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SOLVE SYSTEMS GRAPHICALLY

Use the graph to solve the problem.

1. The graph shows a system of linear equations, $y = -x + 3$ and $y = 3x - 1$. Find the solution to the system from the graphs.

Solutions to $y = -x + 3$ include $(1, \_\_\_\_)$ and $(\_\_\_, 1)$.

Solutions to $y = 3x - 1$ include $(1, \_\_\_\_)$ and $(\_\_\_, 5)$.

Both equations have the solution $(\_\_\_\_, \_\_\_\_)$.

The solution of the system is $(\_\_\_\_, \_\_\_\_)$.

Use this graph for numbers 2–5. Solve each problem.

2. Find each equation from the $y$-intercepts and the slopes.

Solution: ________________________________

3. Using the graph, find the solution to the system.

Solution: _______

4. The $x$ and $y$ values in the system represent the lengths of two boards cut from a 6-foot board. What does $y = 2x$ mean?

Solution: ________________________________

5. Explain why there is only one solution to a system of intersecting lines.

Solution: ________________________________
Solve each problem. Choose the best answer.

6. What can you say about the statement *two lines with the same y-intercept are parallel*?
   - A. never true
   - B. true when the intercept is (0, 0)
   - C. sometimes true
   - D. always true

7. Which ordered pair is the solution to the system of equations \(y = -2x + 5\) and \(y = x - 4\)?
   - A. (-3, 9)
   - B. (-1, 1)
   - C. (3, -1)
   - D. (3, 9)

Solve each problem.

8. Write an equation for a line with a slope of \(\frac{1}{2}\) and a y-intercept of 3. Write a second equation for a line with a slope of \(\frac{2}{3}\) and a y-intercept of 3. If these two equations were graphed on the same coordinate grid, what would be the solution to the system? Explain your answer.

First equation: ________________

Second equation: ________________

**Solution to the system**


9. Write a system of equations that has a solution of (2, 0).


10. A system of equations is graphed. The solution to the system is (3, 4). One equation is \(y = x + 1\). With this information is there only one equation that could be in the system? Explain your answer.


Use the graph to solve the problem.

1. The graph shows a system of equations, \( y = x + 3 \) and \( y = x - 1 \).
   Find the solution to the system.

   Solutions to \( y = x + 3 \) include \((-1, \underline{\hspace{2cm}}), (\underline{\hspace{2cm}}, 1)\).

   Solutions to \( y = x - 1 \) include \((-1, \underline{\hspace{2cm}}), (\underline{\hspace{2cm}}, 3)\).

   The lines are \underline{\hspace{2cm}} and have \underline{\hspace{2cm}} points in common, so there \underline{\hspace{2cm}} solution.

Use the graph for numbers 2 and 3. Solve each problem.

2. Use the \( y \)-intercepts and slopes to write an equation for each line.

   Solution: \underline{\hspace{5cm}}

3. Using the graph, find the solution to the system.

   Solution: \underline{\hspace{5cm}}

4. Consider the system \( y = 4(x + 1) \) and \( y = 4x + 4 \). Find the solution.

   Solution: \underline{\hspace{5cm}}

5. Use mental math to find the solution to the system \( y = -2 \) and \( x = 5 \).

   Solution: \underline{\hspace{2cm}}
Solve each problem. Choose the best answer or write the solution.

6. If a system of equations has a solution, the slopes of the two equations are
   A the same.    C different.
   B both negative.    D both positive.

7. Graph the equations \( y = -x + 12 \) and \( y = x + 8 \) to find two numbers whose sum is 12 and whose difference is 8.

**Solution:** The numbers are ________________.

8. A triangle is defined by the \( y \)-axis and the equations as shown in the graph below. Write the coordinate pair for each vertex of the triangle. How do the vertices relate to the solution of a system of equations?

   Vertex 1: (0, _____)  Vertex 3: ______
   Vertex 2: (_____, 4)

**Solve each problem. Explain your thinking.**

9. Write a system of equations that has no solution. Explain why.

   _______________________________________________________________________

10. There are three possible types of graphs for a system of equations. Name the three types and the solution(s) that result in each.

   _______________________________________________________________________

   _______________________________________________________________________
Use this information for numbers 1–5. Solve each problem.

The graph shows how the monthly cost of cable television (y) changes. The plan has a $4 charge per movie and a monthly charge of $25.

1. What is the y-intercept, and what does it mean to the problem?
   Solution: ____________________________

2. From the graph, find the cost for a month when five movies are ordered.
   Solution: ____________________________

3. Find the slope of the equation. How does the charge per movie relate to the slope of the equation?
   Solution: ____________________________

4. What is the equation represented by the graph?
   Solution: ____________________________

5. If the monthly charge increases from $25 to $28, how will the graph change?
   Solution: ____________________________
Solve each problem. Choose the best answer.

6. Which ordered pair is a solution to the system of equations \( y = 2x + 1 \) and \( y = -x + 7 \)?
   - A) (-5, 1)
   - B) (0, 5)
   - C) (1, 6)
   - D) (2, 5)

7. At \( t = 0 \), Ted is 50 feet away from school. He arrives at school 10 seconds later. Which equation relates distance from school to time?
   - A) \( 50 = 10t \)
   - B) \( r = 50t \)
   - C) \( 50 = 10r \)
   - D) \( d = 50t \)

---

Reasoning

Solve each problem. Explain your thinking.

8. Many systems of equations compare the cost for using one company to the cost for using a different company. Why is the solution to this system referred to as the break-even point? How can you use this solution to decide between the two companies?

   ____________________________
   ____________________________
   ____________________________
   ____________________________

9. What is the solution to a system of two proportions?

   ____________________________
   ____________________________
   ____________________________
   ____________________________

10. Slope is found differently within a table, a graph, and an equation. Explain each method.

   ____________________________
   ____________________________
   ____________________________
   ____________________________
   ____________________________
   ____________________________

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Review 4: Practices 7 and 8
**Glossary**

**B b**

**base**
in a power, the number that is multiplied by itself

**C c**

**coefficient**
a number that is multiplied by a variable

**coinciding lines**
lines that lie on top of each other

**corresponding angles (of figures)**
angles in the relative same position within different figures