

2017 Unit 1

Multiple Choice

Identify the choice that best completes the statement or answers the question.

\_\_\_\_\_ 1. A family will travel 350 miles from their house in order to reach Dallas, TX. Which inequality can be used to find all possible values of  $t$ , the time it will take this family to reach Dallas in hours, if they travel at an average speed of at least  $r$  miles per hour?

- a.  $t \leq 350r$
- b.  $t > \frac{r}{350}$
- c.  $t \leq \frac{350}{r}$
- d.  $t > 350r^2$

$r = d/t$   
 $t = d/r$   
 $t \leq \frac{350}{r}$

\_\_\_\_\_ 2. The perimeter of a rectangle is 42 centimeters. The length of the rectangle can be represented by  $(x + 4)$ , and its width can be represented by  $(2x - 7)$ . What are the dimensions of this rectangle in centimeters?

- a. Length = 10 and width = 11
- b. Length = 8 and width = 13
- c. Length = 6 and width = 15
- d. Length = 12 and width = 9

$42 = 2(x+4) + 2(2x-7)$   
 $= 2x+8 + 4x-14$   
 $= 6x-6$   
 $48 = 6x \quad x=8$   
 $L = 8+4 = 12$   
 $W = 2(8)-7 = 9$

\_\_\_\_\_ 3. In which step below does a mistake first appear in simplifying the expression

- $0.5(-12c + 6) - 3(c + 4) + 10(c - 5)$  ✓  
 Step 1:  $-6c + 3 - 3(c + 4) + 10(c - 5)$  ✓  
 Step 2:  $-6c + 3 - 3c - 12 + 10(c - 5)$  ✓  
 Step 3:  $-6c + 3 - 3c - 12 + 10c - 50$  ✓  
 Step 4:  $7c - 41$  ←  $c - 59$

- a. Step 1
- b. Step 2
- c. Step 3
- d. Step 4

\_\_\_\_\_ 4. Which inequality is equivalent to  $7x - 2y > 8$ ?

- a.  $y > \frac{7}{2}x + 8$
- b.  $y > -\frac{2}{7}x + \frac{8}{7}$
- c.  $y < \frac{7}{2}x - 4$
- d.  $y < -\frac{2}{7}x - \frac{4}{7}$

$-2y > 8 - 7x$   
 $\frac{-2y}{-2} > \frac{8-7x}{-2}$   
 $y < -4 + \frac{7}{2}x$

\_\_\_\_\_ 5. If  $y = -\frac{4}{5}x - 2$ , what is the value of  $x$  when  $y = -9$ ?

- a.  $-\frac{35}{4}$
- b.  $-\frac{55}{4}$
- c.  $\frac{35}{4}$
- d.  $\frac{55}{4}$

$-9 = -\frac{4}{5}x - 2$   
 $+2$   
 $(-\frac{5}{4}) \cdot 7 = (-\frac{4}{5}x)(-\frac{5}{4})$   
 $\frac{35}{4} = x$

\_\_\_\_\_ 6. Which situation can be represented by  $y = 12x - 4$ ?

- a. The number of eggs,  $y$ , in  $x$  dozen eggs for sale after 4 dozen eggs are sold
- b. The cost,  $y$ , of buying  $x$  movie tickets that sell for \$8 each
- c. The cost,  $y$ , after a \$4 discount, of buying  $x$  T-shirts that sell for \$12 each
- d. The number of inches,  $y$ , in an  $x$ -foot-tall tree after cutting off 4 feet

a)  $-4 \neq 4$  dozen  
 b) no \$8  
 c) yes

d)  $-4 \neq 4$  feet

Name: \_\_\_\_\_

ID: A

- \_\_\_\_\_ 7. Which inequality is equivalent to  $-3x + 2y > 5y + 9$ ?
- a.  $y > x + 3$       b.  $y > -x - 3$       c.  $y < x - 3$       d.  $y < -x - 3$
- \_\_\_\_\_ 8. Which of the following describes all the solutions to the inequality  $5x + 7y \geq 22$  when  $y = -4$ ?
- a.  $x \leq 10$       b.  $x \leq -10$       c.  $x \geq 10$       d.  $x \geq -10$
- \_\_\_\_\_ 9. A man bought  $x$  boxes of doughnuts for \$3.49 each. He paid with a \$50 bill and received the correct amount of change. If he received more than \$10 but less than \$20, which inequality represents the number of boxes of doughnuts he could have bought?
- a.  $9 \leq x \leq 11$       b.  $8 \leq x \leq 12$       c.  $8 \leq x \leq 11$       d.  $9 \leq x \leq 12$
- \_\_\_\_\_ 10. What value of  $x$  makes the equation  $-5x - (-7 - 4x) = -2(3x - 4)$  true?
- a.  $x = 3$       b.  $x = 5$       c.  $x = \frac{1}{3}$       d.  $x = \frac{1}{5}$
- \_\_\_\_\_ 11. Which of the following is equivalent to  $3x - 4y = 6$ ?
- a.  $y = -\frac{6}{7}x$       b.  $y = -\frac{3}{4}x$       c.  $y = \frac{3}{4}x + 2$       d.  $y = \frac{3}{4}x - \frac{3}{2}$
- \_\_\_\_\_ 12. Which inequality describes all the solutions to  $5(3 - x) < -2x + 6$ ?
- a.  $x < -9$       b.  $x > 3$       c.  $x < -3$       d.  $x > 7$
- \_\_\_\_\_ 13. What is the solution to  $0.3(12x - 16) = 0.4(12 - 3x)$ ?
- a. -2      b. 4      c. 2      d. -4

### Short Answer

**Record your answer and fill in the bubbles on your answer document.**

14. A senior employee who works 16 hours earns \$39.50 more than a junior employee who works 18 hours. The senior employee earns \$14 per hour. What is the hourly pay in dollars and cents for the junior employee?

#10

$$-5x - (-7 - 4x) = -2(3x - 4)$$

$$-5x + 7 + 4x = -6x + 8$$

$$\begin{array}{r} -x + 7 = -6x + 8 \\ +6x \quad \quad +6x \end{array}$$

$$\begin{array}{r} 5x + 7 = 8 \\ -7 \quad \quad -7 \end{array}$$

$$5x = 1$$

$$\boxed{x = 1/5}$$

#11

$$3x - 4y = 6 - 3x$$

$$-3x$$

$$\begin{array}{r} -4y = 6 - 3x \\ \hline -4 \quad \quad -4 \end{array}$$

$$\boxed{y = -\frac{3}{2} + \frac{3}{4}x}$$

#12

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

$$\begin{array}{r} 15 - 5x < -2x + 6 - 15 \\ -5x + 24 < -2x + 6 - 15 \end{array}$$

$$\begin{array}{r} -3x < -9 \\ \hline -3 \quad \quad -3 \end{array}$$

$$\boxed{x > 3}$$

#7

$$\begin{array}{r} -3x + 2y > 5y + 9 \\ + 3x \quad -5y \quad -5y \quad + 3y \\ \hline \end{array}$$

$$\begin{array}{r} -3y > 9 + 3x \\ \hline -3 \quad -3 \quad -3 \end{array}$$

$$\boxed{y < -3 - x}$$

#8

$$5x + 7y \geq 22 \quad y = -4$$

$$5x + 7(-4) \geq 22$$

$$\begin{array}{r} 5x - 28 \geq 22 \\ + 28 \quad 28 \end{array}$$

$$\begin{array}{r} 5x \geq 50 \\ \hline 5 \end{array}$$

$$\boxed{x \geq 10}$$

#9

$$\begin{array}{r} 10 < 50 - 3.49x < 20 \\ -50 \quad -50 \end{array}$$

$$\begin{array}{r} -40 < -3.49x < -30 \\ \hline -3.49 \quad -3.49x \quad -3.49 \end{array}$$

$$\underline{11.5} > x > \underline{8.6}$$

$$\boxed{9 \leq x \leq 11}$$

adjust to whole  
that make sense

#13

$$0.3(12x - 16) = 0.4(12 - 3x)$$

multiply by 10

$$3(12x - 16) = 4(12 - 3x)$$

$$\begin{array}{r} 36x - 48 = 48 - 12x \\ 12x + 48 \quad + 48 + 12x \end{array}$$

$$48x = 96$$

$$\boxed{x = 2}$$

#14

$$16(14) = 39.50 + 18x$$

$$\begin{array}{r} 224 = 39.50 + 18x \\ -39.50 \quad -39.50 \\ \hline 184.5 = 18x \end{array}$$

$$\boxed{\$10.25 = x}$$