21$$

$$7 - 7x - 7 > 21 - 7$$

$$-7x > 14$$

$$(-7x)/(-7) < 14/(-7)$$

$$x < -2$$



$$(-\infty, -2)$$

**17.** Determine the slope of the line that passes through the points

$$(-3, 2) \text{ and } (-5, 8)$$

$$\begin{aligned} m &= (y_2 - y_1)/(x_2 - x_1) \\ &= (8 - 2)/(-5 - (-3)) \\ &= 6/(-5 + 3) \\ &= 6/(-2) \\ &= -3 \end{aligned}$$

**18.** Determine the slope of the line with the equation

$$x + 2y = 4$$

$$\begin{aligned} -x + x + 2y &= -x + 4 \\ 2y &= -x + 4 \\ (2y)/2 &= (-x + 4)/2 \\ y &= (-x)/2 + 4/2 \\ y &= (-1 \cdot x)/2 + 2 \\ y &= (-1/2) \cdot x + 2 \end{aligned}$$

$$m = (-1/2)$$

**19.** Determine the slope of a line perpendicular to

$$y = -\frac{2}{5}x + 3$$

$$m = -2/5$$

$$m_{\perp} = 5/2$$

**20.** Find the  $x$ -intercept and  $y$ -intercept of the line with the equation

$$5x + 4y = 40.$$

	$x$	$y$
$x$ -intercept	8	0
$y$ -intercept	0	10

$$\begin{aligned} x\text{-intercept: } &(8, 0) \\ y\text{-intercept: } &(0, 10) \end{aligned}$$

**21.** Write an equation in slope-intercept form of the line that has slope 6 and passes through the point

$$(5, -3)$$

$$y - y_1 = m(x - x_1)$$

$$y - (-3) = 6(x - 5)$$

$$y + 3 = 6x - 30$$

$$y + 3 - 3 = 6x - 30 - 3$$

$$y = 6x - 33$$

**22.** Write an equation in slope-intercept form of the line that passes through the points

$$(6, -1) \text{ and } (5, 2)$$

$$m = (2 - (-1))/(5 - 6)$$

$$m = (2 + 1)/(-1)$$

$$m = 3/(-1)$$

$$m = -3$$

$$y - y_1 = m(x - x_1)$$

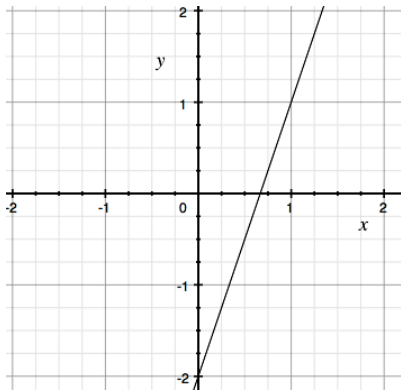
$$y - 2 = -3(x - 5)$$

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

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

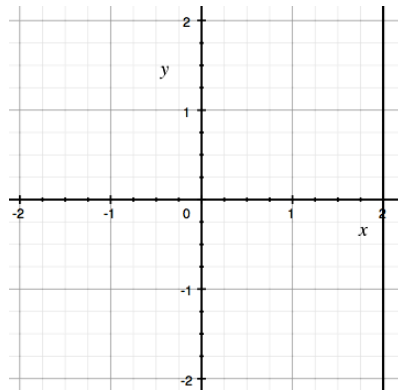
$$y = -3x + 17$$

**23.** Determine the equation of the line graphed.



$$y = 3x - 2$$

**24.** Determine the equation of the line graphed.



$$x = 2$$

**25. Simplify**

$$(2x^5y^3)^5$$

$$= 2^5 \cdot (x^5)^5 \cdot (y^3)^5$$

$$= 32 x^{25} y^{15}$$

**26. Simplify.**

$$\frac{x^3}{x^{-8}}$$

$$= x^{3-(-8)}$$

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

$$= x^{11}$$

**27. Simplify.**

$$\left(\frac{a^4}{5b^2}\right)^{-2}$$

$$= \frac{(5b^2/a^4)^2}{(5b^2)^2/(a^4)^2}$$

$$= (25b^4)/a^8$$

**28. Simplify.**

$$(2x^2y^{-2})(7x^{-5}y^5)$$

$$= 2 \cdot 7 \cdot x^2 \cdot x^{-5} \cdot y^{-2} \cdot y^5$$

$$= 14 \cdot x^{2+(-5)} \cdot y^{-2+5}$$

$$= 14 \cdot x^{-3} \cdot y^3$$

$$= 14 \cdot (1/x^3) \cdot y^3$$

$$= (14y^3)/x^3$$

**29.** Write  $8.371 \times 10^5$  in standard notation.

$$= 837,100$$

**30.** Write each number in scientific notation, then multiply and simplify, leaving your answer in scientific notation.

$$0.0001 \times 25,000$$

$$= 1.0 \times 10^{-4} \times 2.5 \times 10^4$$

$$= 1.0 \times 2.5 \times 10^{-4} \times 10^4$$

$$= 2.5 \times 10^0$$

**31.** Multiply and simplify.

$$(5a - b)(4a + 2b)$$

$$\begin{array}{cccc} \text{F} & \text{O} & \text{I} & \text{L} \\ = 5a \cdot 4a + 5a \cdot 2b + -b \cdot 4a + -b \cdot 2b \end{array}$$

$$= 20a^2 + 10ab + -4ab + -2b^2$$

$$= 20a^2 + 6ab - 2b^2$$

**32.** Multiply and simplify.

$$(x + 5)(x^2 + x - 5)$$

$$= x^3 + 6x^2 - 25$$

	$x^2$	$x$	$-5$
$x$	$x^3$	$x^2$	$-5x$
$5$	$5x^2$	$5x$	$-25$



<p><b>33.</b> Write the prime factorization of</p> <p style="text-align: center;">90</p> <p><math>= 2 \cdot 3^2 \cdot 5</math></p>	<p><b>34.</b> Find the GCF of</p> <p style="text-align: center;"><math>10y^5</math> and <math>25y</math></p> <p><math>\text{GCF} = 5y</math></p>
<p><b>35.</b> Factor completely.</p> <p style="text-align: center;"><math>12x^3 - 3x^4</math></p> <p><math>= 3x^3(4 - x)</math></p>	<p><b>36.</b> Factor.</p> <p style="text-align: center;"><math>x^2 - x - 20</math></p> <p><math>= (x + 4)(x - 5)</math></p>

**37. Factor.**

$$2x - 2y + ax - ay$$

$$= (2 + a)(x - y)$$

	x	-y
2	2x	-2y
a	ax	-ay

**38. Factor.**

$$10x^2 - 13x - 3$$

$$= 10x^2 + 2x + -15x - 3$$

$$= (2x - 3)(5x + 1)$$

	5x	1
2x	10x <sup>2</sup>	2x
-3	-15x	-3

**39. Solve**

$$(x + 4)(x - 10) = 0$$

$$\begin{array}{l} x + 4 = 0 \quad \text{or} \quad x - 10 = 0 \\ x + 4 - 4 = 0 - 4 \quad x - 10 + 10 = 0 + 10 \\ x = -4 \quad \quad \quad x = 10 \end{array}$$

$$\{-4, 10\}$$

**40. Solve**

$$x^2 + 7x - 8 = 0$$

$$\begin{array}{l} (x + 8)(x - 1) = 0 \\ x + 8 = 0 \quad \text{or} \quad x - 1 = 0 \\ x + 8 - 8 = 0 - 8 \quad x - 1 + 1 = 0 + 1 \\ x = -8 \quad \quad \quad x = 1 \end{array}$$

$$\{-8, 1\}$$