

Keystone Algebra I Review

Linear Equations and Inequalities

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

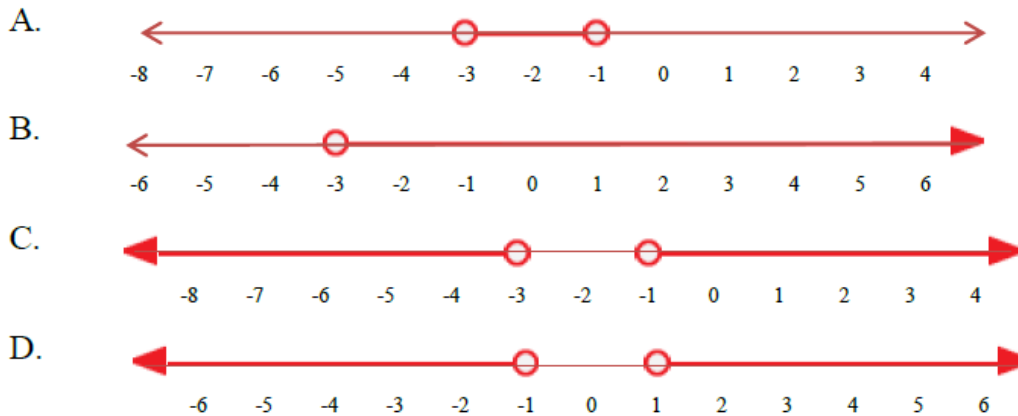
- A. $-16 < x < -15$ B. $-21 < x < -9$
 C. $-21 < x < -15$ D. $-15 < x < -9$

2. Solve the following 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 below?

$$|2x + 4| > 2$$

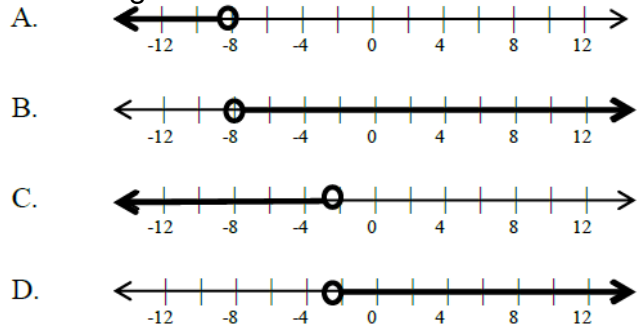


4. Tom can spend up to \$40 for gasoline and a carwash at a service station. The carwash will cost \$6.00, and a gasoline costs \$4.50 per gallon. The inequality below can be solved for g, the number of gallons of gasoline Tom can buy.

$$4.5g + 6 < 40$$

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.

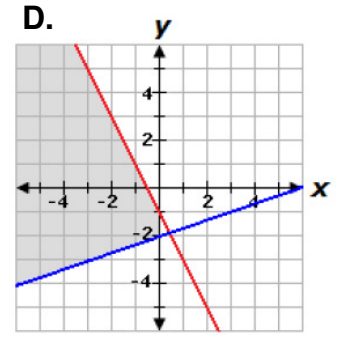
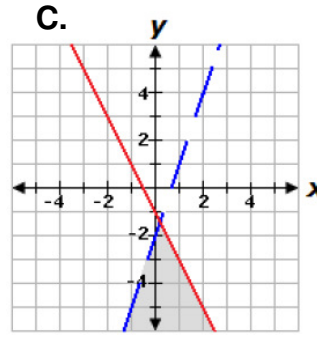
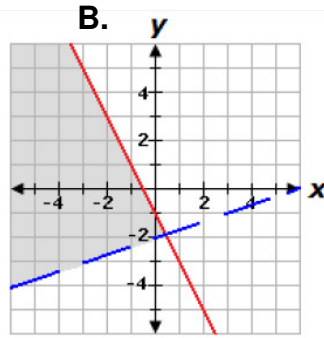
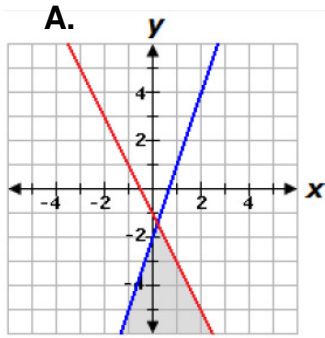


5. Which of the following graphs shows the solution to the inequality

$$-\frac{1}{2}x - 4 < 0$$

6. Which graph represents the following system of inequalities?

$$\begin{cases} y > \frac{1}{3}x - 2 \\ y \leq -2x - 1 \end{cases}$$



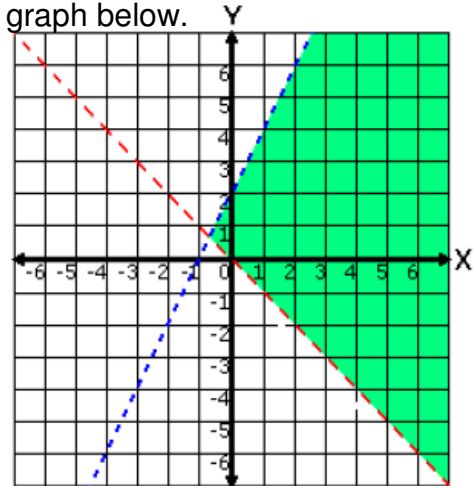
7. Choose the system of inequalities that best matches the graph below.

A. $y < 2x + 2$
 $y < x$

B. $y \leq x - 2$
 $y > -x$

C. $y < 2x$
 $y \leq x$

D. $y < 2x + 2$
 $y > -x$



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:

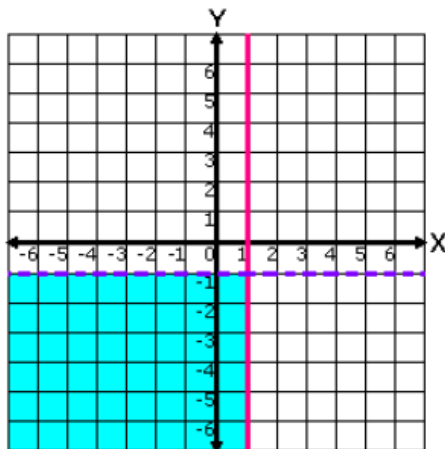
A. $4x + 3y > 20$
 $5x + y < 16$

B. $4x + 3y < 20$
 $5x + y > 16$

C. $4x + 3y > 20$
 $5x + y < 16$

D. $4x + 3y < 20$
 $5x + y < 16$

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



A. $y < -1$
 $x \leq 1$

C. $y < 1$
 $x \leq -1$

B. $y \leq -1$
 $x < 1$

D. $y > -1$
 $x \geq 1$

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 $C(x)$ represent 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 below describes the relationship between the number of chemistry problems and the number of geometry problems.

$$5x + 3y = 81$$

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 for x : $9x - 5 = 6x + 9x + 10$

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.

$$\text{Solve: } 0.4x + 5 + 0.2x = 17$$

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 following equation for x ?

$$-1.75 + 2(2 - x) = 0$$

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.

$$5x + y = 10$$

$$2x - 3y = 4$$

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:

$$11x + 2y = 30$$

$$4x + y = 9$$

A. $x = 4$

B. $x = 10$

C. $x = -4$

D. $x = 8$

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

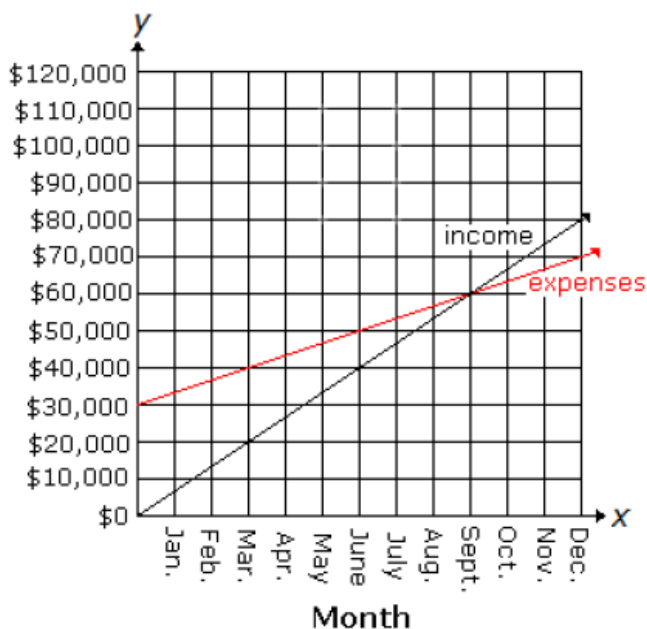
Let x represent the month and y represent the amount in dollars. In which month were the store's expenses greater than its income?

A. November

C. August

B. September

D. October



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20. Reid and Sharon work in two different clothing stores. Reid's store sells shirts for \$14 each and pants for \$39 each. Sharon's store sells shirts for \$12 each and pants for \$44 each. One day, Reid sold \$145 worth of shirts and pants, and Sharon sold the same number of shirts and pants, but her sales were worth \$156. When x is the number of shirts sold and y is the number of pants sold, the situation can be modeled by a system of linear equations.

A. Write the two equations that form the system of equations which models the information above.

B. Use the equations found in **Part A** to determine how many shirts and pants Reid sold.

shirts: _____

pants: _____

C. On another day, Reid and Sharon each sold 5 shirts and 2 pants. Who sold the greatest dollar amount of merchandise?