

Instructions: Fill in the blank with the letter of the best response.

1. _____ Solve the inequality $24 < -2(x - 3) < 36$.

- (A) $-16 < x < -15$
- (B) $-21 < x < -9$
- (C) $-21 < x < -15$
- (D) $-15 < x < -9$

2. _____ Solve the inequality $|3x + 4| < 8$

- (A) $x < \frac{4}{3}$
- (B) $-\frac{4}{3} < x < 4$
- (C) $-4 < x < \frac{4}{3}$
- (D) $-8 < x < \frac{4}{3}$

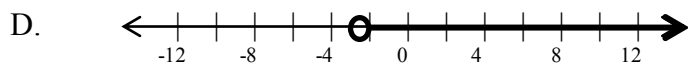
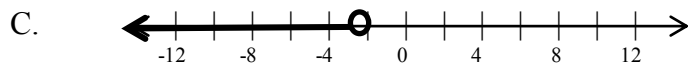
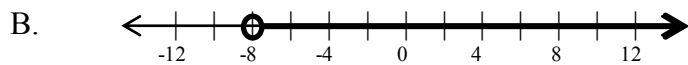
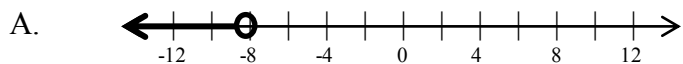
3. _____ Which of the following graphs shows the solution set for the inequality $|2x + 4| > 2$



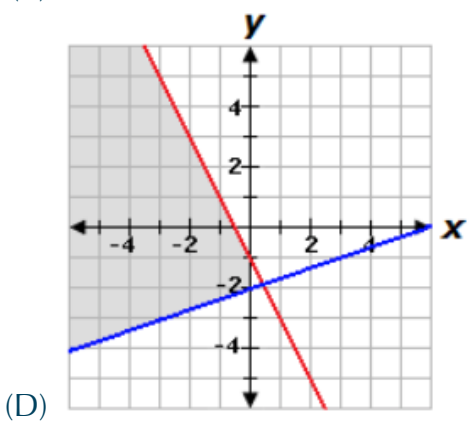
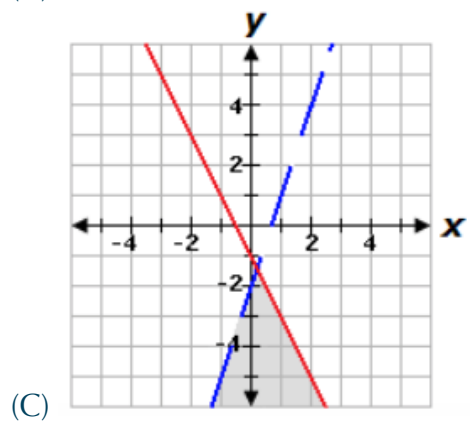
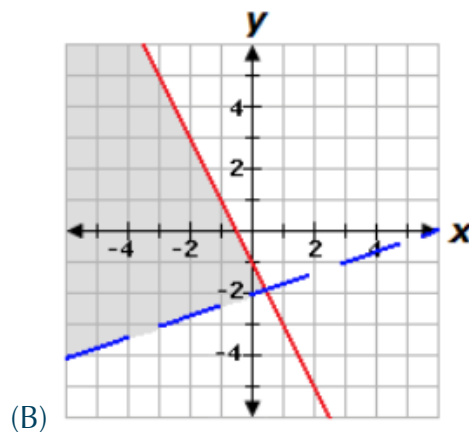
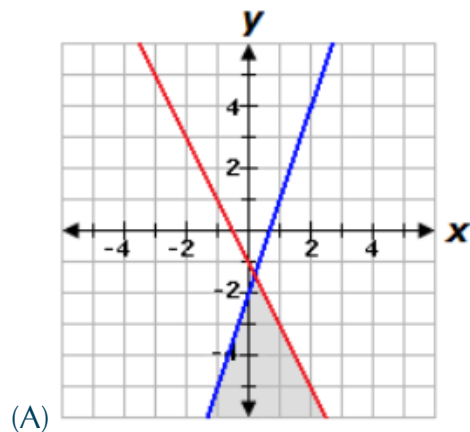
4. _____ Tom can spend up to \$40 for gasoline and a carwash at a service station. The carwash will cost \$6.00, and a gasoline costs \$4.50 per gallon. The inequality $4.5g + 6 < 40$ can be solved for g , the number of gallons of gasoline Tom can buy. Which of the following is a true statement?

- (A) Tom can buy over 10 gallons of gasoline.
- (B) Tom can buy at most 7 gallons of gasoline.
- (C) Tom can buy 6 gallons, but not 7 gallons.
- (D) Tom can buy 7 gallons of gasoline, but not 8 gallons.

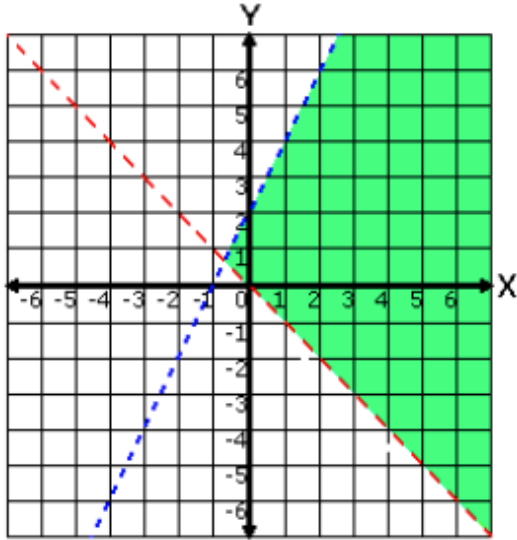
5. _____ Which of the following graphs shows the solution to the inequality $-\frac{1}{2}x - 4 < 0$?



6. _____ Which graph represents the system of inequalities $\begin{cases} y > \frac{1}{3}x - 2 \\ y \leq -2x - 1 \end{cases}$?



7. _____ Choose the system of inequalities that best matches the graph below.



(A) $\begin{cases} y < 2x + 2 \\ y < x \end{cases}$

(B) $\begin{cases} y \leq x - 2 \\ y > -x \end{cases}$

(C) $\begin{cases} y < 2x \\ y \leq x \end{cases}$

(D) $\begin{cases} y < 2x + 2 \\ y > -x \end{cases}$

8. _____ At an ice cream parlor, ice cream cones cost x dollars each and sundaes cost y dollars each. The total cost of 4 cones and 3 sundaes is more than \$20. The total cost of 5 cones and 1 sundae is less than \$16. This situation can be represented by which of the following system of inequalities.

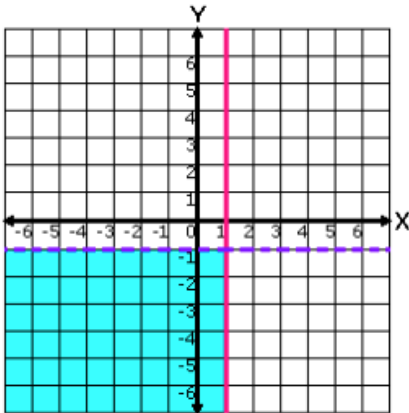
(A) $\begin{cases} 4x + 3y > 20 \\ 5x + y < 16 \end{cases}$

(B) $\begin{cases} 4x + 3y < 20 \\ 5x + y > 16 \end{cases}$

(C) $\begin{cases} 4x + 3y \geq 20 \\ 5x + y \leq 16 \end{cases}$

(D) $\begin{cases} 4x + 3y \leq 20 \\ 5x + y \leq 16 \end{cases}$

9. _____ Choose the system of inequalities that best matches the graph below.



(A) $\begin{cases} y < -1 \\ x \leq 1 \end{cases}$

(B) $\begin{cases} y \leq -1 \\ x < 1 \end{cases}$

(C) $\begin{cases} y < 1 \\ x \leq -1 \end{cases}$

(D) $\begin{cases} y > -1 \\ x \geq 1 \end{cases}$

10. _____ Blade-Z manufactures roller blades. The production facility has fixed costs of \$300 a day and total production costs of \$3,300 per day at an output of 100 pair of skates per day. Which of the following equations represents the daily production cost for Blade-Z based on the number of skates manufactured? (Let $C(x)$ represents the daily production cost and x represent the number of pairs of skates manufactured.)
- (A) $C(x) = 33x + 300$
 - (B) $C(x) = 30x - 300$
 - (C) $C(x) = 30x + 300$
 - (D) $C(x) = 33x$
11. _____ Meghan is completing her chemistry and geometry homework. Each chemistry assignment has x problems, and each geometry assignment has y problems. She must complete a total of 81 problems. The equation $5x + 3y = 81$ describes the relationship between the number of chemistry problems and the number of geometry problems.
- The ordered pair (9, 12) is a solution of the equation. What does the solution (9, 12) represent?
- (A) Each chemistry assignment contains 9 problems and each geometry assignment contains 12 problems.
 - (B) Meghan must complete 3 more geometry assignments than chemistry assignments.
 - (C) Meghan spent 9 minutes on her chemistry homework and 12 minutes on her geometry homework.
 - (D) Meghan must complete 9 more chemistry assignments than geometry assignments.
12. _____ A rental car company charges a base fee of \$50.47 plus \$0.50 per mile driven. If x represents the number of miles driven, which of the following equations could be used to find y , the total cost of the bill?
- (A) $y = \$0.80x + \50.47
 - (B) $y = \$50.47x + \0.50
 - (C) $y = \$50.97x$
 - (D) $y = \$0.50x + \50.47
13. _____ Solve the equation $9x - 5 = 6x + 9x + 10$ for x .
- (A) $x = \frac{5}{18}$
 - (B) $x = -\frac{5}{18}$
 - (C) $x = \frac{5}{2}$
 - (D) $x = -\frac{5}{2}$

14. _____ The steps John used to solve an equation are shown below.

Solve: $0.4x + 5 + 0.2x = 17$

Step 1: $0.4x + 0.2x + 5 = 17$

Step 2: $0.6x + 5 = 17$

Step 3: $0.6x = 12$

Step 4: $x = 20$

Which properties justify Step 1 and Step 3?

- (A) Step 1: Distributive Property; Step 3: Division Property of Equality.
- (B) Step 1: Distributive Property; Step 3: Subtraction Property of Equality.
- (C) Step 1: Commutative Property of Equality; Step 3: Division Property of Equality
- (D) Step 1: Commutative Property of Addition; Step 3: Subtraction Property of Equality

15. _____ What is a solution to the linear equation $\frac{3}{4}x - 5 = 10$?

(A) $x = \frac{15}{4}$

(B) $x = \frac{20}{3}$

(C) $x = \frac{45}{4}$

(D) $x = 20$

16. _____ Which is a correct step in solving the equation $-1.75 + 2(2 - x) = 0$ for x ?

(A) $2(2 - x) = -1.75$

(B) $4 - x = 1.75$

(C) $-2x = 1.75 - 4$

(D) $x = -2.25 \div 2$

17. _____ Use elimination to find the solution to the system of equations

$$\begin{array}{r} 5x + y = 10 \\ 2x - 3y = 4 \end{array}$$

(A) $x = 14, y = 8$

(B) $x = 2, y = 0$

(C) $x = -4, y = 4$

(D) $x = -4, y = 30$

18. _____ Use substitution to solve for x in the system of equations

$$\begin{array}{r} 11x + 2y = 30 \\ 4x + y = 9 \end{array}$$

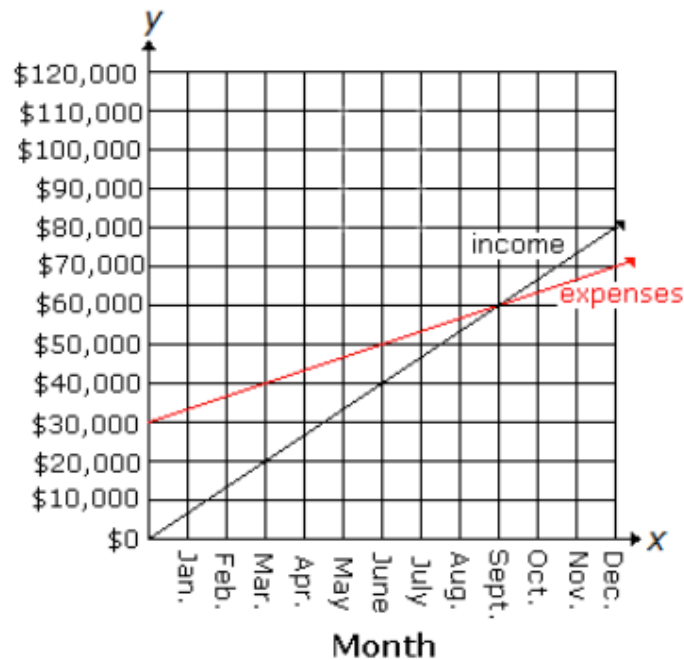
(A) $x = 4$

(B) $x = 10$

(C) $x = -4$

(D) $x = 8$

19. _____ The equation representing income and expenses for Tom's candy store are shown in the graph below.



$$\text{Income: } 20,000x - 3y = 0$$

$$\text{Expenses: } 10,000x - 3y + 90,000 = 0$$

Let x represent the month and y represent the amount in dollars. In which month were the store's expenses greater than its income?

- (A) November
 - (B) September
 - (C) August
 - (D) October
20. _____ How would you classify the line going through the points (6, -3) and (2, -8)?
- (A) rising
 - (B) falling
 - (C) horizontal
 - (D) vertical

Free Response (6 pts): Show all your work in the space provided.

21. Marco is using metal disks of two different sizes in an experiment. The combined weight of 5 small disks and 4 big disks is 300 grams, while the combined weight of 7 small disks and 2 big disks is 240 grams.

(a) Write a pair of linear equations to represent the information given above. Be sure to state what the variables represent.

(b) Solve the pair of equations to find the weight of a small disk. Show your work.

(c) What would the combined weight of 4 small disks and 4 big disks be? Explain your reasoning.