Test 3 (Unit 4 and Unit 5) version 3

Question 1 .

Solve for *x*.

$$8x - 1 = 4x + 2$$

○ **A.** $x = \frac{1}{6}$

○ **B.** $x = \frac{1}{4}$

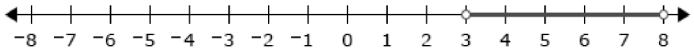
○ **C.** $x = \frac{3}{4}$

○ **D.** $x = \frac{1}{2}$

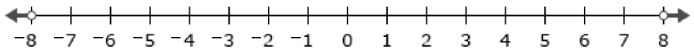
Question 2 .

Which graph shows the solution set of the inequality $|4x - 22| > 10$?

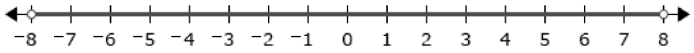
○ **A.**



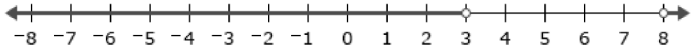
○ **B.**



○ **C.**



○ **D.**



Question 3 .

Which binomial is a factor of $x^2 + 2x - 24$?

○ **A.** $(x + 6)$

○ **B.** $(x - 2)$

○ **C.** $(x + 4)$

○ **D.** $(x + 12)$

Question 4 .

Which of the following number lines shows the solution to the compound inequality given below?

$$-28 \geq -5x + 2 > -118$$

A.

B.

C.

D.

Question 5 .

Solve the following compound inequality.

$$4x - 5 > -5 \text{ OR } -5x \leq -25$$

A. $x > 0$

B. $0 < x \leq 5$

C. $x < 0$ OR $x \geq 5$

D. $x \geq 5$

Question 6 .

A hotel has a budget of $63,750 to repaint the lobby and some hotel rooms. The hotel spent $26,700 on painting the lobby. Each room costs $4,250 to paint. The inequality $26{,}700 + 4{,}250n \leq \$63{,}750$ can be used to determine the number of rooms (n) the hotel can repaint.

Which statement about the number of rooms that can be painted is true?

- **A.** The hotel can repaint 9 rooms.
- **B.** The maximum number of rooms that can be repainted is 2.
- **C.** The minimum number of rooms that can be repainted is 2.
- **D.** The hotel can repaint 2 rooms, but this number is neither the maximum nor the minimum.

Question 7 .

Molly paid $1,646.80 for a used car. If the price paid includes a 8% discount, which of the following equations can be used to determine the price of the car before the discount?

(Let x represent the cost of the car and y represent the total cost before the discount.)

- **A.** $y = 1.8x$
- **B.** $y = 0.92x$
- **C.** $y = x + 8x$
- **D.** $y = 1.08x$

Question 8 .

Olivia purchased x child tickets and y adult tickets at the movies. She spent a total of $46. The equation below describes the relationship between the number of child tickets and the number of adult tickets purchased.

$$7x + 9y = 46$$

The ordered pair (4, 2) is the solution to the equation. What does the solution (4, 2) represent?

- **A.** Olivia purchased 2 child tickets and 4 adult tickets.
- **B.** Child tickets cost $4 each and adult tickets cost $2 each.
- **C.** Olivia spent $4 on child tickets and $2 on adult tickets.
- **D.** Olivia purchased 4 child tickets and 2 adult tickets.

Question 9 .

Simplify the following expression.

$$\frac{x^2 - 12x + 20}{x - 10}$$

○ **A.** $x^2 - 16x - 30$

○ **B.** $x - 10$

○ **C.** $x^2 - 12x - 10$

○ **D.** $x - 2$

Question 10 .

Solve for *x*.

$$27x = 18x + 54x + 6$$

○ **A.** $x = \frac{1}{9}$

○ **B.** $x = -\frac{12}{5}$

○ **C.** $x = -\frac{2}{5}$

○ **D.** $x = -\frac{2}{15}$

Question 11 .

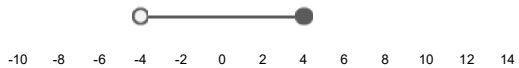
Which of the following number lines shows the solution to the inequality given below?

$5x - 1 \leq -21$ OR $3x - 6 > 6$

○ **A.**

○ **B.**

○ **C.**



○ **D.**

Question 12 .

Maria is weighing a glass jar filled with marbles. The weight of each marble is 4 grams and the weight of the empty jar is x grams. There are 72 marbles in the glass jar and the total weight of the marbles and the glass jar is 703 grams.

Which equation could be used to find x, the weight of the empty glass jar?

○ **A.** $703 = 72x + 4$

○ **B.** $703 = 4x + 72$

○ **C.** $703 = 4(72) + x$

○ **D.** $703 = 4x \div 72$

Question 13 .

Solve for *x*.

$$8(x + 4) + 6(x + 4) = 6x - 6$$

○ **A.** $x = \frac{7}{4}$

○ **B.** $x = -\frac{31}{10}$

○ **C.** $x = -\frac{31}{4}$

○ **D.** $x = 8$

Question 14 .

Simplify the following expression.

$3x(4x - 2)$

○ **A.** $12x^2 - 2x$

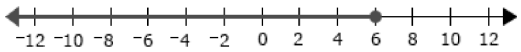
○ **B.** $12x^2 - 6x$

○ **C.** $12x^2 + 10x$

○ **D.** $12x^2 + 2x$

Question 15 .

The solution set of an inequality is shown below.



Which inequality has the solution set shown on the number line?

○ **A.** $\frac{x}{8} \leq \frac{-3}{4}$

○ **B.** $\frac{-x}{8} \leq \frac{3}{4}$

○ **C.** $\frac{x}{8} \leq \frac{3}{4}$

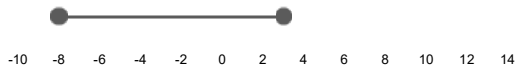
○ **D.** $\frac{-x}{8} \leq \frac{-3}{4}$

Question 16 .

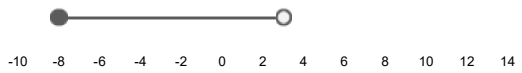
Which of the following number lines shows the solution to the compound inequality given below?

$3x + 5 \geq -19$ AND $-4x - 2 > -14$

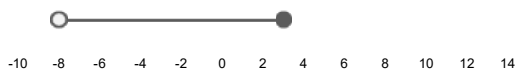
○ **A.**



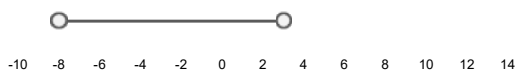
○ **B.**



○ **C.**



○ **D.**



Question 17 .

Cassie received a 30%-off coupon and a $5-off coupon from a department store. She visits the department store during a tax-free sale and plans to spend no more than $29.30. She also plans to use both of the coupons she received on her purchase. If this situation is modeled by the inequality below, what must be the original purchase total, *x*, before the discounts are applied?

$$0.7x - \$5 \leq \$29.30$$

○ **A.** The original purchase total must be at least to $49 before the discounts are applied.

○ **B.** The original purchase total must be at least to $34.30 before the discounts are applied.

○ **C.** The original purchase total must be at most to $49 before the discounts are applied.

○ **D.** The original purchase total must be at least to $36.86 before the discounts are applied.

Question 18 .

Solve for *p*.

$$\frac{2p - 25}{4} = 6$$

○ **A.** $p = -\frac{1}{2}$

○ **B.** $p = 62$

○ **C.** $p = \frac{31}{2}$

○ **D.** $p = \frac{49}{2}$

Question 19 .

Solve for *x*.

$$8x + 6 = 5x - 6x + 24$$

○ **A.** $x = 2$

○ **B.** $x = -6$

○ **C.** $x = -10$

○ **D.** $x = \frac{10}{3}$

Question 20 .

Evaluate the following expression for $m = 16$.

$$\sqrt{4m} + 1$$

○ **A.** 15

○ **B.** 7

○ **C.** 9

○ **D.** 17

Question 21 .

Harvey is solving an equation. His work is shown below.

$$5x + (5x + 9) = 57$$
$$(5x + 5x) + 9 = 57$$
$$10x + 9 = 57$$

Which statement describes the procedure Harvey used in his work and which property justifies the procedure?

- ○ **A.** Harvey regrouped the terms to add 5*x* and 5*x*. This procedure is justified by the associative property.
- ○ **B.** Harvey regrouped the terms to multiply 5*x* and 5*x* by 9. This procedure is justified by the associative property.
- ○ **C.** Harvey regrouped the terms to multiply 5*x* and 5*x*. This procedure is justified by the commutative property.
- ○ **D.** Harvey regrouped the terms to add 5*x* and 5*x* and 9. This procedure is justified by the commutative property.

Question 22 .

Simplify.

$$\sqrt{847}$$

- ○ **A.** $121\sqrt{7}$
- ○ **B.** $11\sqrt{7}$
- ○ **C.** $7\sqrt{11}$
- ○ **D.** $77\sqrt{11}$

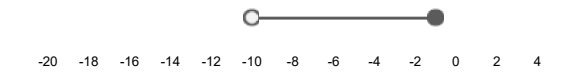
Question 23 .

Which of the following number lines shows the solution to the inequality given below?

$2x + 8 \leq -12$ OR $5x + 3 > -2$

○ **A.**

○ **B.**



○ **C.**

○ **D.**

Answers

1. C
2. D
3. A
4. B
5. A
6. D
7. B
8. D
9. D
10. D
11. B
12. C
13. C
14. B
15. C
16. B
17. C
18. D
19. A
20. C
21. A
22. B
23. D