

## Cumulative Review

Chapters 1-5

### Multiple Choice

For Exercises 1–11, choose the correct letter.

- What is true about the graphs of  $y = -4x + 6$  and  $y = \frac{1}{4}x + 6$ ?
  - They are parallel.
  - They have the same slope.
  - They are perpendicular.
  - They do not intersect.
- A mail order company sells boxes of fishing lures for \$26.95 per box. A charge of \$8.95 is added to orders, regardless of the order size. Which of the following equations models the relationship between the number of boxes ordered and the total cost of the order?
  - $c = 26.95w; w \geq 1$
  - $8.95c = 26.95w; w \geq 1$
  - $c = (26.95 + 8.95)w; w \geq 1$
  - $c = 26.95w + 8.95; w \geq 1$
- Which of the following is the correct simplification of the expression  $6^2 + 15 \div 3 + 4 \times 3$ ?
  - 63
  - 53
  - 29
  - 21
- Which is *not* a solution of  $3x - 5 < 17$ ?
  - 4
  - 5
  - 7
  - 12
- Which of the following statements is *not* true for the graph of the equation  $5x + 3y = 12$ ?
  - The  $y$ -intercept is 4.
  - The line has a positive slope.
  - The  $x$ -intercept is 2.4
  - The line contains the point  $(2, \frac{2}{3})$ .
- What is the constant of variation for  $3y = 6x$ ?
  - $\frac{1}{2}$
  - 2
  - 3
  - 6
- What is  $f(-4)$  when  $f(x) = -x^2 - 2x$ ?
  - 24
  - 8
  - 8
  - 24
- The Girl Scouts hoped to raise \$1000 selling cookies. Instead, they raised \$1050. What percent of their goal did they achieve?
  - 115%
  - 105%
  - 100%
  - 95%
- Which of the following is the solution of  $3(5x - 6) = -63$ ?
  - 3
  - 5
  - 3
  - 15
- What is  $\frac{8x + 3y^2}{4y - 3x}$  when  $x = 2$  and  $y = 3$ ?
  - 22
  - 8
  - 7.5
  - $\frac{43}{6}$

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## Cumulative Review (continued)

### Chapters 1-5

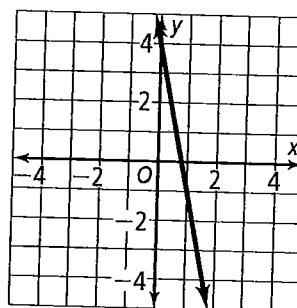
11. What is an equation of the graph at the right?

A.  $y = -5x + 4$

B.  $y = -7x + 1$

C.  $y = -2x + 8$

D.  $y = x + 4$



12. Evaluate each expression.

a.  $x^2$  for  $x = -5$

b.  $-x^2$  for  $x = -5$

13. Find  $x$ .

a. 20% of 150 is  $x$ .

b. 50% of  $x$  is 150.

14. What are the coordinates of the vertex of the graph of  $y = |x + 2| - 4$ ?

15. Find the  $y$ -intercept of the graph of each equation.

a.  $7y - 3x = 4$

b.  $2x + 4y = 3$

16. Find the slope of each line.

a. The line containing points  $(3, -6)$  and  $(4, -5)$

b. The line described by the equation  $12x + 5y = 9$

17. Find the slope of each line.

a. The line that is perpendicular to the graph  $2x + 3y = 6$

b. The line that is parallel to the graph  $-2x - 6y = 8$

Find each answer.

18. A long-distance company charges \$26.95 per month plus \$.14 per minute for all in-state long distance calls. Calculate the cost in dollars to make 225 minutes of in-state long distance calls over one month.

19. The ratio of black walnut to red oak trees at a tree farm is 4 : 5. The tree farm has 1200 black walnut trees. How many black walnut and red oak trees does the tree farm have altogether?

20. A train moving at a constant speed travels 325 mi in 8 hr. At this rate, how many miles does the train travel in 12 hr?

21. You invest \$175.00 in advertising yourself as a math tutor. You charge \$25/hr. How many hours do you have to tutor before you break even?

22. Line A passes through points  $(6, 8)$  and  $(1, -7)$ . Line B is perpendicular to Line A. Line C is perpendicular to Line B. What is the slope of Line C?

23. **Open-Ended** Make up a problem that could be solved using a rate of change.

24. What is the  $y$ -intercept of the graph of the equation  $17x + 2y = 42$ ?

**Cumulative Review**

Chapters 1–8

**Multiple Choice**

For Exercises 1–11 choose the correct letter.

- What are the next three terms in the sequence 6, 12, 24, 48, ... ?  
 A. 72, 96, 120      B. 86, 162, 240      C. 96, 192, 384      D. 50, 52, 54
- Solve  $8y = -100$ .  
 F. -800      G. -12.5      H. 800      I. 12.5
- Find the equation of the line passing through (2, -1) and parallel to  $y = -3x - 1$ .  
 A.  $y = -3x + 5$       B.  $y = -\frac{3x}{2} - 1$       C.  $y = \frac{x}{3} + 5$       D.  $y = 3x + 1$
- Solve  $\begin{cases} 3x + 7y = -2 \\ 4x - 3y = 22 \end{cases}$ .  
 F. (-4, -2)      G. (-4, 2)      H. (4, 2)      I. (4, -2)
- Simplify  $\frac{10x^5y^3}{2x^6y}$ .  
 A.  $5xy^2$       B.  $\frac{5y^2}{x}$       C.  $\frac{5x}{y^2}$       D.  $\frac{x}{5y^2}$
- Simplify  $(3x - 1)(x + 4)$ .  
 F.  $3x^2 - 4$       G.  $3x^2 - 11x - 4$       H.  $3x^2 + 11x - 4$       I.  $3x^2 + 13x - 4$
- A scuba diver at a depth of 80 ft begins her ascent to the ocean surface. Her rate of change in depth is 2ft/s. Which expression represents her depth in feet  $t$  seconds after she begins her ascent?  
 A.  $2t - 80$       B.  $80 - 2t$       C.  $-80 - 2t$       D.  $80 + 2t$
- Factor  $4x^2 - x - 14$ .  
 F.  $(4x + 7)(x - 2)$       G.  $(2x - 7)(2x + 2)$       H.  $(4x - 7)(x + 2)$       I.  $(2x + 7)(2x - 2)$
- What is the GCF of the terms of  $3x^3 + 6x^2 - 9x$ ?  
 A.  $x$       B. 3      C.  $3x$       D.  $3x^2$
- Which number is *not* a solution of the compound inequality  $7 - 4x \leq 3$  and  $-x - 5 > -10$ ?  
 F. 5      G. 4      H. 2      I. 1
- Which of the following is a cubic binomial?  
 A.  $w^3 - 6w^2 + 9$       B.  $7a^3 + 4a^{-2}$       C.  $-y^3 + 3y^5$       D.  $x^2 - 2x^3$

**Cumulative Review** (continued)

Chapters 1–8

12. A city is growing at a rate of 8 percent per year. What multiplier is used to find the new population each year?
13. Simplify  $6^2 \div 4 + 2(7 - 3) \cdot 4$ .
14. What is the slope of a line that passes through the origin and the point (6, 3)?
15. Evaluate  $x^2 + 3y$  for  $x = 4$  and  $y = 0.5$ .
16. A weight of 6 lb stretches a spring a distance of 12 in. Find the constant  $k$  for the spring.
17. Solve  $\frac{18}{x} = \frac{21}{14}$ .
18. What is the  $x$ -intercept of the line with equation  $5x + 4y = 30$ ?
19. How many positive solutions are there to the equation  $|2x - 5| = 4$ ?
20. Write an equation in standard form passing through the points  $(-2, 0)$  and  $(-3, -1)$ .
21. The product of two negative integers is 36. The second integer is 5 more than the first. Find the integers.
22. The length of a rectangular pizza is 4 in. less than twice its width. The area of the pizza is  $160 \text{ in.}^2$ . Find the dimensions of the pizza.
23. Write a polynomial that is a difference of two squares using the variable  $m$ . Write the polynomial in factored and standard forms.
24. Solve the following system of inequalities by graphing:

$$\begin{aligned}2x - 4y &\leq 4 \\ -3x - 6y &> 6\end{aligned}$$

## Cumulative Review

Chapters 1–10

### Multiple Choice

For Exercises 1–11, choose the correct letter.

- Which property is illustrated by  $x + 7 = 7 + x$ ?
  - Associative Property of Addition
  - Commutative Property of Addition
  - Identity Property of 7
  - Distributive Property
- In which quadrant would the point  $(3, -4)$  be located?
  - I
  - II
  - III
  - IV
- If  $4r = 3s - 5t$ , then  $t = ?$ 
  - $\frac{3s - 4r}{5}$
  - $\frac{3s - 5r}{4}$
  - $\frac{4r - 5}{3s}$
  - $\frac{4r - 3s}{5}$
- Which functions have minimum values?
  - $f(x) = |2x - 1|$
  - $y = -x^2 + 3x$
  - $f(x) = -4x + 3$
  - $h(x) = 2x^2 - x - 6$
  - I and III
  - II and III
  - II and IV
  - I and IV
- What is the vertex of  $f(x) = x^2 - 8x + 3$ ?
  - $(-2, 23)$
  - $(4, -13)$
  - $(0, 3)$
  - $(4 + \sqrt{13}, 0)$
- If  $x = -2$ ,  $y = 3$ , and  $z = 0$ , which expression has the greatest value?
  - $(4y)^{-x}$
  - $(xy^3)^{5z}$
  - $\frac{z}{25y^x}$
  - $x^y$
- A pickup truck that sold for \$18,722 in 1996 sells for \$32,270 in 2002. What is the percent increase?
  - 27%
  - 65%
  - 72%
  - 172%
- The point  $(3.5, -9)$  is the midpoint of the line segment determined by which pair of points?
  - $(6, -2), (10, -11)$
  - $(0, -4), (-7, 5)$
  - $(-2, -3), (9, -15)$
  - $(-1, 7), (8, -11)$
- Solve  $|x + 5| < 5$ .
  - $-10 < x < 0$
  - $-5 < x < 5$
  - $-10 < x < 5$
  - $-10 < x < 10$
- Find the slope of the line passing through the points  $(3, -5)$  and  $(-6, 14)$ .
  - $\frac{7}{3}$
  - $\frac{19}{9}$
  - $-\frac{19}{9}$
  - $\frac{9}{19}$
- Multiply  $(3x - 1)(x^2 + 2x - 4)$ .
  - $3x^3 + 5x^2 - 14x + 4$
  - $3x^3 + 7x^2 + 14x + 4$
  - $3x^3 + 5x^2 - 10x + 4$
  - $3x^3 + 7x^2 + 10x - 4$

**Cumulative Review** (continued)

## Chapters 1–10

Find the number of solutions for each function.

12.  $y = -x^2 - 6x - 9$

13.  $y = x^2 - 3x + 5$

14. What is the length of the diagonal of a 3 by 6 rectangle?

15. A department store purchases coats for \$30 each and then sells them for \$45 each. What is the percent increase?

16. What is the  $y$ -intercept of the graph of  $4x - 3y = 12$ ?17. For what value of  $a$  would  $(x - a)$  be a factor of  $x^2 - 30x + 225$ ?

18. One leg of a right triangle measures 12 in. The hypotenuse measures 13 in. What is the length of the other leg?

19. Find the distance between the points  $(-7, -1)$  and  $(5, -6)$ .20. Write the equation of a line passing through the points  $(2, 3)$  and  $(-4, 7)$ .21. Write an equation in standard form of a line passing through the points  $(-2, 0)$  and  $(-3, -1)$ .22. **Vocabulary** What is the name for a solution that results from solving a radical equation that is not a solution to the original radical equation?23. Simplify  $(9x^4 - 3x^2 + 2) - (x^2 + 3)$ .24. Factor  $54x^4 + 9x^3 + 12x^2 + 2x$  completely.

25. Write and simplify an expression for the area of the shaded region.

