Group Session - Midterm Review

Question 1 .

Evaluate the following expression when $n = 16$.

$$2|5 - n| - |-9|$$

- **A.** -13
- **B.** 53
- **C.** 13
- **D.** 60

Question 2 .

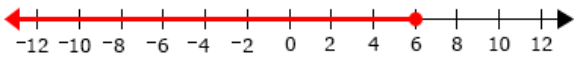
Simplify the expression given below.

$$(16x^3 - 2) - (12x^3 - 30)$$

- **A.** $4x^3 + 28$
- **B.** $4x^3 + 12x^2 - 28$
- **C.** $14x^3 - 9x^2 + 28$
- **D.** $16x^3 - 11x^2 + 32$

Question 3 .

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 4 .

Ethan wants to buy an action figure for $3 and several packs of trading cards for $6 each at a toy store. He can spend no more than $39 at the store today, but if he spends $15 or more he will receive a free poster.

Write and solve an inequality where x represents how many packs of cards Ethan can buy today to receive the free poster.

- **A.** $2 < x < 6$
- **B.** $3 < x < 7$
- **C.** $3 \leq x \leq 7$
- **D.** $2 \leq x \leq 6$

Question 5 .

A line passes through the point (6,5) and has a slope of $\frac{7}{3}$. Find the equation of the line.

- **A.** $y = \frac{7}{3}x - 19$
- **B.** $y = -\frac{7}{3}x - 19$
- **C.** $y = -\frac{7}{3}x - 9$
- **D.** $y = \frac{7}{3}x - 9$

Question 6 .

Solve for *x*.

$$8x - 5 = 4x + 10$$

- **A.** $x = \frac{5}{2}$
- **B.** $x = \frac{5}{4}$
- **C.** $x = \frac{5}{6}$
- **D.** $x = \frac{15}{4}$

Question 7 .

Kenneth brings a partially-filled beaker of red liquid into is his laboratory and uses an apparatus to add drops of blue liquid to the beaker at a constant rate. The equation $y = 5x + 15$ describes the relationship between the number of minutes (x) since Kenneth began adding drops of blue liquid to the beaker and the total amount of liquid in the beaker (y), in milliliters. Which statement correctly describes a solution of the equation?

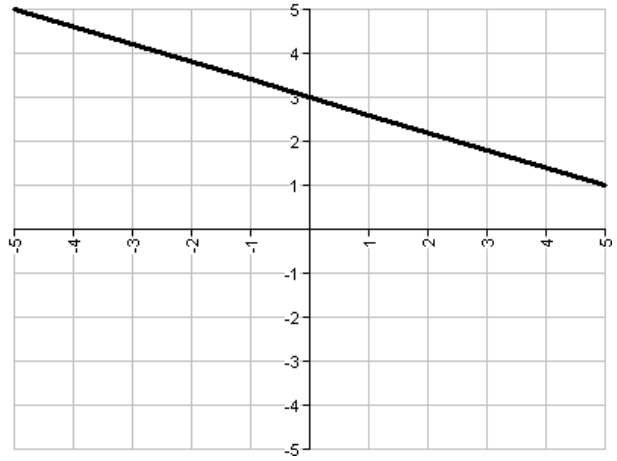
- **A.** The total amount of liquid in the beaker after 1 minute is 5 milliliters.
- **B.** The total amount of liquid in the beaker after 2 minutes is 25 milliliters.
- **C.** The total amount of liquid in the beaker after 5 minutes is 15 milliliters.
- **D.** The total amount of liquid in the beaker after 35 minutes is 4 milliliters.

Question 8 .

A linear function has a slope of $\frac{8}{3}$ and crosses the *y*-axis at 7. What is the equation of the line?

- **A.** $y = \frac{8}{3}x - 7$
- **B.** $y = 7x + \frac{8}{3}$
- **C.** $y = \frac{8}{3}x + 7$
- **D.** $y = \frac{8}{3}x - \frac{56}{3}$

Question 9 .

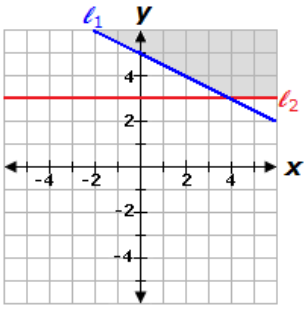


Determine the y-intercept of the line above.

- **A.** (7, 0)
- **B.** (0, 3)
- **C.** (0, 4)
- **D.** (3, 0)

Question 10 .

Which system of inequalities is represented by the graph below?



A. $\begin{cases} y \geq -\frac{1}{2}x + 5 \\ y \geq 3 \end{cases}$

B. $\begin{cases} y > -\frac{1}{2}x + 5 \\ y > 3 \end{cases}$

C. $\begin{cases} y \geq -\frac{1}{2}x + 5 \\ x \geq 3 \end{cases}$

D. $\begin{cases} y > -\frac{1}{2}x + 5 \\ x > 3 \end{cases}$

Question 11 .

A linear function has a *y*-intercept of 7 and a slope of 3. What is the equation of the line?

A. $y = 3x + 7$

B. $y = \frac{1}{3}x + 7$

C. $y = 3x + 21$

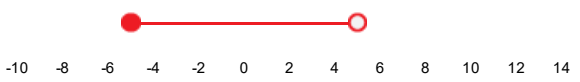
D. $y = 3x - 7$

Question 12 .

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

$3x + 5 \geq -10$ AND $-5x - 2 > -27$

A.



B.

C.

D.

Question 13 .

Identify the slope of the line below.

$7x - 5y = -20$

A. 4

B. -4

C. $\frac{7}{5}$

D. $-\frac{7}{5}$

Question 14 .

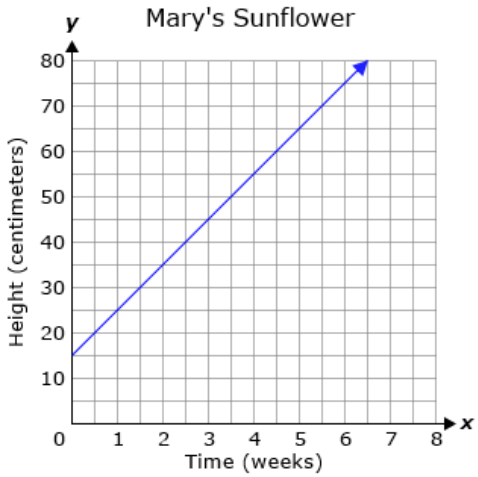
Solve for *x*.

$$7(x + 4) + 7(x + 4) = 6x - 6$$

- **A.** $x = \frac{3}{4}$
- **B.** $x = -\frac{31}{4}$
- **C.** $x = -\frac{31}{10}$
- **D.** $x = 8$

Question 15 .

Mary bought a young sunflower plant at a nursery and planted it in her garden. The graph below describes the relationship between the number of weeks (*x*) since she planted the sunflower in her garden and the average height (*y*), in centimeters, of the plant that week.



What was the height of the sunflower when Mary planted it in her garden, and at what rate is it growing?

- **A.** The sunflower was 10 centimeters tall when Mary planted it in her garden, and it is growing at a rate of 15 centimeters per week.
- **B.** The sunflower was 15 centimeters tall when Mary planted it in her garden, and it is growing at a rate of 5 centimeters per week.
- **C.** The sunflower was 25 centimeters tall when Mary planted it in her garden, and it is growing at a rate of 10 centimeters per week.
- **D.** The sunflower was 15 centimeters tall when Mary planted it in her garden, and it is growing at a rate of 10 centimeters per week.

Question 16 .

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

$-20 \geq -3x + 1 > -59$

A.

B.

C.

D.

Question 17 .

Solve the following compound inequality.

$2x - 2 > 6$ OR $-5x \leq -40$

A. $x < 4$ OR $x \geq 8$

B. $x \geq 8$

C. $x > 4$

D. $4 < x \leq 8$

Question 18 .

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

$-5x - 7 < -22$ OR $-2x \leq 10$

A.

B.

C.

D.

Question 19 .

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.

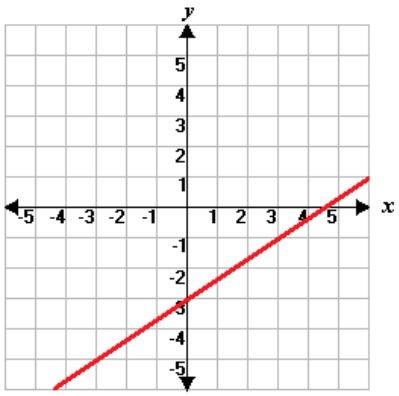
B. Olivia purchased 4 child tickets and 2 adult tickets.

C. Child tickets cost $4 each and adult tickets cost $2 each.

D. Olivia spent $4 on child tickets and $2 on adult tickets.

Question 20 .

Which of the following equations matches the graph below?



A. $y = \frac{2}{3}x - 3$

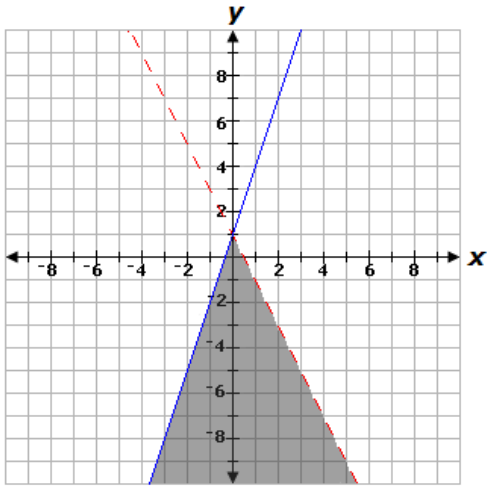
B. $y = \frac{3}{2}x + 3$

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

D. $y = -\frac{2}{3}x - 3$

Question 21 .

The solution set to a system of linear inequalities is graphed below.



Which system of linear inequalities has the solution set shown in the graph?

- **A.** $y < 3x + 1$
  $y \leq -2x + 1$
- **B.** $y < 3x + 1$
  $y < -2x + 1$
- **C.** $y \leq 3x + 1$
  $y > -2x + 1$
- **D.** $y \leq 3x + 1$
  $y < -2x + 1$

Question 22 .

A mail courier charges a base fee of $3.95 plus $10.40 per package being delivered. If *x* represents the number of packages delivered, which of the following equations could be used to find *y*, the total cost of mailing packages?

- **A.** $y = \$10.40x + \$3.95$
- **B.** $y = \$3.95x + \$10.40$
- **C.** $y = \$14.35x$
- **D.** $y = \$10.40x$

Question 23 .

What is the equation for a line that passes through the points (-2,-3) and (4,21)?

- **A.** $y = -4x + 11$
- **B.** $y = 4x - 11$
- **C.** $y = -4x - 5$
- **D.** $y = 4x + 5$

Question 24 .

Cassie received a 15%-off coupon and a $10-off coupon from a department store. She visits the department store during a tax-free sale and plans to spend no more than $41.85. 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?

$$0.85x - \$10 \leq \$41.85$$

- **A.** The original purchase total must be at most to $61 before the discounts are applied.
- **B.** The original purchase total must be at least to $39.24 before the discounts are applied.
- **C.** The original purchase total must be at least to $61 before the discounts are applied.
- **D.** The original purchase total must be at least to $51.85 before the discounts are applied.

Question 25 .

Solve for *x*.

$$9x + 6 = 7x - 8x + 24$$

- **A.** $x = -3$
- **B.** $x = -5$
- **C.** $x = \frac{9}{5}$
- **D.** $x = 3$

Question 26 .

What is the equation of the line that passes through the points (4,9) and (8,2)?

- **A.** $y + 2 = -\frac{7}{4}(x + 8)$
- **B.** $y - 2 = -\frac{4}{7}(x - 8)$
- **C.** $y + 9 = -\frac{4}{7}(x + 4)$
- **D.** $y - 9 = -\frac{7}{4}(x - 4)$

Question 27 .

Stella needs to make at least 8 cakes for a bake sale. A chocolate cake requires 5 cups of flour, and a fruit cake requires 3 cups of flour. She has at most 120 cups of flour.

Which system of inequalities represent the number of chocolate cakes (*c*) and the number of fruit cakes (*f*) Stella can make?

- **A.** $c + f \leq 8$
  $5c + 3f \leq 120$
- **B.** $c + f \geq 8$
  $3c + 5f \leq 120$
- **C.** $c + f \leq 8$
  $3c + 5f \leq 120$
- **D.** $c + f \geq 8$
  $5c + 3f \leq 120$

Question 28 .

Solve for *p*.

$$\frac{3p - 29}{2} = 4$$

- **A.** $p = 22$
- **B.** $p = \frac{37}{3}$
- **C.** $p = 11$
- **D.** $p = -7$

Question 29 .

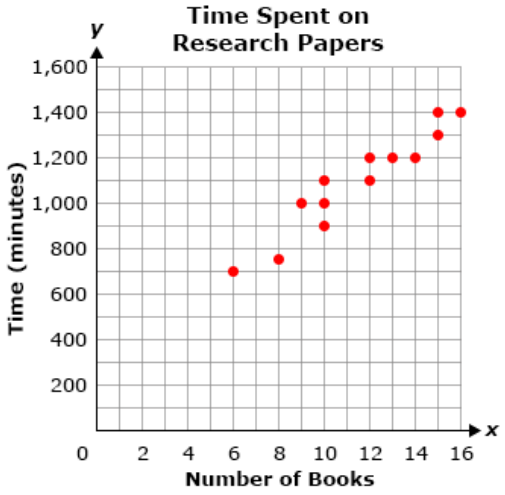
Maria is weighing a glass jar filled with marbles. The weight of each marble is 4 grams and the weight of the empty jar is x grams. There are 72 marbles in the glass jar and the total weight of the marbles and the glass jar is 703 grams.

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

- **A.** $703 = 4x \div 72$
- **B.** $703 = 72x + 4$
- **C.** $703 = 4(72) + x$
- **D.** $703 = 4x + 72$

Question 30 .

The scatter plot below shows the total time (y), in minutes, 13 students spent working on their research papers based on the number of books (x) they used as resources.



Based on the scatter plot, which equation represents the line of best fit for the time the students spent working on research papers?

- **A.** $y = 70.28x$
- **B.** $y = 87.5x$
- **C.** $y = 70.28x + 285.21$
- **D.** $y = 87.5x + 700$