

Name _____

Date _____

8.EE.C

Foundations for Algebra-P03-308893-801-Salvo • Released Thursday, Apr 03, 2025 2:32 PM

Problem 1

Which statement is true about the equation below?

$$3(2 - k) = -3k + 2$$

- A The equation has no solution.
- B The equation has one solution.
- C The equation has two solutions.
- D The equation has infinitely many solutions.

Massachusetts Department of Elementary and Secondary Education

Problem 2

Which of the following equations has infinitely many solutions?

- A $2x + 3 = 5 + 2x$
- B $2x + 3 = 5 + 3x$
- C $3x - 5 = -5 + 2x$
- D $3x - 5 = -5 + 3x$

Problem 3

Consecutive numbers follow one right after the other. An example of three consecutive numbers is 17, 18, and 19. Another example is -100, -99, -98.

How many sets of two or more consecutive positive integers can be added to obtain a sum of 100?

sets

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Problem 4

The perimeter of a rectangle is 40 units. One side of the rectangle is 7 and the other is $x+2$. What is the value of x ?

Problem 5

A family of five people has \$200 to spend on fishing rods and fishing licenses. They spend a total of \$20 on licenses. Assuming they buy 5 identical rods, what is the maximum amount they can spend on each rod?

Do not include units (\$) in your answer.

Problem 6

Solve the following equations of rational expressions, if possible. If an equation cannot be solved, explain why.

$$\frac{5}{6x-2} = \frac{-1}{x+1}$$

If there is no solution, type "ns" as your answer.

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Problem 7

Solve the following equations of rational expressions, if possible. If an equation cannot be solved, explain why.

$$\frac{4-x}{8} = \frac{7x-1}{3}$$

If there is no solution, type "ns" as your answer.

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Problem 8

Solve the following equations of rational expressions, if possible. If an equation cannot be solved, explain why.

$$\frac{3x}{x+2} = \frac{5}{9}$$

If there is no solution, type "ns" as your answer.

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Problem 9

Solve the following equations of rational expressions, if possible. If an equation cannot be solved, explain why.

$$\frac{\frac{1}{2}x+6}{3} = \frac{x-3}{2}$$

If there is no solution, type "ns" as your answer.

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Problem 10

Solve the following equations of rational expressions, if possible. If an equation cannot be solved, explain why.

$$\frac{7-2x}{6} = \frac{x-5}{1}$$

If there is no solution, type "ns" as your answer.

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Problem 11

Solve the following equations of rational expressions, if possible. If an equation cannot be solved, explain why.

$$\frac{2x+5}{2} = \frac{3x-2}{6}$$

If there is no solution, type "ns" as your answer.

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Problem 12

Solve the following equations of rational expressions, if possible. If an equation cannot be solved, explain why.

$$\frac{6x+1}{3} = \frac{9-x}{7}$$

If there is no solution, type "ns" as your answer.

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Problem 13

Solve the following equations of rational expressions, if possible. If an equation cannot be solved, explain why.

$$\frac{\frac{1}{3}x - 8}{12} = \frac{-2 - x}{15}$$

If there is no solution, type "ns" as your answer.

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Problem 14

Solve the following equations of rational expressions, if possible. If an equation cannot be solved, explain why.

$$\frac{3 - x}{1 - x} = \frac{3}{2}$$

If there is no solution, type "ns" as your answer.

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Problem 15

Select **all** the equations that have no solution.

A $x + 6 = 5 + x$

B $-2(x - 3) = -2x + 6$

C $4 - 4x = 3x + 2$

D $4(x + 1) = 3(x + 2)$

E $5 - 3x = -3x + 4$

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Problem 16

Rewrite the equation that would represent the sum in the fifth step of the Facebook problem:
 $S^5 = 7 + 7 \cdot 5 + 7 \cdot 5 + 7 \cdot 5 + 7 \cdot 5$.

Submit your work using the tools below.

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Problem 17

Elena began to solve this equation:

$$\frac{12x + 6(4x + 3)}{3} = 2(6x + 4) - 2$$

$$12x + 6(4x + 3) = 3(2(6x + 4) - 2)$$

$$12x + 6(4x + 3) = 6(6x + 4) - 6$$

$$12x + 24x + 18 = 36x + 24 - 6$$

When she got to the last line she stopped and said the equation is true for all values of x . How could Elena tell?

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Problem 18

Solve the following equation for x .

$$\frac{5x - 8}{3} = \frac{11x - 9}{5}$$

$$x = ?$$

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Problem 19

Solve the following equation for x.

$$\frac{x+11}{7} = \frac{2x+1}{-8}$$

x = ?

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Problem 20

Solve the following equation. Verify your solution.

$$3(4x-2) = 30$$

x = _____

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Problem 21

Solve for n:

$$5 - 2(8 + 3n) = 1$$

n = _____

source: [Louisiana Department of Education](#)

Problem 22

Solve for y:

$$3y + 5 = -3 - 2y$$

y = _____

source: [Louisiana Department of Education](#)

Problem 23

Solve the following equation. Verify your solution.

$$-24 = 4(2 + 2x)$$

$$x = \underline{\hspace{2cm}}$$

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Problem 24

Solve the following equation. Verify your solution.

$$-16 = 2(4x + 8)$$

$$x = \underline{\hspace{2cm}}$$

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Problem 25

Solve the following equation. Verify your solution.

$$3(x + 10) + 5 = 11$$

$$x = \underline{\hspace{2cm}}$$

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Problem 26

Solve the following equation. Verify your solution.

$$3t - 2 + t - 5t = -1$$

$$t = \underline{\hspace{2cm}}$$

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Problem 27

Solve the following equation. Verify your solution.

$$-24 = 2(1 - 5x) + 4$$

$$x = \underline{\hspace{2cm}}$$

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Problem 28

Solve the following equation. Verify your solution.

$$-2(a+ 3) + 4a= 18$$

$$a = \underline{\hspace{2cm}}$$

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Problem 29

Solve the following equation. Verify your solution.

$$28 = 5x+ 3(x+ 4)$$

$$x = \underline{\hspace{2cm}}$$

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Problem 30

Solve the following equation. Verify your solution.

$$4x- 3(x- 2) = 21$$

$$x = \underline{\hspace{2cm}}$$

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Problem 31

Solve the following equation. Verify your solution.

$$0 = -2(x+ 5) + 3x$$

$$x = \underline{\hspace{2cm}}$$

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Problem 32

Solve the following equation. Verify your solution.

$$\frac{1}{3}(x + 6) = 1$$

$$x = \underline{\hspace{2cm}}$$

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Problem 33

Solve the following equation. Verify your solution.

$$5 - 4(2b - 5) + 3b = 15$$

$$b = \underline{\hspace{2cm}}$$

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Problem 34

Solve the following equation. Verify your solution.

$$10 = 3(x - 2) - 2(5x - 1)$$

$$x = \underline{\hspace{2cm}}$$

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Problem 35

Solve the following equation. Verify your solution.

$$0.2(10t - 4) - t = 1.2$$

$$t = \underline{\hspace{2cm}}$$

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Problem 36

Solve the following equation. Verify your solution.

$$-\frac{1}{7}(x - 7) + 22 = 26$$

$$x = \underline{\hspace{2cm}}$$

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Problem 37

Solve the following equation. Verify your solution.

$$-10 = \frac{3x}{4} + \frac{x}{2}$$

x= _____

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Problem 38

Solve the following equation. Verify your solution.

$$\frac{x-2}{3} = \frac{1}{2}$$

x= _____

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Problem 39

Solve the following equation. Verify your solution.

$$-(x-5) + 2 -x = 3$$

x = _____

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Problem 40

Mia has taken two quizzes in math so far this quarter and scored a 75% on the first and an 82% on the second. What must she score on the third quiz in order to have an average of 80% on her three quizzes?

Do not include the percent sign (%) in your answer.

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Problem 41

The emcee at \$1 \$100. The \$1 bills among the 7 \$1 bills \$1 \$6 by \$1 in the \$2 in the \$3 in the \$4? \$5? \$6?).
a carnival is to emcee envelopes so that no envelopes among 3 to putting first envelope, envelope, envelope ready to give only has 7 matter what the contestant wins, she to get any amount and (Go away a cash envelopes and she can pay the winner from ahead winning wants to with the envelopes check.
contestant make sure without redistributing Can you could win she the bills. For example, make anywhere distributes it's possible to divide 6
from the 100
\$1 bills among the 7 envelopes so that she can give away \$1 \$100, just by handing out the
How should the emcee any amount of money, from to right envelopes?
divide up the 100

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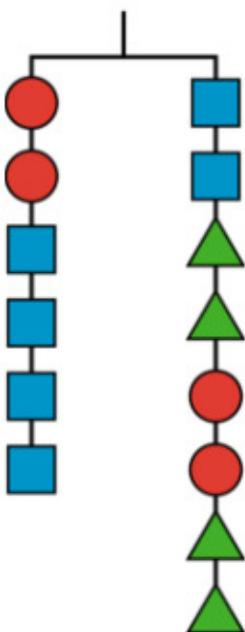
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Problem 42

Here is a hanger that is in balance. We don't know how much any of its shapes weigh. How could you change the number of shapes on it, but keep it in balance? Describe in words or draw a new diagram.



Submit your work using the tools below.

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Problem 43

Solve the following equation. Verify your solution.

$$x + 3x = 9 + x$$

$$x = \underline{\hspace{2cm}}$$

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Problem 44

Solve the following equation. Verify your solution.

$$4c + 4 = c + 10$$

c = _____

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Problem 45

Solve the following equation. Verify your solution.

$$3(4x - 1) = 2(5x - 7)$$

x = _____

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Problem 46

Solve the following equation. Verify your solution.

$$3x + 10 + 2x = 2(x + 8)$$

x = _____

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Problem 47

Solve the following equation. Verify your solution.

$$2(x + 8) = 2(2x + 1)$$

x = _____

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Problem 48

Solve the following equation. Verify your solution.

$$4(x + 3) = x + 26 + x$$

x = _____

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Problem 49

Solve the following equation. Verify your solution.

$$3a + 5(a - 2) = 6(a + 4)$$

a = _____

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Problem 50

Solve the following equation. Verify your solution.

$$13 - (2c + 2) = 2(c + 2) + 3c$$

c = _____

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Problem 51

Solve the following equation. Verify your solution.

$$2 - (2x + 2) = 2(x + 3) + x$$

x = _____

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Problem 52

Solve the following equation. Verify your solution.

$$3(y + 7) = 2(y + 9) - y$$

y = _____

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Problem 53

Solve the following equation. Verify your solution.

$$\frac{1}{2} (12 - 2x) - 4 = 5x + 2(x - 7)$$

x = _____

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Problem 54

Solve the following equation. Verify your solution.

$$\frac{1}{2} (12n - 4) = 14 - 10n$$

$$n = \underline{\hspace{2cm}}$$

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Problem 55

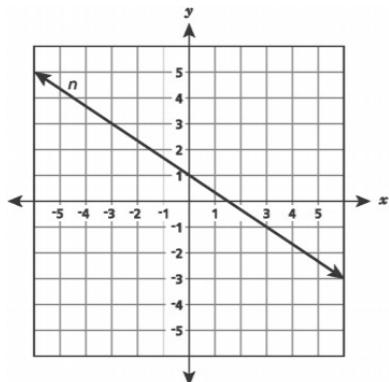
Solve for x.

$$3(7x - 5) + 5 = 10x - 5$$

$\underline{\hspace{2cm}}$

Problem 56

Line n is shown on the grid below.



Line q will be graphed on the same grid. The only solution to the system of linear equations formed by lines

n and q occurs when $x = \frac{3}{2}$ and $y = 0$. Which equation could represent line q ?

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

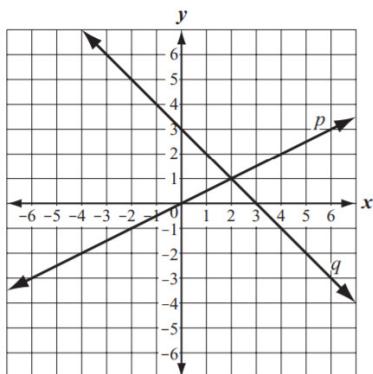
B $y = \frac{4x}{3} - 2$

C $y = \frac{-5x}{2} + 1$

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

Problem 57

The system of equations represented by lines p and q is shown on the graph below.



Based on the graph, what is the solution of the system of equations?

A $(0,0)$

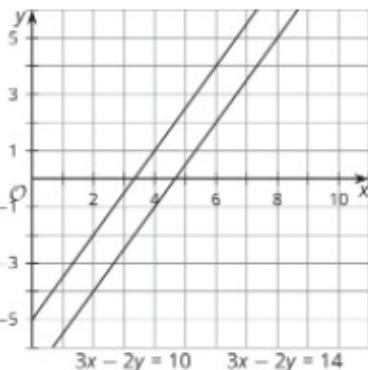
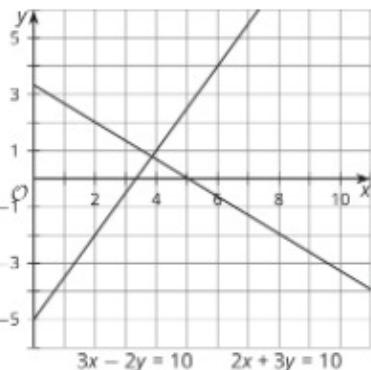
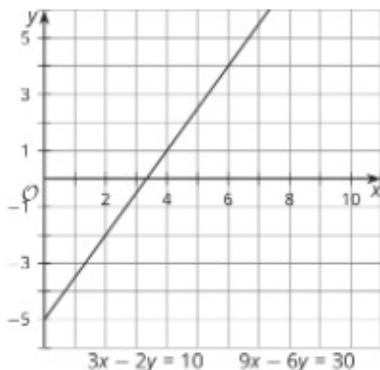
B $(0,3)$

C $(2,1)$

D $(4,2)$

Problem 58

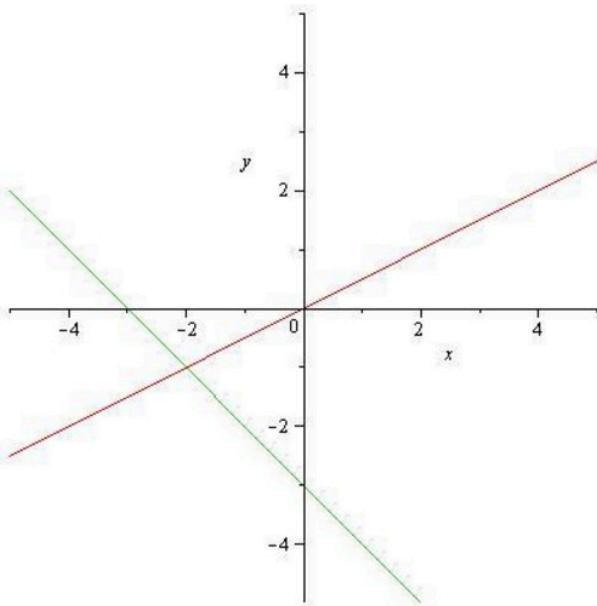
What do you notice? What do you wonder?



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Problem 59

Sean was given a system of equations to solve and decided to graph the two equations.

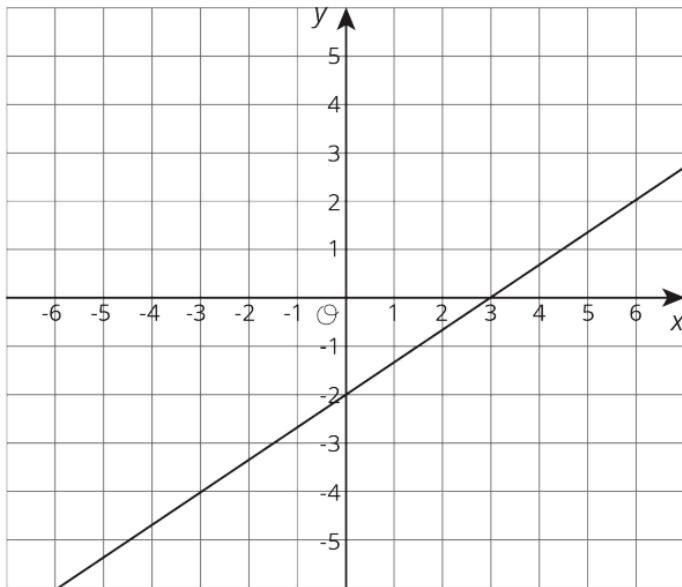


What is the solution of this system of equations?

$$\left(\frac{\text{_____}}{\text{_____}}, \frac{\text{_____}}{\text{_____}} \right)$$

Problem 60

Here is the graph for one of the equations in a system of two equations.



The solution to the system is $(6, 2)$. Select **all** the equations that could be the other equation in the system.

A $y = -3x$

B $y = \frac{-3}{2}x + 6$

C $y = \frac{-1}{6}x + 3$

D $y = \frac{2}{3}x - 1$

E $y = \frac{1}{2}x - 1$

F $y = 4x - 2$

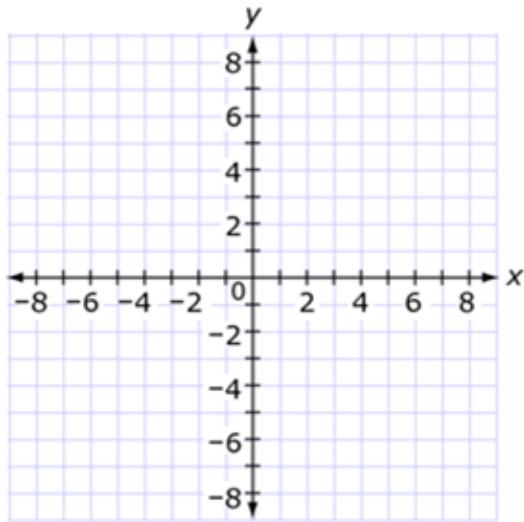
Problem 61

Which of the following represents the solution to a system of linear equations on graphs?

- The slopes of the lines
- The x-intercepts of the lines
- The y-intercepts of the lines
- The point at which the lines intersect

Problem 62

Graph a system of two linear equations in the grid below so that the system has a single solution of $(-2, -3)$.



Submit your graph using the tools below.

Problem 63

In a system of two linear equations, the lines represented by each equation have the same slope.

Which could be the total number of solutions to the system of each equation?

Select all that apply.

No solutions

1 solution

2 solutions

3 solutions

Infinitely many solutions

Problem 64

Without sketching the graph, name the ordered pair where the graphs of the two linear equations intersect.

$$\begin{cases} x = 2 \\ y = -3 \end{cases}$$

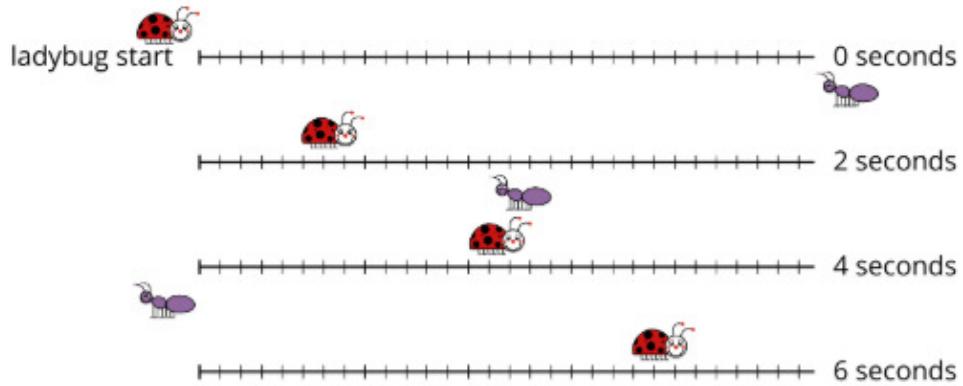
Write your answer in the format:

(x,y) with no spaces.

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Problem 65

What do you notice? What do you wonder?



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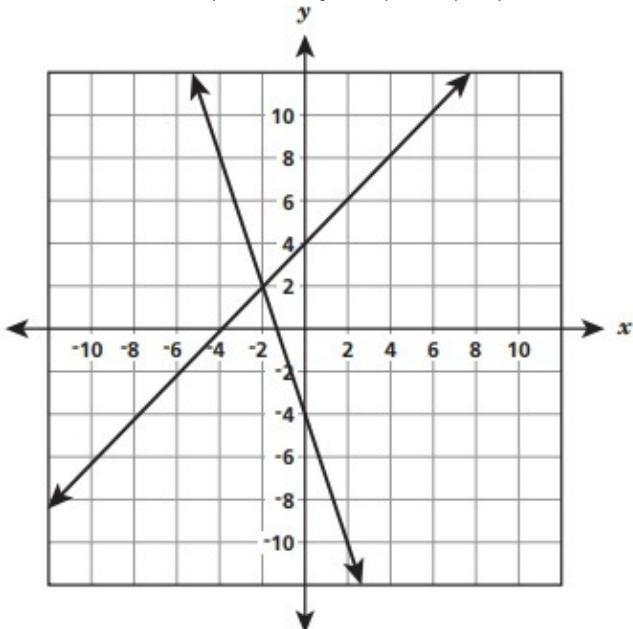
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Problem 66

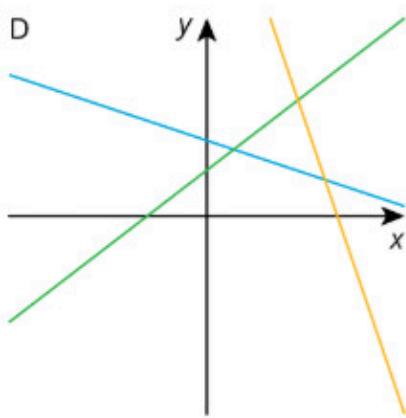
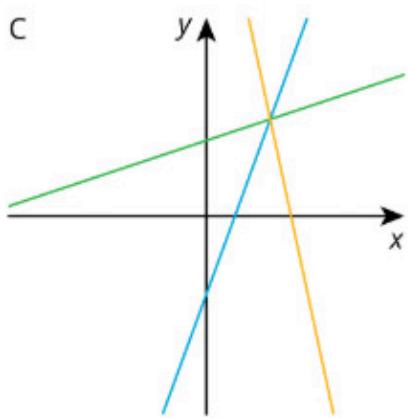
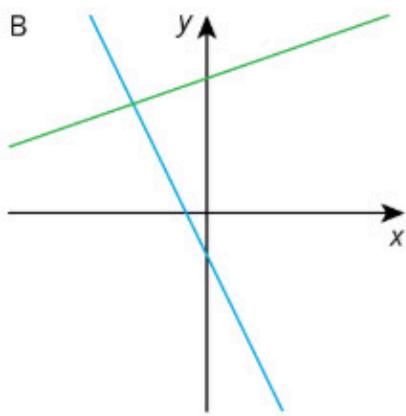
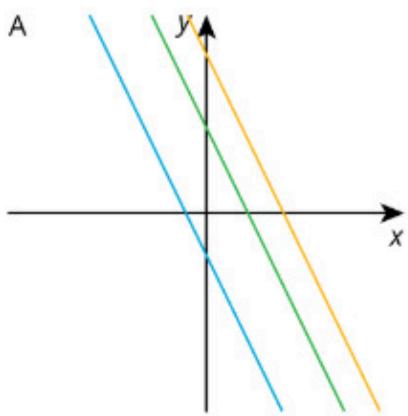
Which statement explains why the point $(-2,2)$ is the solution to the system of linear equations shown below?



- A It lies on the graph of only one of the equations.
- B It lies in the second quadrant of the coordinate plane.
- C It is the only point that satisfies both equations simultaneously.
- D It is one of many points that satisfies both equations simultaneously.

Problem 67

Which one doesn't belong? Explain your reasoning.



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Problem 68

Determine the nature of the solution to the given system of linear equations.

$$\begin{cases} y = \frac{3}{7}x - 8 \\ 3x - 7y = 1 \end{cases}$$

Does the system above have a solution?

Yes (one solution)

No

Yes (Infinitely many solutions)

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Problem 69

Determine the nature of the solution to the given system of linear equations.

$$\begin{cases} 5y = \frac{15}{4}x + 25 \\ y = \frac{3}{4}x + 5 \end{cases}$$

Does the system above have a solution?

Yes (one solution)

No

Yes (Infinitely many solutions)

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Problem 70

Determine the nature of the solution to the given system of linear equations.

$$\begin{cases} 6x - 7y = \frac{1}{2} \\ 12x - 14y = 1 \end{cases}$$

Does the system above have a solution?

Yes (one solution)

No

Yes (Infinitely many solutions)

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Problem 71

Determine the nature of the solution to the given system of linear equations.

$$\begin{cases} 5x - 2y = 6 \\ -10x + 4y = -14 \end{cases}$$

Does the system above have a solution?

Yes (one solution)

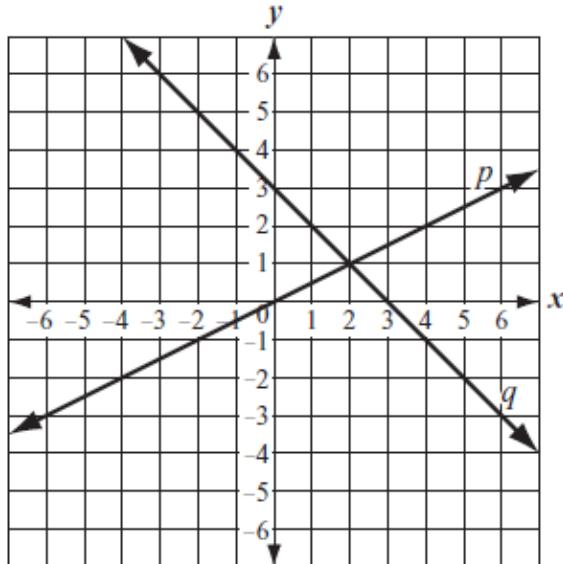
No

Yes (Infinitely many solutions)

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Problem 72

The system of equations represented by lines p and q is shown in the graph below.



Based on the graph, what is the solution of the system of equations?

(0, 0)

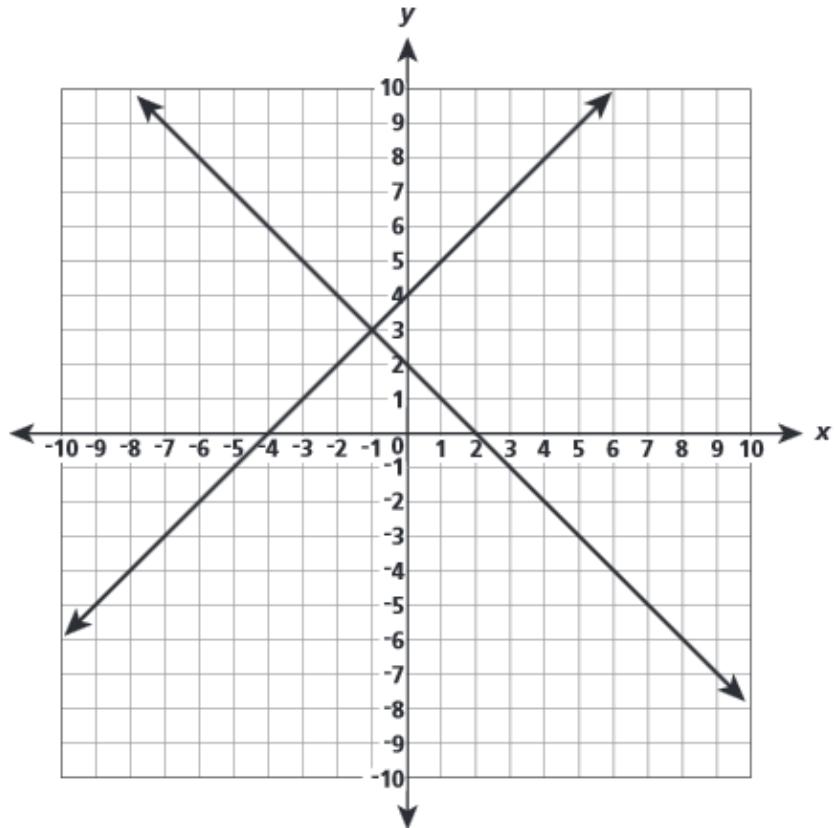
(0, 3)

(2, 1)

(4, 2)

Problem 73

Lucy graphed a system of linear equations.

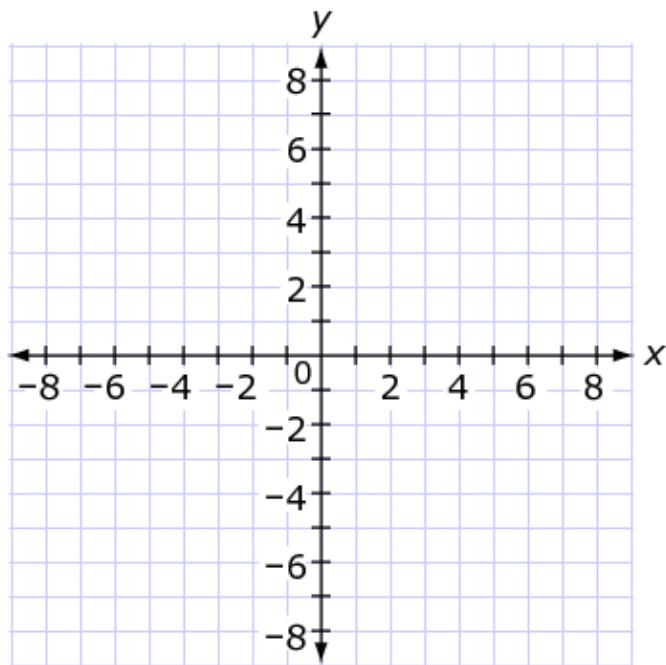


What is the solution to the system of equations?

- (−4, 2)
- (−1, 3)
- (0, 2)
- (2, 4)

Problem 74

Graph a system of two equations that has a single solution of $(-2, -3)$.



Submit your graph using the tools below.

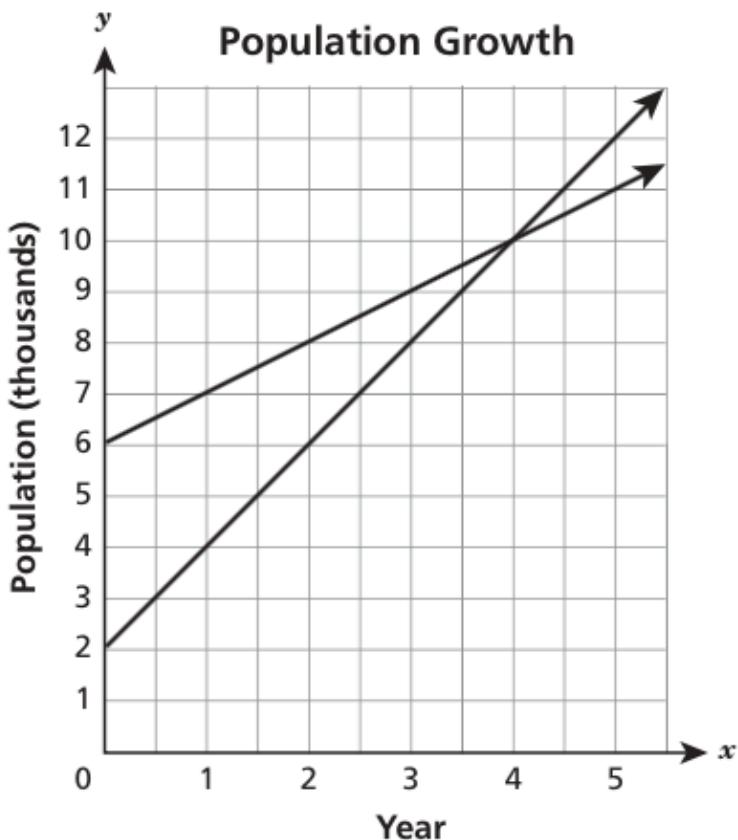
Problem 75

$$y = x + 6$$

$$y = 2x + 2$$

The population growth of two towns over a period of five years is represented by the system of equations below, both algebraically and graphically.

Which ordered pair is the solution to the system of equations?



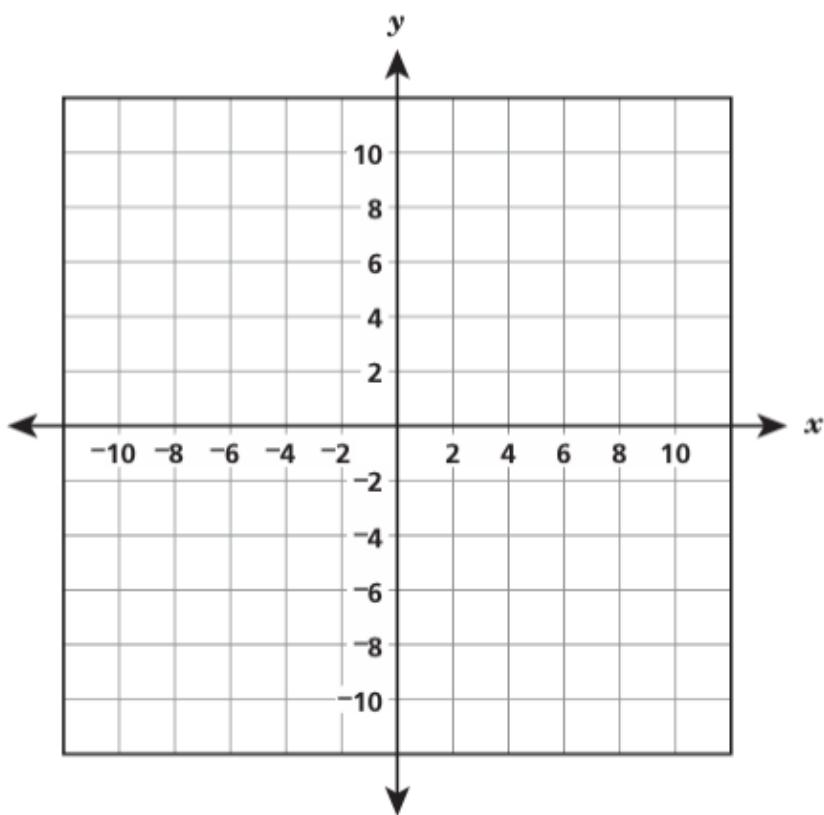
- (2, 6)
- (4, 10)
- (6, 2)
- (10, 4)

Problem 76

Graph and label the given system of equations on the coordinate grid shown below.

$$y = \frac{1}{2}x + 2$$

$$y = x - 1$$



What is the solution to the system of equations?

$$\left(\underline{\hspace{2cm}}, \underline{\hspace{2cm}} \right)$$

Problem 77

Two lines are graphed on the same coordinate plane. The lines only intersect at the point (3,6). Which of these **all** that systems of linear equations could represent two lines?

Select

$$\begin{cases} x = 3 \\ y = 6 \end{cases}$$

$$\begin{cases} x = 6 + y \\ y = 3 + x \end{cases}$$

$$\begin{cases} y = 3x - 3 \\ y = x - 1 \end{cases}$$

$$\begin{cases} x = 3 + y \\ y = 6 + x \end{cases}$$

$$\begin{cases} y = x + 3 \\ y = 2x \end{cases}$$

Problem 78

Consider the system of equations.

$$y = 2x + 2$$

$$y = 6x + 2$$

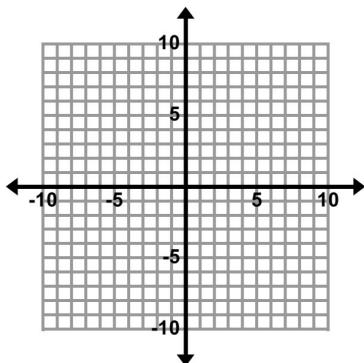
Which statements are true about the system of equations?

- The graph of the system consists of lines that have no points of intersection.
- The graph of the system consists of lines that have exactly one point of intersection.
- The graph of the system consists of lines that have more than one point of intersection.
- The system has no solution.
- The system has exactly one solution.
- The system has more than one solution.

Problem 79

Solve the system of linear equations graphically. If there is one solution, verify that your solution satisfies both equations.

$$y = 3x + 1 \text{ and } x + y = 5$$



If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions".
If there is one solution, write your answer in the following format:

(x,y)

with no spaces

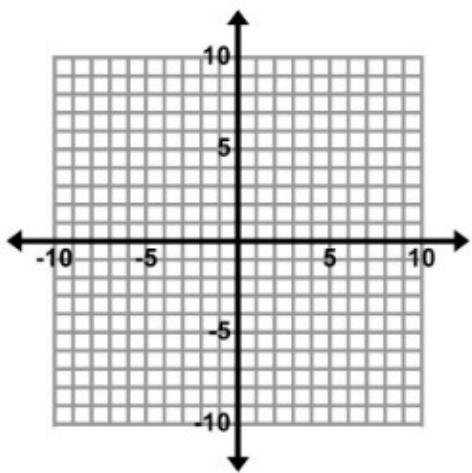
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Problem 80

Solve the system of linear equations graphically. If there is one solution, verify that your solution satisfies both equations.

$$y = -5 \text{ and } 2x + y = -3$$



If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions".

If there is one solution, write your answer in the following format:

(x,y)

with no spaces

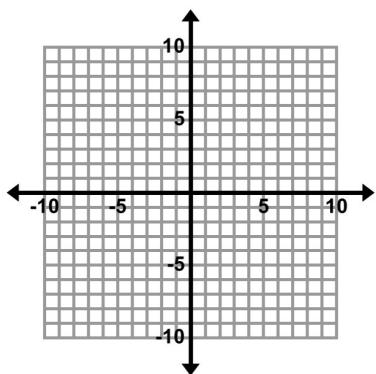
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Problem 81

Solve the system of linear equations graphically. If there is one solution, verify that your solution satisfies both equations.

$$y = -3x + 4 \text{ and } y = \frac{1}{2}x - 3$$



If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions".

If there is one solution, write your answer in the following format:

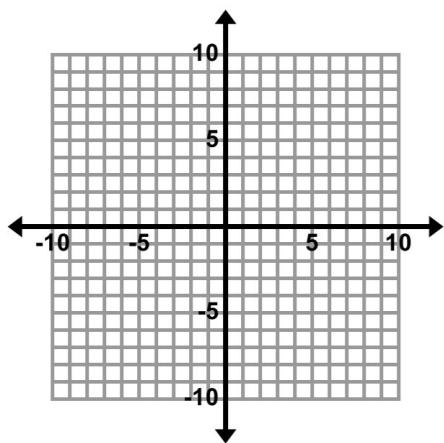
(x,y) with no spaces

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Problem 82

Solve the system of linear equations graphically. If there is one solution, verify that your solution satisfies both equations.

$$y = \frac{1}{2}x - 2 \text{ and } y = \frac{1}{2}x + 4$$



If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions".

If there is one solution, write your answer in the following format:

(x,y)

with no spaces

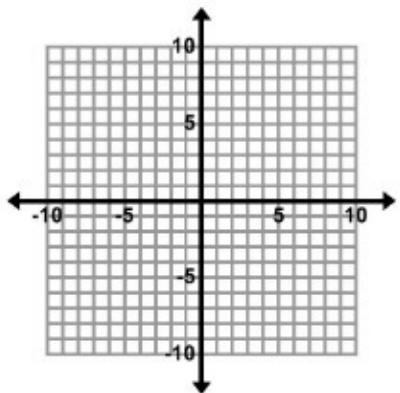
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Problem 83

Solve the system of linear equations graphically. If there is one solution, verify that your solution satisfies both equations.

$$y = 6x - 6 \text{ and } y = 3x - 6$$



If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions".

If there is one solution, write your answer in the following format:

(x,y)

with no spaces

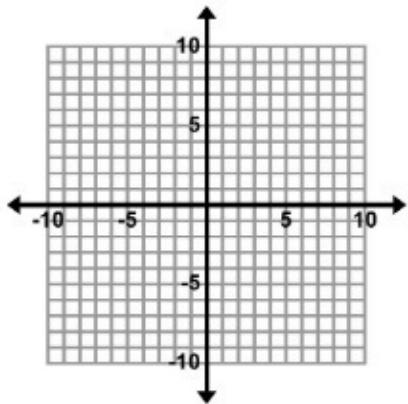
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Problem 84

Solve the system of linear equations graphically. If there is one solution, verify that your solution satisfies both equations.

$$2x + y = -4 \text{ and } y + 2x = 3$$



If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions".

If there is one solution, write your answer in the following format:

(x,y)

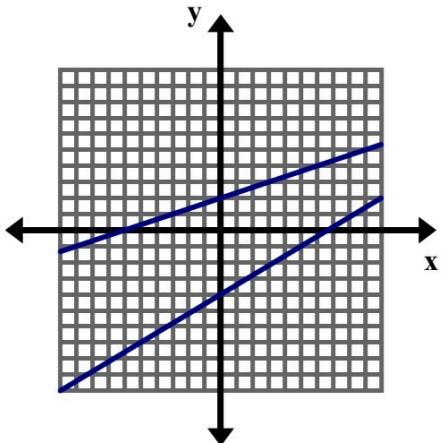
with no spaces

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Problem 85

How many solutions does the system of linear equations graphed below have? How do you know?

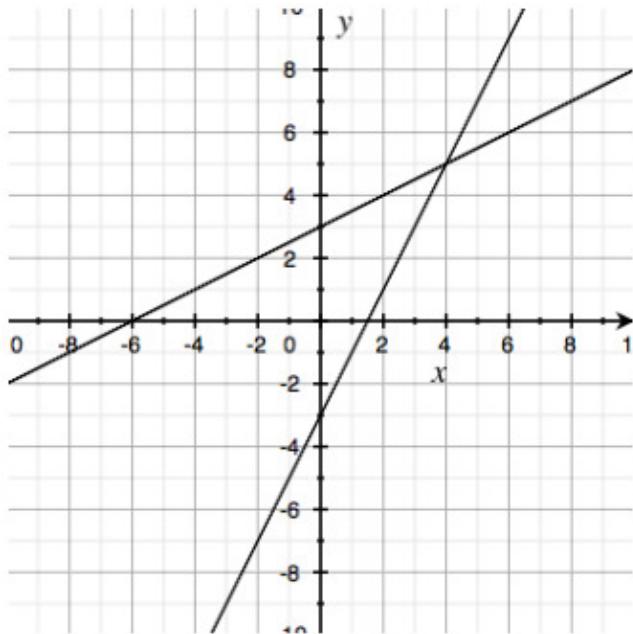


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Problem 86

The graph of a system of linear equations is shown below.



What system of linear equations is represented by the graph?

A.

$$\begin{cases} y = \frac{1}{2}x + 3 \\ y = 2x - 3 \end{cases}$$

B.

$$\begin{cases} y = -4x \\ y = 5x + 1 \end{cases}$$

C.

$$\begin{cases} y = \frac{1}{6}x - 3 \\ y = 2x + 4 \end{cases}$$

D.

$$\begin{cases} y = x + 3 \\ y = -3x - 1 \end{cases}$$

 A. B. C.

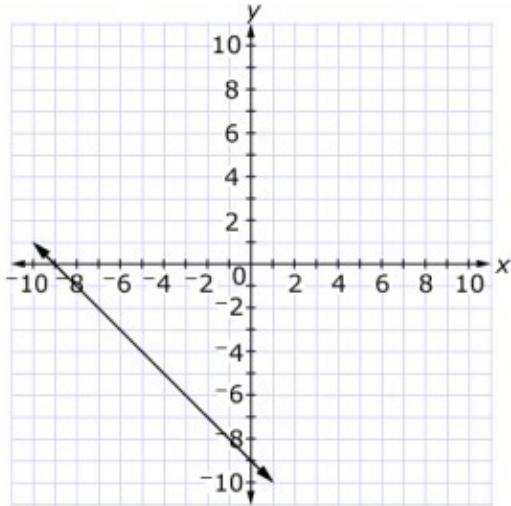


D.

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Problem 87

The graph of $x + y = -9$ is shown.



Graph the equation $y = 2x + 3$ on the same coordinate plane and plot the solution to this system of linear equations.

Submit your work using the tools below.

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Problem 88

Line n is shown on the grid below.

Line q will be graphed on the same grid. The only solution to the system of linear equations formed by lines n and q occurs when $x = \frac{3}{2}$ and $y = 0$. Which equation could represent line q ?

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

B $y = \frac{4}{3}x - 2$

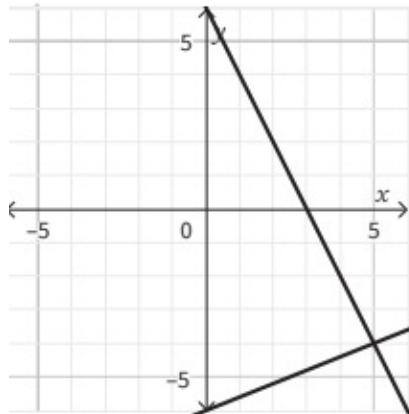
C $y = -\frac{5}{2}x + 1$

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

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Problem 89

Determine the solution to the system of linear equations.



Write the answer in the following format: (x,y)

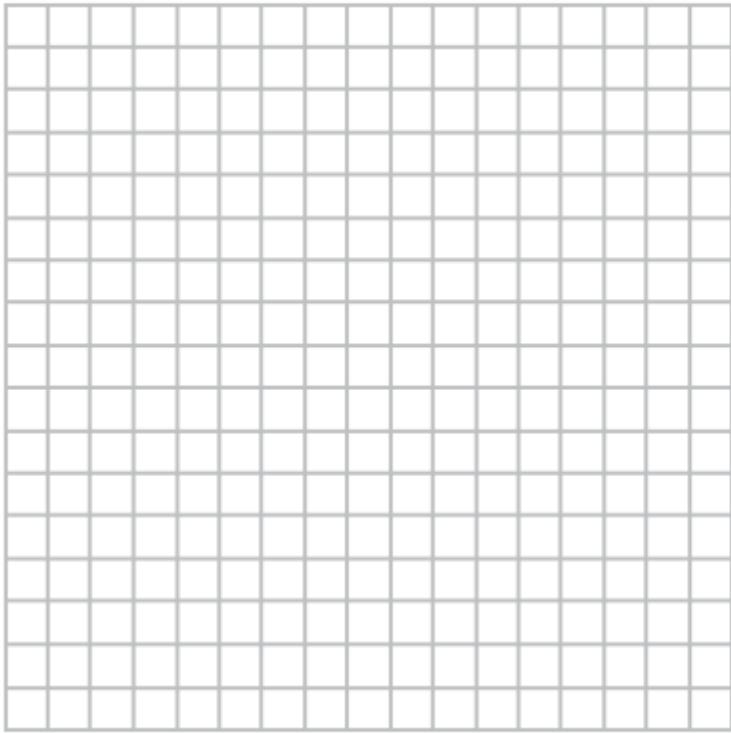
Do not use spaces in your answer.

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Problem 90

Solve the system of equations by graphing.

$$\begin{cases} y = -\frac{1}{5}x + 4 \\ y = 3x - 12 \end{cases}$$

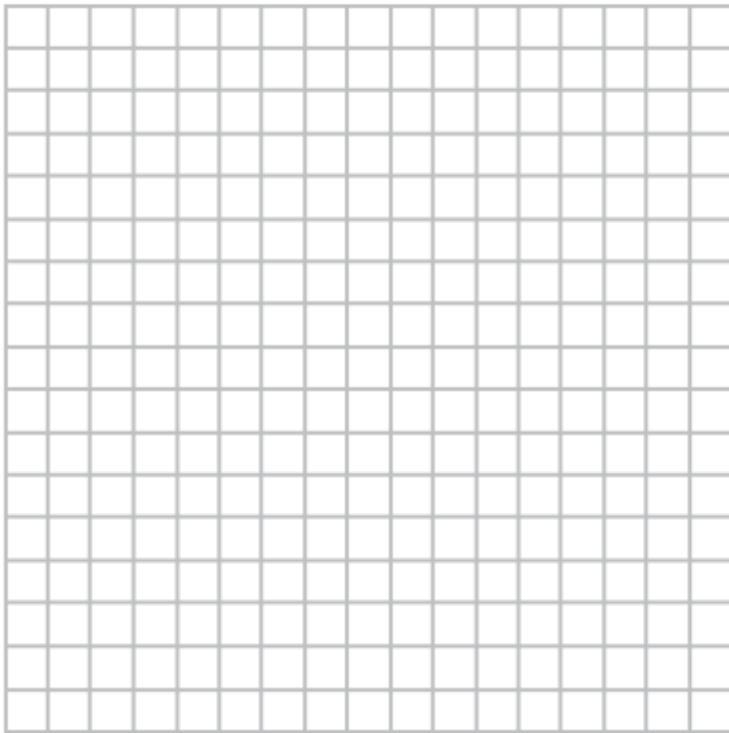


Submit your graph using the tools below.

Problem 91

Solve the system of equations by graphing.

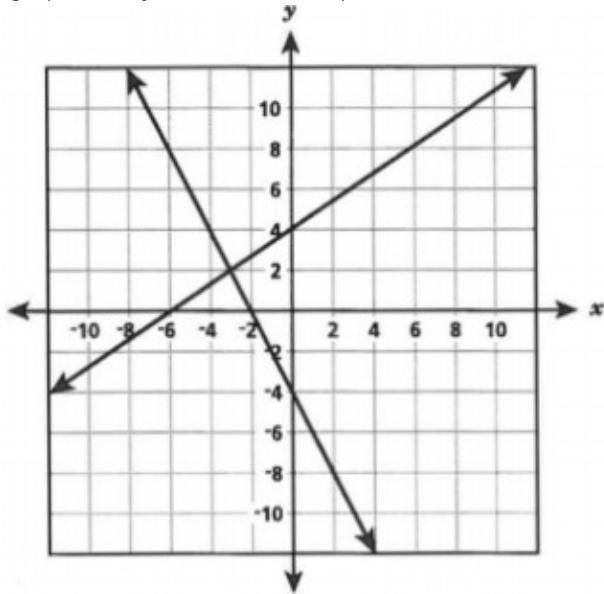
$$\begin{cases} y = -2x - 8 \\ y = 3x + 7 \end{cases}$$



Submit your graph using the tools below.

Problem 92

The graph of a system of linear equations is shown below. Write an ordered pair for the solution of the system.

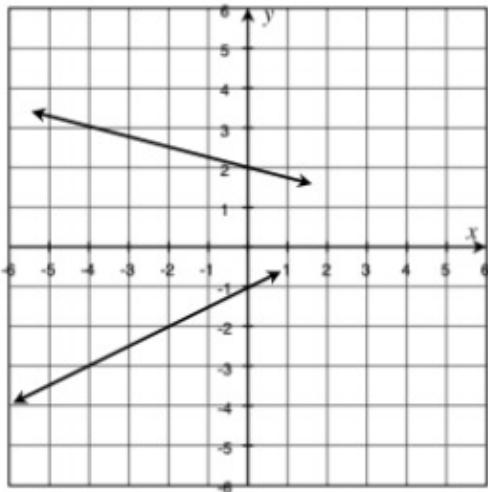


$$\left(\underline{\hspace{2cm}}, \underline{\hspace{2cm}} \right)$$

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Problem 93

What is the solution to the system of linear equations shown below?



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A $y = -(1/3)x + 2$

B $(1, 4)$

C $y = (1/2)x - 1$

D $(4, 1)$

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Problem 94

The equation of line sis

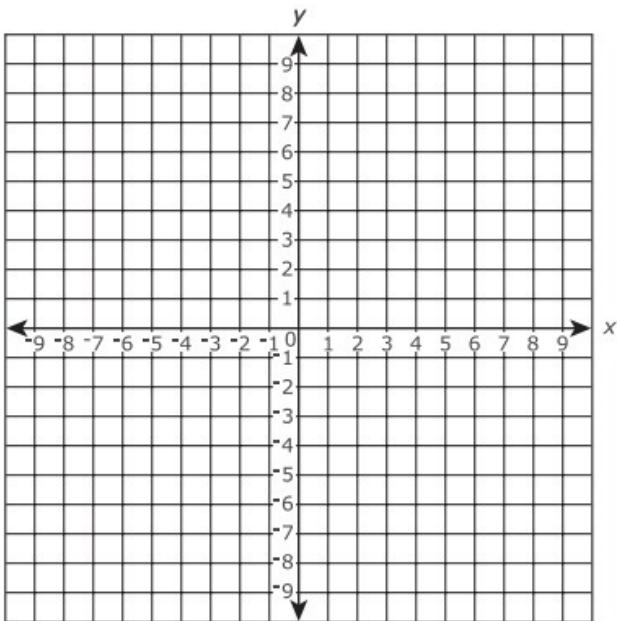
$$y = \frac{1}{3}x - 3$$

The equation of line tis

$$y = -x + 5$$

The equations of linesandtform a system of equations. The solution to the system of equations is located at point P.

Draw a line to represent linesand another line to represent linet. Then plot point P.



Submit your graph using the tools below.

Problem 95

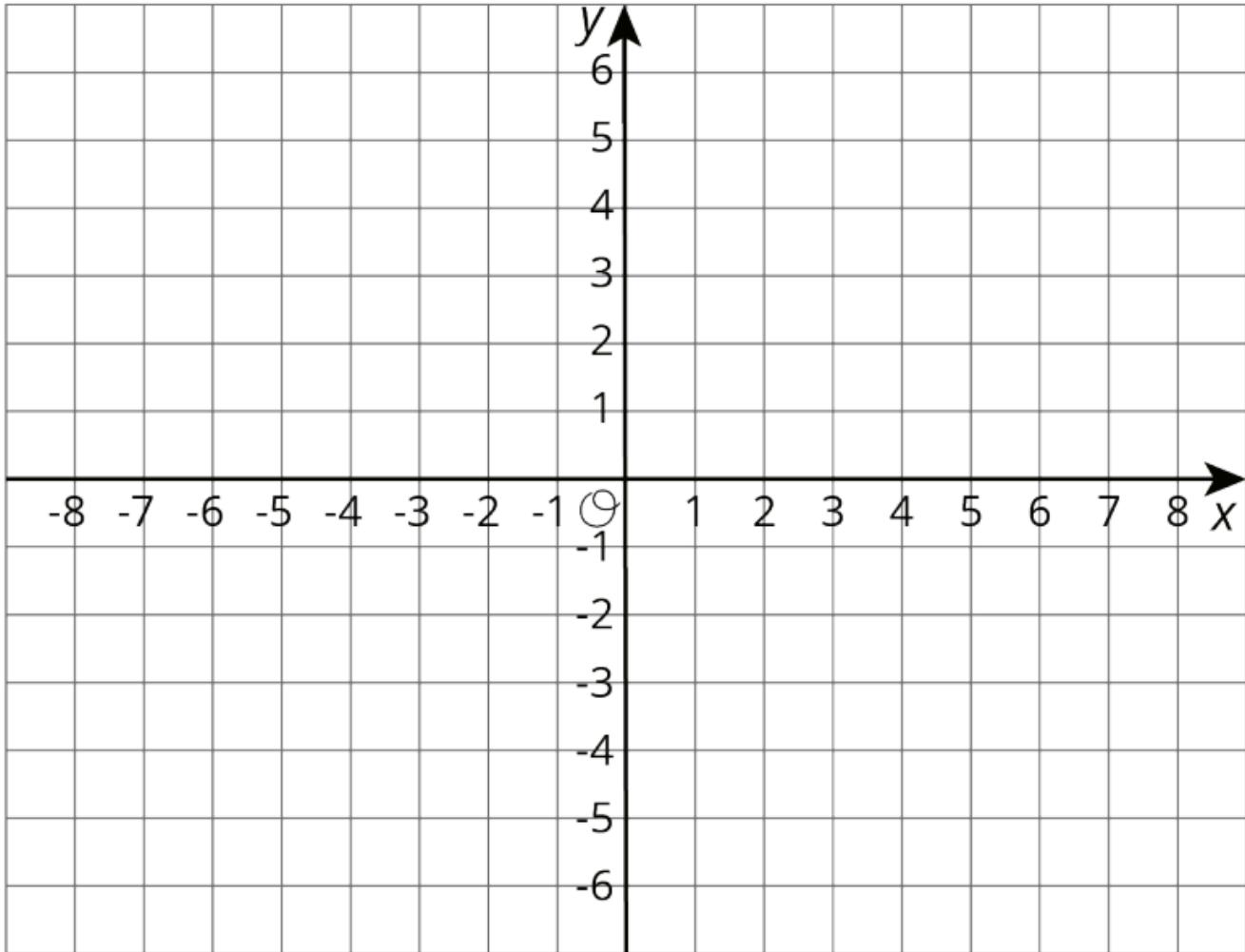
A system of two linear equations is graphed on a coordinate plane. If the system of equations has infinitely many solutions, which statement must be true?

- A On the graph, there are no points (x, y) that satisfy both equations.
- B On the graph, there is exactly one point (x, y) that satisfies both the equations.
- C On the graph, any point (x, y) that satisfies one of the equations cannot satisfy the other equation.
- D On the graph, any point (x, y) that satisfies one of the equations must also satisfy the other equation.

Problem 96

Use a graph to find x and y values that make both $y = -\frac{2}{3}x + 3$ and $y = 2x - 5$ true.

(_____ , _____)



Problem 97

Solve these without writing anything down:

$$\begin{cases} x=5 \\ y=x-7 \end{cases}$$

x = _____ y = _____

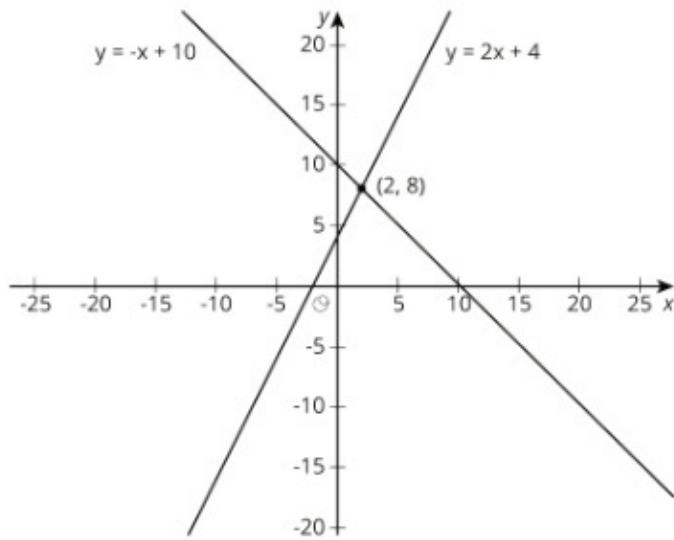
$$\begin{cases} y=4 \\ y=x+3 \end{cases}$$

x = _____ y = _____

$$\begin{cases} x=8 \\ y=-11 \end{cases}$$

x = _____ y = _____

Problem 98



Use the lines to decide whether each statement is true or false. Be prepared to explain your reasoning using the lines.

1. A solution to $8 = -x + 10$ is 2

Select 1	▲
true	
false	

2. A solution to $2 = 2x + 4$ is 8.

Select 1	▲
true	
false	

3. A solution to $-x + 10 = 2x + 4$ is 8.

Select 1	▲
true	
false	

4. A solution to $-x + 10 = 2x + 4$ is 2.

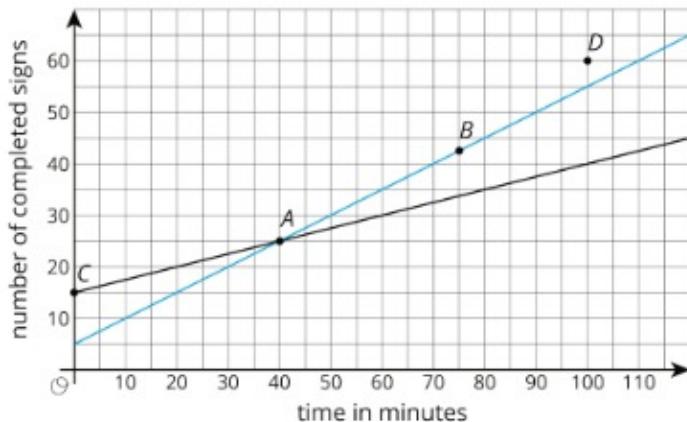
Select 1	▲
true	
false	

5. There are no values of x and y that make $y = -x + 10$ and $y = 2x + 4$ true at the same time.

Select 1	▲
true	
false	

Problem 99

Clare and Andre are making signs for all the lockers as part of the decorations for the upcoming spirit week. Yesterday, Andre made 15 signs and Clare made 5 signs. Today, they need to make more signs. Each person's progress today is shown in the coordinate plane.



Based on the lines, mark the statements as true or false for Clare

point	what it says	Clare	Andre
A	At 40 minutes, I have 25 signs completed.	Select 1 <input type="radio"/> true <input type="radio"/> false	Select 1 <input type="radio"/> true <input type="radio"/> false
B	At 75 minutes, I have 42 and a half signs completed.	Select 1 <input type="radio"/> true <input type="radio"/> false	Select 1 <input type="radio"/> true <input type="radio"/> false
C	At 0 minutes, I have 15 signs completed.	Select 1 <input type="radio"/> true <input type="radio"/> false	Select 1 <input type="radio"/> true <input type="radio"/> false
D	At 100 minutes, I have 60 signs completed.	Select 1 <input type="radio"/> true <input type="radio"/> false	Select 1 <input type="radio"/> true <input type="radio"/> false

Problem 100

Does the graph of the line for $3x - y = -6$ pass through the points $(-2, 0)$ and $(0, -6)$? Explain your reasoning.

Problem 101

Which system of equations has a solution of $(3, -4)$?

A $\begin{cases} y = 2x - 10 \\ y = -x - 1 \end{cases}$

B $\begin{cases} x + y = -1 \\ y = -4x + 8 \end{cases}$

C $\begin{cases} y = 4 - 2x \\ y + 3x = 5 \end{cases}$

D $\begin{cases} y - 5x = -17 \\ x - y = -7 \end{cases}$

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Problem 102

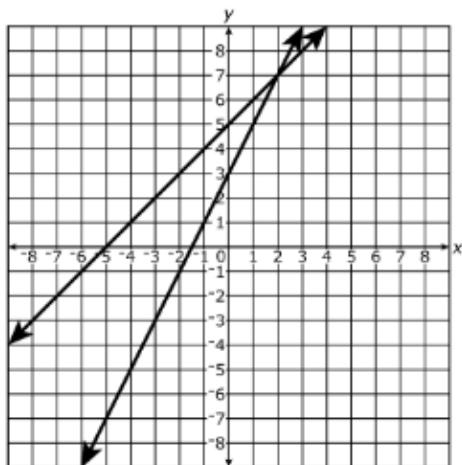
Does the graph of the line for $3x - y = -6$ pass through the points $(-2, 0)$ and $(0, -6)$? Explain your reasoning.

¿La gráfica de la recta $3x - y = -6$ pasa por los puntos $(-2, 0)$ y $(0, -6)$? Explica tu razonamiento.

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Problem 103

The graph of the system of equations $\begin{cases} y = 2x + 3 \\ y = x + 5 \end{cases}$ is shown on the coordinate plane.



What is the solution to the system of equations?

Select from the drop-down menus to correctly complete the statement.

The solution
is

Select 1

- (-1.5, -5)
- (1, 6)
- (2, 7)
- (3, 5)

because the solution to the system
must

Select 1

- satisfy both equations simultaneously
- satisfy one equation or the other equation
- represent x-intercepts of both the equations
- represent y-intercepts of both the equations

Problem 104

A person purchased 10 items to donate to a school, backpacks that cost \$25.75 each and notebooks that cost \$4.25 each. The total cost of the items is \$150. This situation can be represented by a system of equations with a unique solution.

What does the solution to the system of equations represent in this context?

- A the cost of all the backpacks
- B the cost of all the notebooks
- C the total amount of money spent on the items
- D the number of backpacks and notebooks purchased

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Problem 105

What is the solution to the system of equations below?

$$\begin{cases} 3x + 4y = -2 \\ 2x - 4y = -8 \end{cases}$$

- A $x = 2, y = -2$
- B $x = 6, y = -5$
- C $x = 4, y = 4$
- D $x = -2, y = 1$

Problem 106

Which system of equations has infinitely many solutions?



$$\begin{cases} y = -x \\ 8y = -8x \end{cases}$$



$$\begin{cases} y = 3x + 1 \\ y = -4 \end{cases}$$



$$\begin{cases} x + y = 4 \\ 3x + 3y = 1 \end{cases}$$



$$\begin{cases} y = 2x + 1 \\ y = 5 - x \end{cases}$$

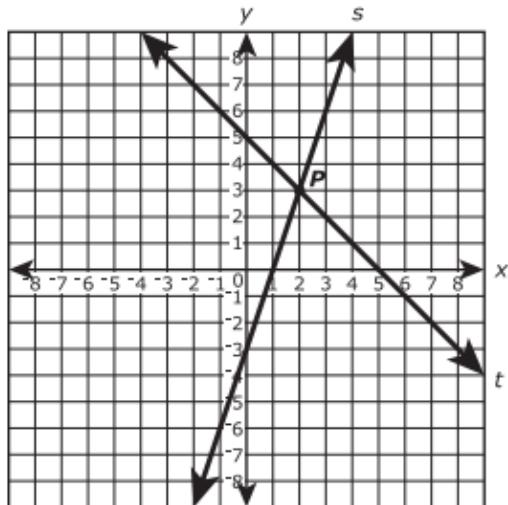
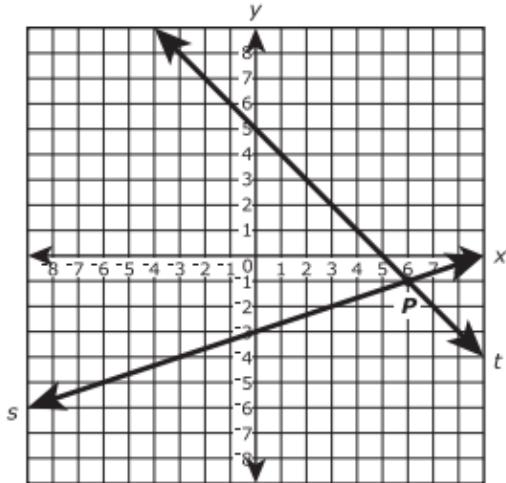
Problem 107

The equation of line s is $y = \frac{1}{3}x - 3$.

The equation of line t is $y = -x + 5$

The solution of the system of equation of lines s and t is located at point P.

Which graph correctly represents the lines t and s?



Problem 108

A system of equations is shown.

$$\begin{cases} x = 10 \\ 3x + 5y = 20 \end{cases}$$

What is the solution (x,y) of the system of equations?

Problem 109

Joe solved this linear system correctly.

$$\begin{aligned}6x + 3y &= 6 \\y &= -2x + 2\end{aligned}$$

These are the last two steps of his work:

$$6x - 6x + 6 = 6$$
$$6 = 6$$

Which statement about this linear system must be true?

- x must equal 6.
 - y must equal 6.
 - There is no solution to this system.
 - There are infinitely many solutions to this system.

Problem 110

Explain or show that the point $(5, -4)$ is a solution to this system of equations:

$$\begin{cases} 3x - 2y = 23 \\ 2x + y = 6 \end{cases}$$

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Problem 111

Which of the systems of equations has a solution of $(-2, 6)$?

A $\begin{cases} y = 2x + 10 \\ y = 3x - 6 \end{cases}$

B $\begin{cases} y - 2x = 2 \\ y + 2x = 10 \end{cases}$

C $\begin{cases} x - y = 9 \\ y = x + 9 \end{cases}$

D $\begin{cases} x + 2y = 10 \\ -4x - y = 2 \end{cases}$

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Problem 112

Solve the system using elimination.

$$x + y = 4.5$$

$$-2x + 4y = 6$$

If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions".

If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 113

Solve the system using elimination.

$$4x + y = -8$$

$$3x + 3y = 3$$

If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions".

If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 114

Solve the system using elimination.

$$2x+y=7$$

$$4x+2y=14$$

If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions". If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 115

Solve the system using elimination.

$$2x+3y=-10$$

$$-4x+5y=-2$$

If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions". If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 116

Solve the system using elimination.

$$x - 2y = 2/3$$

$$-3x + 5y = -2$$

If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions". If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 117

Solve the system using elimination.

$$-3x - y = -15$$

$$8x + 4y = 48$$

If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions". If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 118

Solve the system using elimination.

$$3x - y = 10$$

$$2x + 5y = 35$$

If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions".

If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 119

Solve the system using elimination.

$$x + y = 15$$

$$-2x - 2y = 30$$

If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions".

If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 120

The solution to a system of equations is $(6, -3)$. Choose two equations that might make up the system.

$y = -3x + 6$

$y = 2x - 9$

$y = -5x + 27$

$y = 2x - 15$

$y = -4x + 27$

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Problem 121

Solve the system of equations shown below.

$$2x - 6y = -12$$

$$x + 2y = 14$$

$x =$

$y =$

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Problem 122

Which system of equations has no solution?

A $\begin{cases} 3x + 4y = 5 \\ 6x + 8y = 10 \end{cases}$

B $\begin{cases} 7x - 2y = 9 \\ 7x - 2y = 13 \end{cases}$

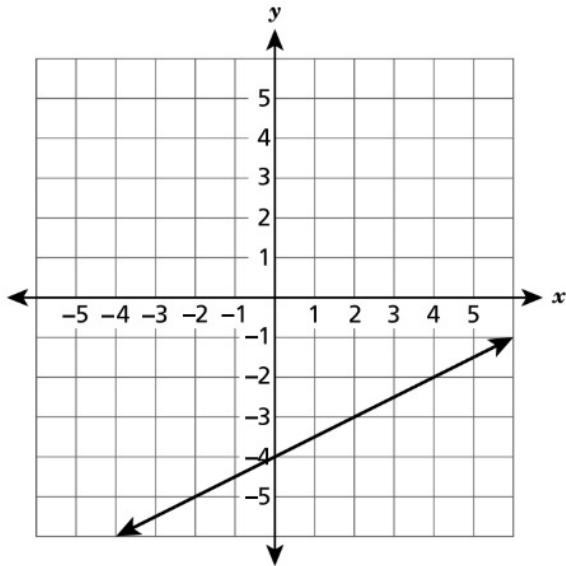
C $\begin{cases} 2x - y = -11 \\ -2x + y = 11 \end{cases}$

D $\begin{cases} 3x + 6y = 1 \\ x + y = 0 \end{cases}$

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Problem 123

A line is graphed on the coordinate plane below.



Line $y = -x + 2$ will be graphed on the same coordinate plane to create a system of equations. What is the solution to that system of equations?

- A $(-2, 4)$
- B $(0, -4)$
- C $(2, -4)$
- D $(4, -2)$

Problem 124

The solution to a system of equations is $(5, -19)$. Choose two equations that might make up the system.

$y = -3x - 6$

$y = 2x - 23$

$y = -7x + 16$

$y = x - 17$

$y = -2x - 9$

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Problem 125

Create a second equation so the system has no solutions.

$$\left\{ \begin{array}{l} y = \frac{3}{4}x - 4 \end{array} \right.$$

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Problem 126

What are the solutions to the system of equations below?

$$3y = x - 2$$

$$y = -2x + 4$$

- A $x=0; y=2$

- B $x=1; y=-2$

- C $x=2; y=0$

- D $x=-2; y=4$

Massachusetts Department of Elementary and Secondary Education

Problem 127

What is the solution to the systems of equations below?

$$2x + 3y = 6$$

$$x - 3y = 9$$

- A $(-1, \frac{8}{3})$

- B $(-3, -4)$

- C $(5, -\frac{4}{3})$

- D $(8, -\frac{1}{3})$

Massachusetts Department of Elementary and Secondary Education

Problem 128

Determine the solution, if any, to the system of equations below.

$$\begin{aligned}8x - 2y &= 1 \\-4x + y &= 3\end{aligned}$$

Massachusetts Department of Elementary and Secondary Education

Problem 129

Solve the system of linear equations using elimination. Make sure the equations are in the same form first.

$$\begin{aligned}6x - y &= 5 \\3x + y &= 4\end{aligned}$$

If there are no solutions, write "no solution". If there are infinitely many solutions, write "infinitely many solutions". If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 130

Solve the system of linear equations using elimination. Make sure the equations are in the same form first.

$$\begin{aligned}x + 4y &= 9 \\-x - 2y &= 3\end{aligned}$$

If there are no solutions, write "no solution". If there are infinitely many solutions, write "infinitely many solutions". If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 131

Solve the system of linear equations using elimination. Make sure the equations are in the same form first.

$$\begin{aligned}x + 5y &= -8 \\-x - 2y &= -13\end{aligned}$$

If there are no solutions, write "no solution". If there are infinitely many solutions, write "infinitely many solutions". If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 132

Solve the system of linear equations using elimination. Make sure the equations are in the same form first.

$$\begin{aligned}2x+y &= 7 \\x+y &= 1\end{aligned}$$

If there are no solutions, write "no solution". If there are infinitely many solutions, write "infinitely many solutions". If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 133

The point where the graphs of two equations intersect has y-coordinate 2. One equation is

$y = -3x + 5$. Find the other equation if its graph has a slope of 1.

$y =$

Use x as your variable.

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Problem 134

Susan has seven more fish than Tammy. They have 43 fish altogether. How many fish does Susan have?

fish

Problem 135

In rectangle $ABCD$, AB is 8 centimeters and side BC is 6 centimeters. Point F is a point on BC and point E is a point on AB . The area of triangle DFC is 20 square centimeters, and the area of triangle AED is 16 square centimeters. What is the area of triangle DEF in square centimeters?

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Problem 136

If you were babysitting, would you rather

- Charge \$5 for the first hour and \$8 for each additional hour?

Or

- Charge \$15 for the first hour and \$6 for each additional hour?

Explain your reasoning.

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Problem 137

Elena noticed that, nine years ago, her cousin Katie was twice as old as Elena was e years old k years old, which system of then. Then Elena said, "In four years, I'll be as old as Katie is now!" If Elena is _____ and Katie _____ equations matches the currently _____ is _____ story?

A
$$\begin{cases} k-9=2e \\ e+4=k \end{cases}$$

B
$$\begin{cases} 2k=e-9 \\ e=k+4 \end{cases}$$

C
$$\begin{cases} k=2e-9 \\ e+4=k+4 \end{cases}$$

D
$$\begin{cases} k-9=2(e-9) \\ e+4=k \end{cases}$$

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Problem 138

The high school is hosting an event for seniors but will also allow some juniors to attend. The principal approved the event for 200 students and decided the number of juniors should be 25% of the number of seniors. How many juniors will be allowed to attend? If you get stuck, try writing two equations that each represent the number of juniors and seniors at the event.

juniors

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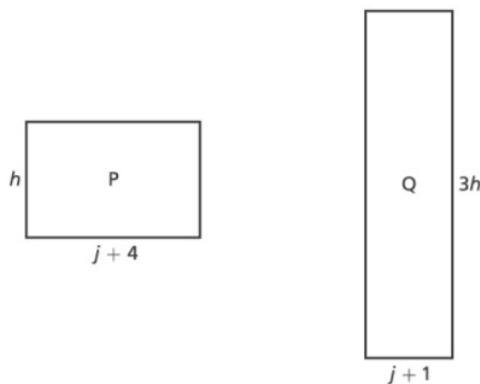
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Problem 139

Two rectangles are shown below. Rectangle P has a perimeter of 20 inches. Rectangle Q has a perimeter of 30 inches.



- A $j = 3$ and $h = 3$
- B $j = 10$ and $h = 4$
- C $j = 2$ and $h = 4$
- D $j = 9.5$ and $h = 6.5$

Massachusetts Department of Elementary and Secondary Education

Problem 140

The amount of money, that Jason receives from selling x posters is given by $y = 4x$. The cost of producing x posters is given by the equation $y = \frac{1}{2}x + 200$. How many posters does Jason need to sell so that the cost and revenue are equal?

- A 40
- B 80
- C 140
- D 320

Massachusetts Department of Elementary and Secondary Education

Problem 141

Use a system of equations to solve:

Tickets were sold to the girl's district basketball game. The price for an adult ticket was \$8 and the price for a student ticket was \$5. 300 tickets were sold and revenue totaled \$1770. How many adult tickets were sold?

A 90

B 210

C 221.25

Problem 142

The length of a rectangular garden is three times the width. If the perimeter is 32 m, what are the dimensions of the garden?

A 4m x 4m

B 4m x 12m

C 6m x 10m

D 8m x 8m

Problem 143

Kim has 40 coins worth a total of \$8.80. Some of the coins are nickels and the rest are quarters. How many quarters does she have?

A 34

B 35

C 176

Problem 144

Cell phone Plan A costs \$70 per month and comes with a free \$500 phone. Cell phone Plan B costs \$50 per month but does not come with a phone. If you buy the \$500 phone and choose Plan B, how many months is it until your cost is the same as Plan A's?

months

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Problem 145

Which story matches the equation $-6 + 3x = 2 + 4x$?



A

At 5 p.m., the temperatures recorded at two weather stations in Antarctica are -6 degrees and 2 degrees. The temperature changes at the same constant rate,

degrees per hour, throughout the night at both locations. The temperature at the first station 3 hours after this recording is the same as the temperature at the second station 4 hours after this recording.



B

Elena and Kiran play a card game. Every time they collect a pair of matching cards, they earn

points. At one point in the game, Kiran has -6 points and Elena has 2 points. After Elena collects 3 pairs and Kiran collects 4 pairs, they have the same number of points.

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Problem 146

On a different Saturday, two friends set out on bikes at 8:00 am and met up at 8:30 am. (The same two friends who live 7 miles apart.) If one was riding at 10 miles per hour, how fast was the other riding?

miles per hour

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Problem 147

A store sells white scarves and red scarves.

- A white scarf costs \$3
- A red scarf costs \$5

On Monday, the store sold 12 scarves for a total of \$50. What is the total number of red scarves that the store sold on Monday?

A 4

B 5

C 6

D 7

Massachusetts Department of Elementary and Secondary Education

Problem 148

Ted has some red blocks and some green blocks.

- Each red block weighs the same number of ounces.
- Each green block weighs the same number of ounces.
- The total weight of 2 red blocks and 6 green blocks is 23 ounces.
- The total weight of 3 red blocks and 4 green blocks is 22 ounces.

What is the total weight of 1 red block **and** 1 green block?

3 ounces

6 ounces

6.5 ounces

13.5 ounces

Problem 149

Ted has some red blocks and some green blocks.

- Each red block weighs the same number of ounces.
- Each green block weighs the same number of ounces.
- The total weight of 2 red blocks and 6 green blocks is 23 ounces.
- The total weight of 3 red blocks and 4 green blocks is 22 ounces.

What is the total weight of 1 red block **and** 1 green block?

A 3 ounces

B 6 ounces

C 6.5 ounces

D 13.5 ounces

Massachusetts Department of Elementary and Secondary Education

Problem 150

A chemist has two acid solutions. Solution A contains 10% acid, and solution B contains 30% acid. He will mix the two solutions to make 10 liters of a third solution, solution C, containing 25% acid.

The system of equations shown can be used to represent this situation.

$$\begin{cases} x + y = 10 \\ 0.10x + 0.30y = 2.5 \end{cases}$$

Which statement about the system of equations is true?

- In the system of equations, x represents the number of liters of acid in solution A, and y represents the number of liters of acid in solution B.
- In the system of equations, x represents the number of liters of acid in solution B, and y represents the number of liters of acid in solution A.
- In the system of equations, x represents the number of liters of solution A in solution C, and y represents the number of liters of solution B in solution C.
- In the system of equations, x represents the number of liters of solution B in solution C, and y represents the number of liters of solution A in solution C.

Problem 151

You have a coupon worth \$18 off the purchase of a scientific calculator.

The calculator is also being offered at a discount of 15% off.

You can only use either the coupon or the discount, but not both.

Write a linear equation to represent using the coupon.

Use x for the cost of the calculator and y for the cost after the coupon.

Complete the equation below

$y = \underline{\hspace{2cm}}$

$\underline{\hspace{2cm}}$

Problem 152

Write a linear equation to represent using the discount.

Use x for the cost of the calculator and y for the cost after the discount.

Problem 153

For what tag price on the calculator would you pay the same amount with either the discount or the coupon?

Problem 154

Complete the equation so that it is true for all values of x .

$$3x = 6 = 3(x + \underline{\hspace{2cm}})$$

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Problem 155

Complete the equation so that it is true for all values of x .

$$x - 2 = -(\underline{\hspace{2cm}} - x)$$

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Problem 156

Complete the equation so that it is true for all values of x .

$$\frac{15x - 10}{5} = \underline{\hspace{2cm}} - 2$$

Use X as your variable.

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Problem 157

Complete the equation so that it is true for no values of x .

$$3x + 6 = 3(x + \underline{\hspace{1cm}})$$

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Problem 158

Complete the equation so that it is true for no values of x .

$$x - 2 = -(\underline{\hspace{1cm}} - x)$$

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Problem 159

Complete the equation so that it is true for no values of x .

$$\frac{15x - 10}{5} = \underline{\hspace{1cm}} - 2$$

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Problem 160

Describe how you know whether an equation will be true for all values of x or true for no values of x .

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Problem 161

The solution below has something wrong. Identify the place that it is wrong.

$$2(x + 8) = 16$$

$$2x + 16 = 16$$

$$2x = 0$$

No Solution

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Problem 162

What is the correct answer?

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Problem 163

The solution below has something wrong. Identify the place that it is wrong.

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

$$4 = 10$$

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Problem 164

What is the correct answer?

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Problem 165

The solution below has something wrong. Identify the place that it is wrong.

$$5x + 50 = 20x$$

$$50 = 25x$$

$$2 = x$$

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Problem 166

What is the correct answer?

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Problem 167

Write the following statement as a mathematical expression.

Let x be a number.

The sum of thirteen and twice a number

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Problem 168

Is the expression linear or non-linear?

Linear

Non-linear

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Problem 169

The solution below has something wrong. Identify the place that it is wrong.

$$2x + 3 = 5x - 4$$

$$5x = 5x - 4$$

$$0 = -4$$

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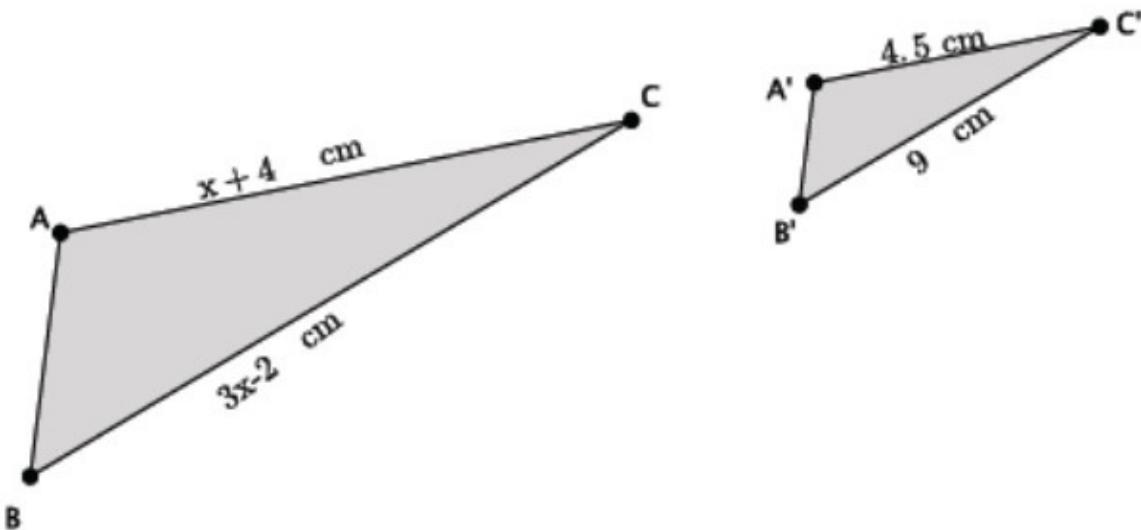
Problem 170

What is the correct answer?

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Problem 171

In the diagram below, $\triangle ABC \sim \triangle A'B'C'$. Determine the lengths of AC and BC .



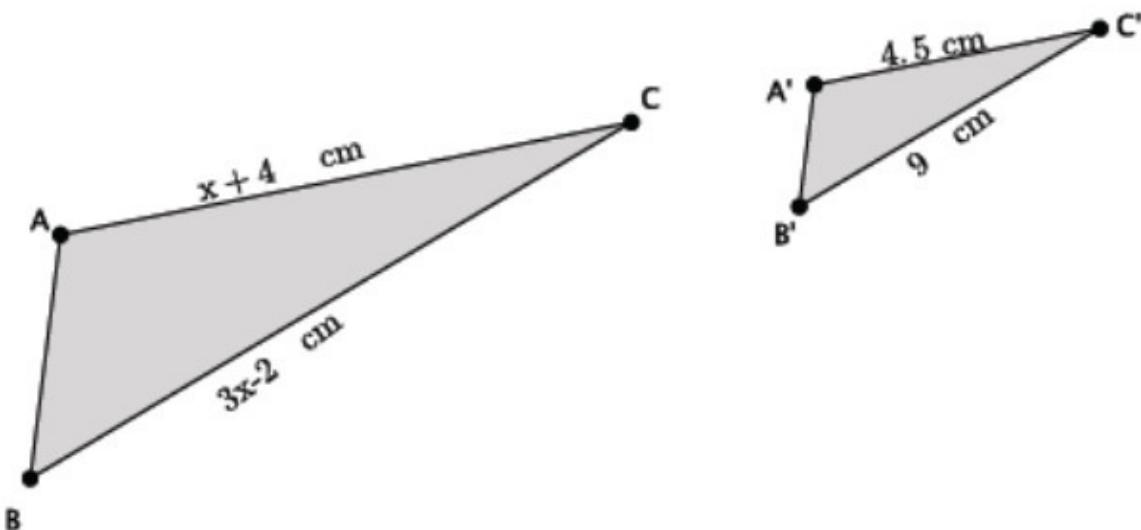
What is the length of AC ?

Do not include units (cm) in your answer.

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Problem 172

In the diagram below, $\triangle ABC \sim \triangle A'B'C'$. Determine the lengths of AC and BC .



What is the length of BC ?

Do not include units (cm) in your answer.

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Problem 173

Three consecutive odd integers have a sum of 3. What are the numbers?

Write an equation that you could use to solve this problem.

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Problem 174

What is the smallest number?

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Problem 175

What is the middle number (neither the least nor greatest)?

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Problem 176

What is the largest number?

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Problem 177

The solution below has something wrong. Identify the place that it is wrong.

$$\begin{aligned}(x + 3) + 5 &= 5 \\ x + 3 &= 0 \\ x &= 3\end{aligned}$$

Problem 178

What is the correct answer?

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Problem 179

Without solving them, say whether each of these equations has a positive solution, a negative solution, a zero solution, or no solution. Explain your answers.

(a) $3x = 5$

- Positive solution
- Negative solution
- Zero solution
- No solution

Problem 180

(b) $5z + 7 = 3$

- Positive solution
- Negative solution
- Zero solution
- No solution

Problem 181

(c) $7 - 5w = 3$

 Positive solution Negative solution Zero solution No solution**Problem 182**

(d) $4a = 9a$

 Positive solution Negative solution Zero solution No solution**Problem 183**

(e) $y = y + 1$

 Positive solution Negative solution Zero solution No solution

Problem 184

Solve each equation mentally.

$$3x + 5 = 14$$

$$x = \underline{\hspace{2cm}}$$

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Problem 185

Solve each equation mentally.

$$3(x - 1) + 5 = 14$$

$$x = \underline{\hspace{2cm}}$$

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Problem 186

Solve each equation mentally.

$$3x - 3 + 5 = 14$$

$$x = \underline{\hspace{2cm}}$$

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Problem 187

Solve each equation mentally.

$$3(1 - x) + 5 = 14$$

$$x = \underline{\hspace{2cm}}$$

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Problem 188

Each month, Liz pays \$35 to her phone company just to use the phone. Each text she sends costs her an additional \$0.05. In March, her phone bill was \$72.60. In April, her phone bill was \$65.85. How many texts did she send each month?

Write an equation that you could use to solve this problem.

Write the equation using the "WIRIS editor" button



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Problem 189

How many texts in March?

Do not include units (texts) in your answer.

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Problem 190

How many texts in April?

Do not include units (texts) in your answer.

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Problem 191

The sum of four consecutive integers is 74.

Write an equation that represents the problem.

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Problem 192

What are the numbers?

Enter the numbers in the format

1,2,3,4

in ascending order, with no spaces between the commas

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Problem 193

Write the following statement as a mathematical expression.

Let x be a number.

The quotient of two and a number, subtracted from seventeen

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Problem 194

Is the expression linear or non-linear?



Linear



Non-linear

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Problem 195

Explain.

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Problem 196

The solution below has something wrong. Identify the place that it is wrong.

$$\begin{aligned}2x + 8 &= 2x + 100 \\4x + 8 &= 100 \\x + 2 &= 50 \\x &= 48\end{aligned}$$

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Problem 197

What is the correct answer?

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Problem 198

Write the following statement as a mathematical expression.

Let x be a number.

A number decreased by three squared

Use the \wedge symbol to represent an exponent.

For example: 5 should be typed as 5^2

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Problem 199

Is the expression linear or non-linear?

Linear

Non-linear

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Problem 200

Andre is working on $\frac{5x}{3} - 1 < \frac{2}{3}$. He figured out that when $\frac{5(1)}{3} - 1 < \frac{2}{3}$. He tested all these points:

- When $x = -1$, $\frac{5(-1)}{3} - 1 = \frac{-8}{3}$, $\frac{-8}{3} < \frac{2}{3}$
- When $x = 0$, $\frac{5(0)}{3} - 1 = -1$, $-1 < \frac{2}{3}$
- When $x = 2$, $\frac{5(2)}{3} - 1 = \frac{7}{3}$, $\frac{7}{3} > \frac{2}{3}$
- When $x = 3$, $\frac{5(3)}{3} - 1 = 4$, $4 > \frac{2}{3}$

Based on these results, Andre determines that solutions for X should include -1 and 0, but not 2 or 3.

Andre is frustrated with how much computation he had to do. What advice would you give him about how many numbers to test and which ones to test?

Problem 201

Mai was trying to solve $10 - 3x > 7$. She saw that when $10 - 3(1) > 7$, she reasoned, "Because the problem has a greater than sign, I wrote $x > 1$."

Mai skipped the step of testing points, and that led to an error.

Help Mai test points to determine the correct solution to the inequality. Show your work below.

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Problem 202

Explain to Mai what went wrong with her reasoning.

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Problem 203

You forward an e-card that you found online to three of your friends. They liked it so much that they forwarded it on to four of their friends, who then forwarded it on to four of their friends, and so on. The number of people who saw the e-card is shown below. Let S

$$\begin{aligned}S^1 &= 3 \\S^2 &= 3 + 3 \cdot 4 \\S^3 &= 3 + 3 \cdot 4 + 3 \cdot 4^2 \\S^4 &= 3 + 3 \cdot 4 + 3 \cdot 4^2 + 3 \cdot 4^3\end{aligned}$$

¹represent the number of people who saw the e-card after one step, let S

²represent the number of people who saw the e-card after two steps, and so on.

Find and write out the pattern in the equations.

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Problem 204

Assuming the trend continues, how many people will have seen the e-card after 10 steps?

Do not include units (people) in your answer.

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Problem 205

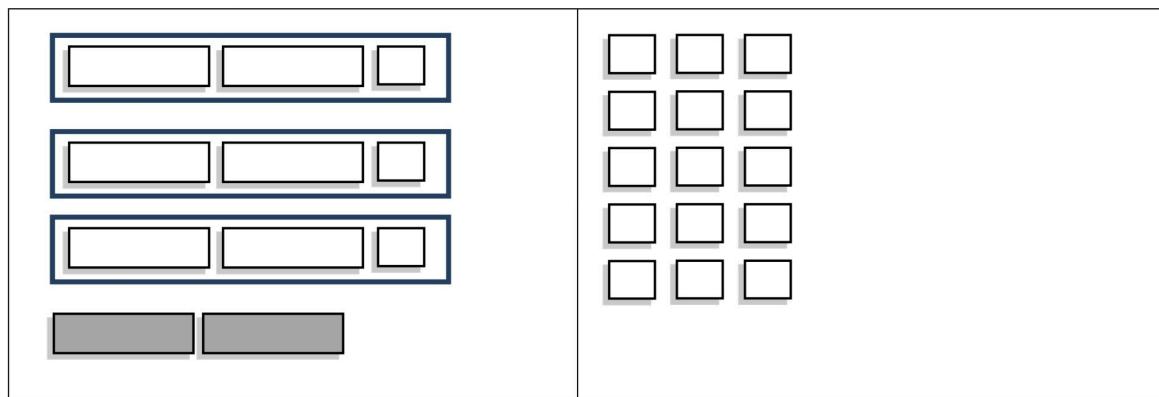
How many people will have seen the e-card after n steps?

Do not include units (people) in your answer.

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Problem 206

The following is a model of an equation.



Write the symbolic representation (equation) for this model.

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Problem 207

Solve the equation.

$$x = \underline{\hspace{2cm}}$$

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Problem 208

To own and operate a home printer, it costs \$100 for the printer and an additional \$0.05 per page for ink. To print out pages at an office store, it costs \$0.25 per page. Let

p represent
number of
pages.

What does the equation $100 + 0.05p = 0.25p$ represent?

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Problem 209

The solution to that equation is $p = 500$. What does the solution mean?

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Problem 210

In this problem, a common mistake has been made. Which line contains the mistake?

$$\begin{aligned}7 + 2(3x+ 4) &= 3 \\7 + 6x+ 4 &= 3 \quad \text{Distribute the 2.} \\11 + 6x &= 3 \quad \text{Combine like terms (7 and 4).} \\6x &= -8 \quad \text{Subtract 11 from both sides.} \\x &= -8/6 \quad \text{Divide both sides by 6.} \\x &= -4/3 \quad \text{Simplify the fraction.}\end{aligned}$$

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Line 1

Line 2

Line 3

Line 4

Line 5

Line 6

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Problem 211

Explain the mistake.

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Problem 212

Solve the problem correctly.

x=___

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Problem 213

In this problem, a common mistake has been made. Which line contains the mistake?

$$\begin{aligned} -2(y-3) + 5 &= 3 \\ -2y - 6 + 5 &= 3 \quad \text{Distribute the } -2. \\ -2y - 1 &= 3 \quad \text{Combine like terms } (-6 \text{ and } 5) \\ -2y &= 4 \quad \text{Add } 1 \text{ to both sides.} \\ y &= -2 \quad \text{Divide both sides by } -2. \end{aligned}$$

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- Line 1
- Line 2
- Line 3
- Line 4
- Line 5

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Problem 214

Explain the mistake.

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Problem 215

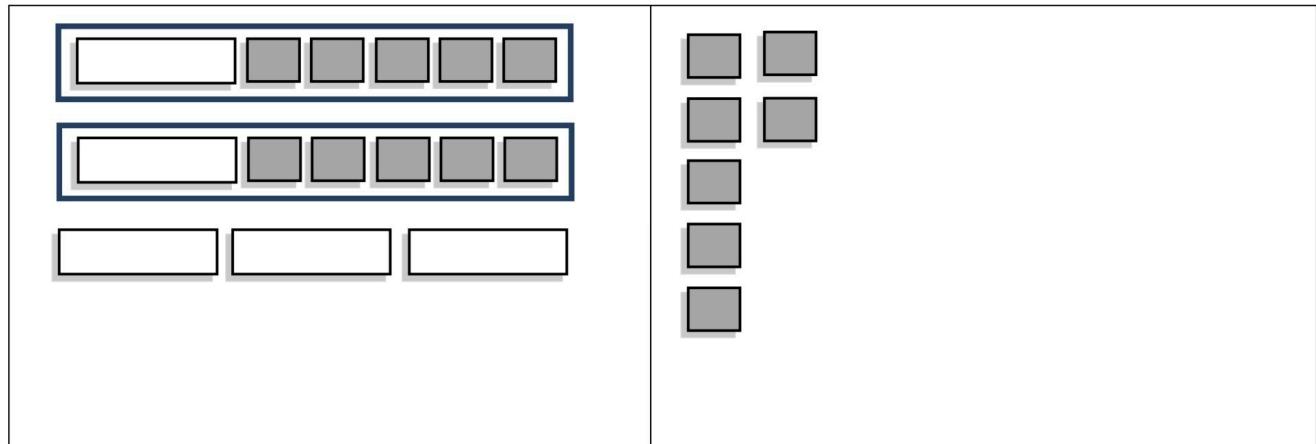
Solve the problem correctly.

y=___

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Problem 216

The following is a model of an equation.



Write the symbolic representation (equation) for this model.

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Problem 217

Solve the equation.

x= ___

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Problem 218

In this problem, a common mistake has been made. Which line contains the mistake?

$$\begin{aligned}5 - (2x - 7) &= 14 \\5 - 2x - 7 &= 14 \quad \text{Distribute the negative sign.} \\-2 - 2x &= 14 \quad \text{Combine like terms (5 and -7).} \\-2x &= 16 \quad \text{Add 2 to both sides.} \\x &= -8 \quad \text{Divide both sides by -2.}\end{aligned}$$

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Line 1

Line 2

Line 3

Line 4

Line 5

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Problem 219

Explain the mistake.

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Problem 220

Solve the problem correctly.

$x = \underline{\hspace{2cm}}$

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Problem 221

In this problem, a common mistake has been made. Which line contains the mistake?

$$\begin{aligned} \frac{1}{3}(x+15) &= 11 \\ \frac{1}{3} + 5 &= 11 \quad \text{Distribute the } \frac{1}{3}. \\ \frac{x}{3} &= 6 \quad \text{Subtract 5 from both sides.} \\ x &= 2 \quad \text{Divide both sides by 3.} \end{aligned}$$

The Utah Middle School Math Project

Line 1

Line 2

Line 3

Line 4

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Problem 222

Explain the mistake.

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Problem 223

Solve the problem correctly.

x = _____

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Problem 224

The expressions below show the grams of fat in sandwiches at a popular fast food restaurant. Use these expressions and the equation to write a story.

Fast Food Calories:

Crispy Chicken: f

Single burger with cheese: $f + 11$

Double burger with cheese: $2f$

$$3f + 2(f + 11) + 4(2f) = 204 \text{ g.}$$

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Problem 225

Use the expressions to determine the fat grams in a Crispy Chicken.

Do not include units (grams) in your answer.

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Problem 226

Use the expressions to determine the fat grams in a single burger with cheese.

Do not include units (grams) in your answer.

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Problem 227

Use the expressions to determine the fat grams in a double burger with cheese.

Do not include units (grams) in your answer.

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Problem 228

Solve the following equation for y : $2x + 3y = -6$. Then, answer the questions that follow.

Complete the equation below

$y = \underline{\hspace{2cm}}$

Use x as your variable.

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Problem 229

Based on your transformed equation, what is the slope of the linear equation $2x + 3y = -6$?

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Problem 230

Complete the table to find solutions to the linear equation.

x	Transformed Linear Equation:	y

Create and fill in the table using the table button



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Problem 231

Graph the points on the coordinate plane.

Submit your graph using the tools below.

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Problem 232

Find the slope between any two points.

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Problem 233

The slope you found in part (d) should be equal to the slope you noted in part (a). If so, connect the points to make the line that is the graph of an equation of the form

$$y = mx + b$$

that has slope m .

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Problem 234

Note the location (ordered pair) that describes where the line intersects the y -axis.

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Problem 235

Solve the following equation for y : $5x - y = 4$. Then, answer the questions that follow.

Complete the equation below

$$y = \underline{\hspace{2cm}}$$

Use x as your variable.

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Problem 236

Based on your transformed equation, what is the slope of the linear equation $5x - y = 4$?

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Problem 237

Complete the table to find solutions to the linear equation.

x	Transformed Linear Equation:	y

Create and fill in the table using the table button



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Problem 238

Graph the points on the coordinate plane.

Submit your graph using the tools below.

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Problem 239

Find the slope between any two points.

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Problem 240

The slope you found in part (d) should be equal to the slope you noted in part (a). If so, connect the points to make the line that is the graph of an equation of the form

$$y = mx + b$$

that has slope m .

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Problem 241

Note the location (ordered pair) that describes where the line intersects the y -axis.

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Problem 242

Solve the following equation for y: $9x + 3y = 21$.

Complete the equation below

$$y = \underline{\hspace{2cm}}$$

Use x as your variable.

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Problem 243

Based on your transformed equation, what is the slope of the linear equation $9x + 3y = 21$?

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Problem 244

Complete the table to find solutions to the linear equation.

x	Transformed Linear Equation:	y

Create and fill in the table using the table button



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Problem 245

Graph the points on the coordinate plane.

Submit your graph using the tools below.

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Problem 246

Find the slope between any two points.

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Problem 247

The slope you found in part (d) should be equal to the slope you noted in part (a). If so, connect the points to make the line that is the graph of an equation of the form

$$y = \text{_____} \text{ that has } m. \\ mx + \text{slope} \\ b$$

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Problem 248

Note the location (ordered pair) that describes where the line intersects the y-axis.

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Problem 249

Solve the following equation for y:

$$-4x + 8y = 24$$

Complete the equation below

$$y = \underline{\hspace{2cm}}$$

Use x as your variable.

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Problem 250Based on your transformed equation, what is the slope of the linear equation $-4x + 8y = 24$?

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Problem 251

Complete the table to find solutions to the linear equation.

x	Transformed Linear Equation:	y

Create and fill in the table using the table button



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Problem 252

Graph the points on the coordinate plane.

Submit your graph using the tools below.

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Problem 253

Find the slope between any two points.

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Problem 254

The slope you found in part (d) should be equal to the slope you noted in part (a). If so, connect the points to make the line that is the graph of an equation of the form

$$y = mx + b$$

that has slope m.

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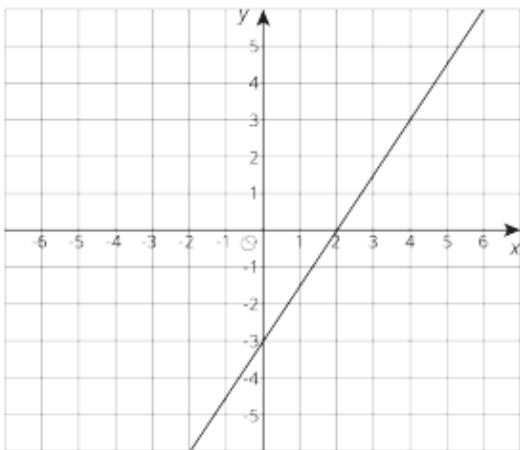
Problem 255

Note the location (ordered pair) that describes where the line intersects the y-axis.

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Problem 256

Here is the graph for one equation in a system of equations.



Write a second equation for the system so it has infinitely many solutions.

$y =$

Use x as your variable.

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Problem 257

Write a second equation whose graph goes through $(0, 2)$ so that the system has no solutions.

$y =$

Use x as your variable.

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Problem 258

Write a second equation whose graph goes through $(2, 2)$ so that the system has one solution at $(4, 3)$.

$y =$

Use x as your variable.

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Problem 259

La gráfica de una ecuación lineal pasa por los puntos $(-2, 0)$ y $(0, -6)$.

Usa los dos puntos para dibujar la gráfica de la ecuación.

Entrega tu gráfica usando las herramientas que ves en el espacio de abajo.

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Problem 260

A graph of a linear equation passes through $(-2, 0)$ and $(0, -6)$.

$3x - y = -6$ es una ecuación para esta gráfica?



Sí



No

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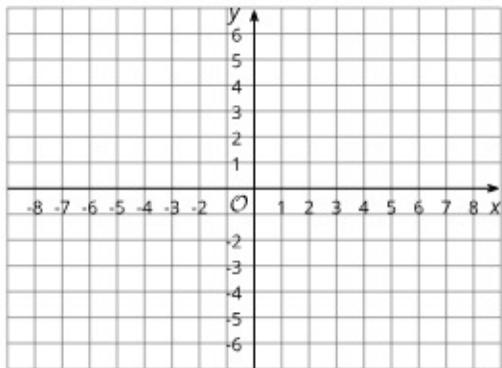
Problem 261

Explica cómo lo sabes.

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Problem 262

Graph a system of linear equations with no solutions.



Submit your graph using the tools below.

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Problem 263

Write an equation for each line you graph.



Write the equations using the "WIRIS editor" button .

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Problem 264

You are a representative for a cell phone company and it is your job to promote different cell phone plans.

Your boss asks you to visually display the costs of three plans and compare them so you can point out the advantages of each plan to your customers.

The information on the plans is shown in the boxes below.

Plan A:

Basic fee:
\$29.95 per month

Text messages:
10 cents each

Unlimited calling
Free nights/weekends
Includes long distance

Plan B:

Basic fee:
\$90.20 per month

Text messages:
unlimited, no cost

Unlimited calling
Free nights/weekends
Includes long distance

Plan C:

Basic fee:
\$49.95 per month

Text messages:
5 cents each

Unlimited calling
Free nights/weekends
Includes long distance

Use this information to write equations for each plan, and then graph the equations and estimate their intersections.

If necessary, write the equations using the "WIRIS editor" button

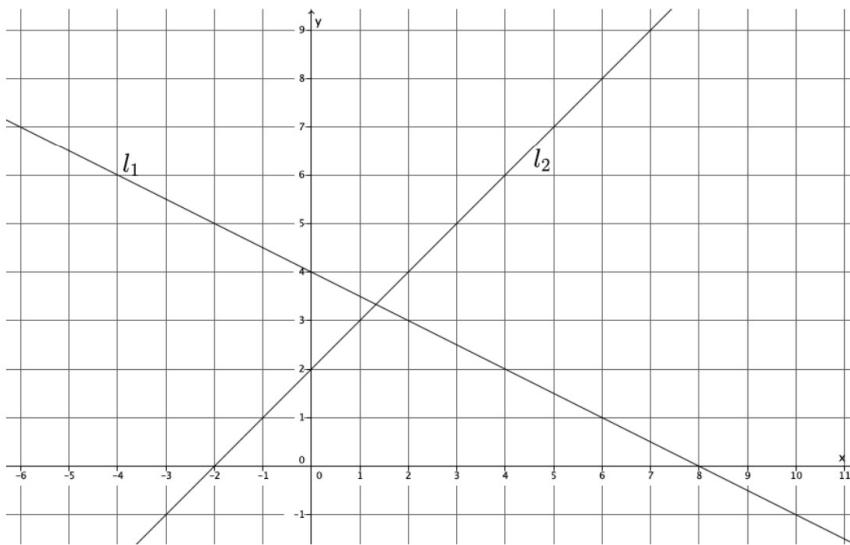


Problem 265

A customer wants to know how to decide which plan will save her the most money. Describe which plan has the lowest cost for each possible range of numbers of text messages a customer might send.

Problem 266

Line l_1 and line l_2 are shown on the graph below. Use the graph to answer the following questions.



What is the y-intercept of l_1 ?

Write your answer in the following format:

(x,y) with no spaces.

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Problem 267

What is the y-intercept of l_2 ?

Write your answer in the following format:

(x,y) with no spaces.

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Problem 268

Write a system of linear equations representing lines l_1 and l_2 .



Write the system of equations using the "WIRIS editor" button

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Problem 269

Use the graph to estimate the solution to the system.

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Problem 270

Solve the system of linear equations algebraically.

Write your answer with improper fractions if necessary.

Write your answer in the following format:

(x,y) with no spaces.

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Problem 271

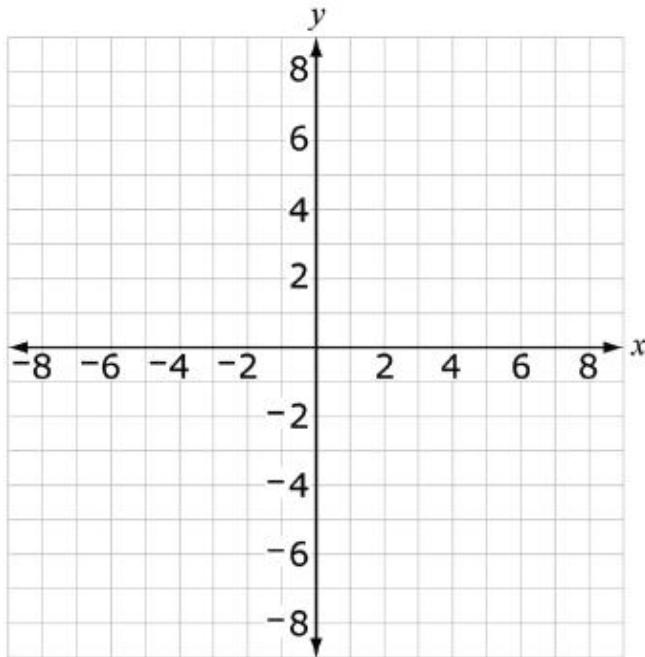
Show that your solution from the previous part satisfies both equations.

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Problem 272

The solution of a system of linear equations is $(-3, 1)$.

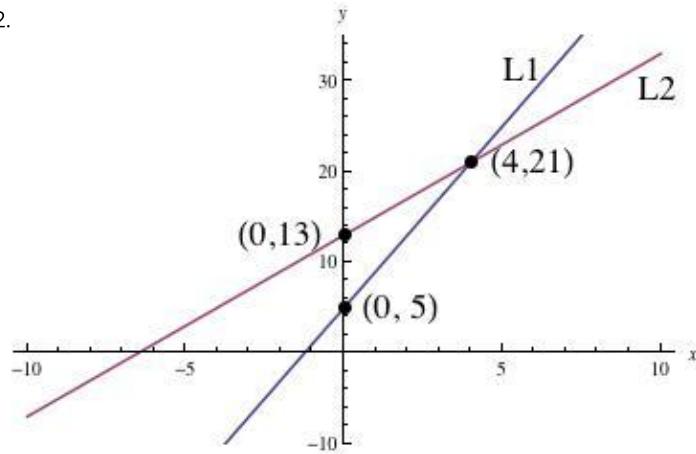
Graph two lines that could be the graphs of the two linear equations in the system.



What are the equations of two lines?

Problem 273

Consider the graph below showing two lines, L_1 and L_2 .

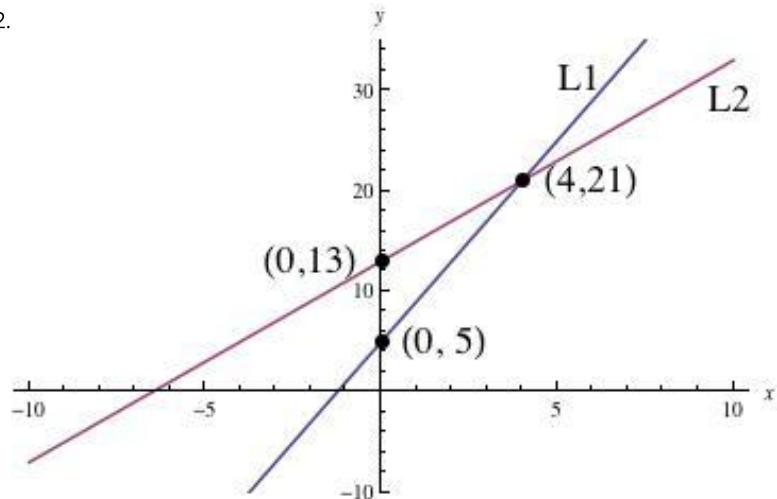


Find the equation of L_1 .

$$y =$$

Problem 274

Consider the graph below showing two lines, L_1 and L_2 .

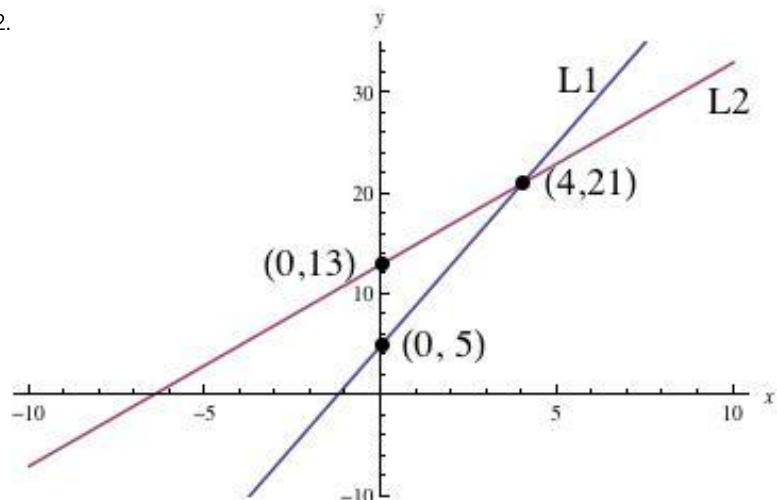


Find the equation of L_2 .

$$y =$$

Problem 275

Consider the graph below showing two lines, L_1 and L_2 .

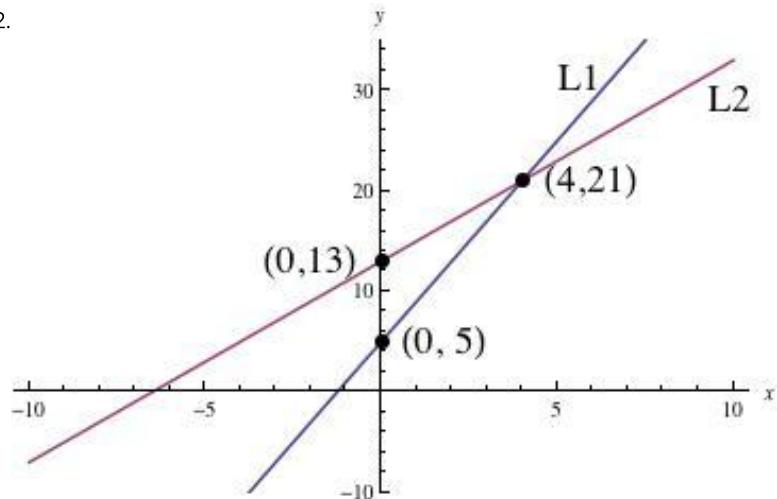


Find the following two points other than those shown on the graph:

One that lies on L_1 but not on L_2 .

Problem 276

Consider the graph below showing two lines, L_1 and L_2 .



Find the following two points other than those shown on the graph:

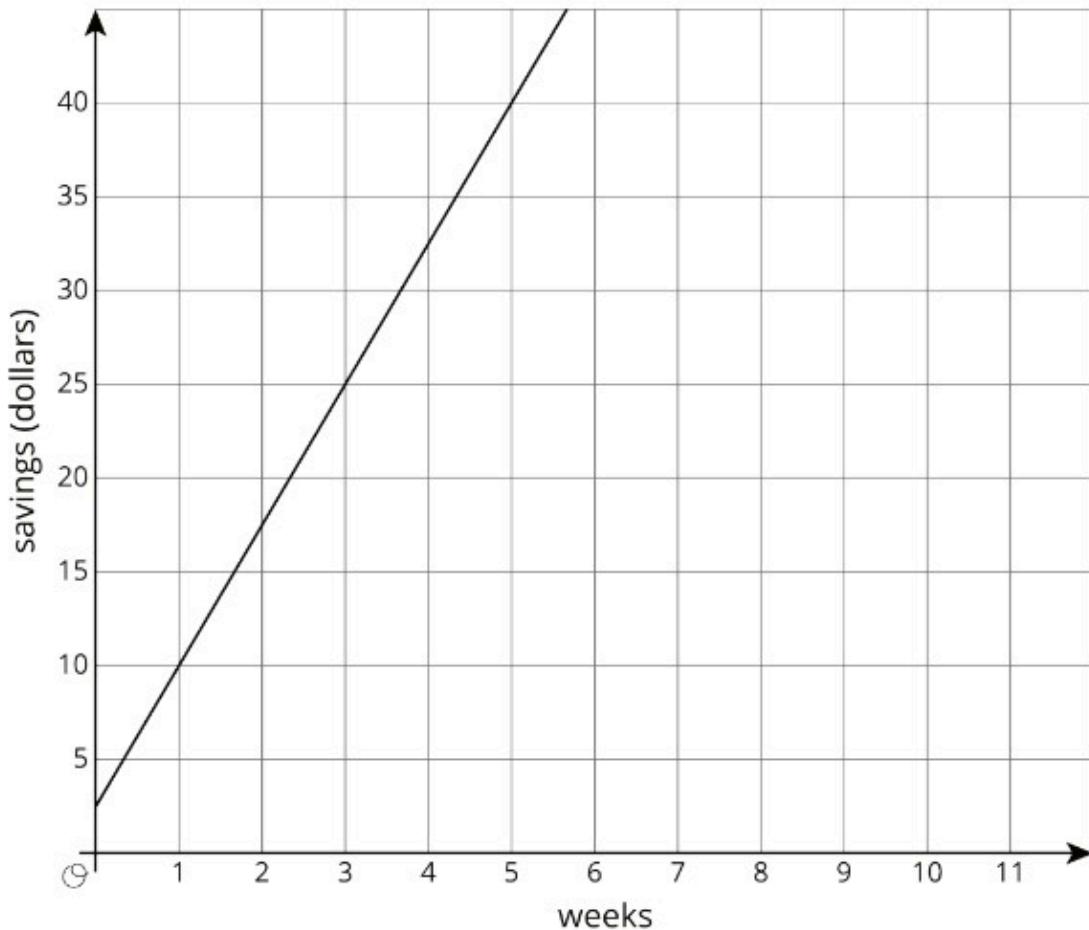
One that lies on L_2 but not on L_1 .

Problem 277

Andre and Noah started tracking their savings at the same time.

Andre started with \$15 and deposits \$5 per week.

Noah started with \$2.50 and deposits \$7.50 per week. The graph of $y=7.5x+2.5$. x represents the number of weeks and y represents Noah's savings is given and his equation is



Write the equation for Andre's savings.

$$y =$$

Use x as your variable.

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Problem 278

Graph Andre's equation alongside Noah's equation.

Submit your graph using the tools below.

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Problem 279

What does the intersection point mean in this situation?

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Problem 280

Draw a graph with two lines that intersect only at the point $(1, 4)$. One of the lines should pass through the point $(0, -1)$.

Submit your graph using the tools below.

Problem 281

Write an equation for each line you drew in part a.

Problem 282

If we consider two or more equations together we have a system of equations. A solution to a system of equations is a pair of values for x and y that make all of the equations true.

Do you think such a solution exists for the system of equations in part (b)? Explain.

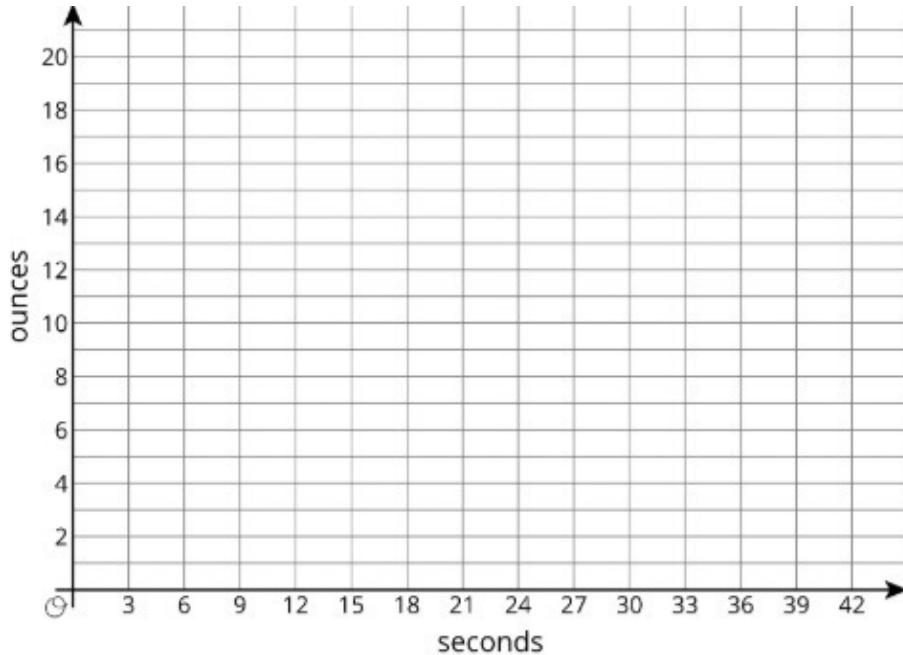
Problem 283

Can you determine whether a system of equations has a solution by looking at the graph of the equations? Explain.

Problem 284

Determined to finish her milkshake before Diego, $\frac{1}{3}$ an ounce per second. Diego starts with his usual 20 ounce milkshake and drinks at the same rate as Lin before, $\frac{2}{3}$ an ounce per second.

Graph this situation on the axes provided.



Submit your graph using the tools below.

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Problem 285

What does the graph tell you about the situation?

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Problem 286

How many solutions are there?

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Problem 287

A graph of a linear equation passes through (-2, 0) and (0, -6).

Use the two points to sketch the graph of the equation.

Submit your graph using the tools below.

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Problem 288

A graph of a linear equation passes through (-2,0) and (0,-6).

Is $3x - y = -6$ an equation for this graph?

Yes

No

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Problem 289

Explain how you know.

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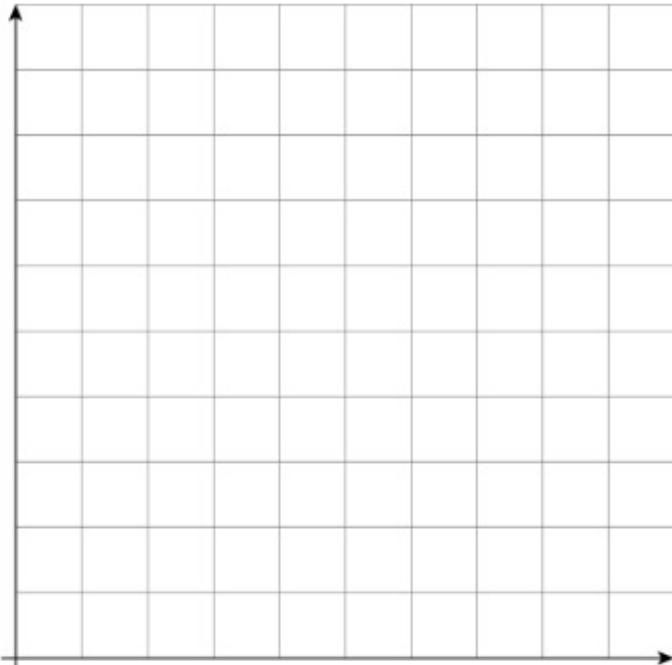
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Problem 290

A stack of n small cups has a height, h , in centimeters of $h = 1.5n+6$.

A stack of n large cups has a height, h , in centimeters of $h = 1.5n+9$.

Graph the equation for each cup on the same set of axes. Make sure to label the axes and decide on an appropriate scale.



Submit your graphs using the tools below.

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Problem 291

For what number of cups will the two stacks have the same height?

cups

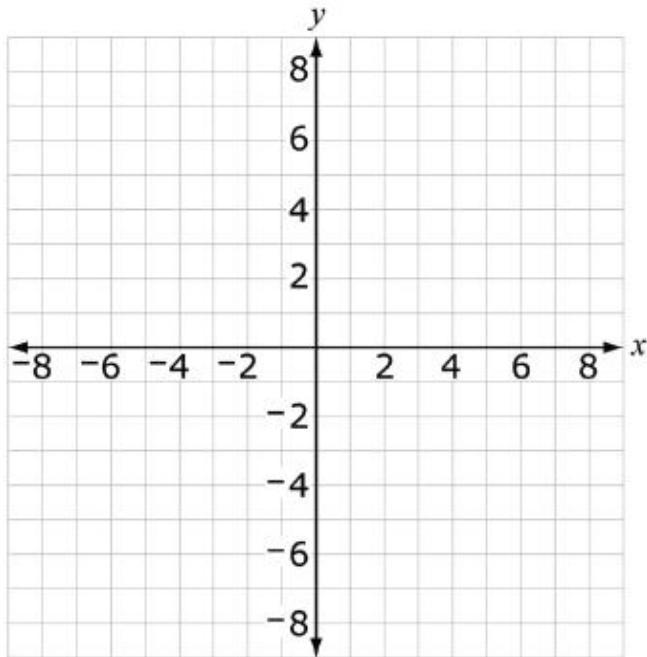
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Problem 292

The solution of a system of linear equations is $(-3, 1)$. On the coordinate grid below, graph two lines that could be the graphs of the two linear equations in the system.



Label one of the lines you graphed a and the other line b .

a ?

What is the equation of line

If necessary, write the equation using the "WIRIS editor" button



Problem 293

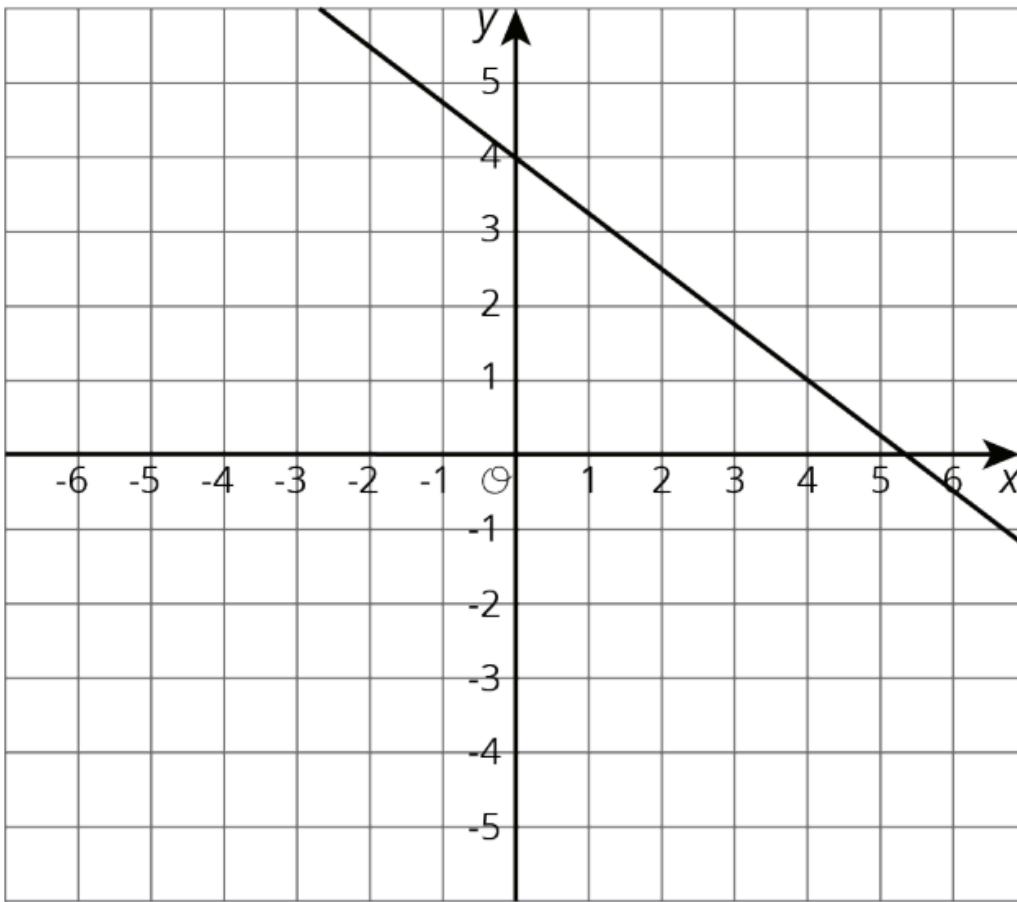
What is the equation of line b ?

If necessary, write the equation using the "WIRIS editor" button



Problem 294

Here is the graph for one equation in a system of equations:



Write a second equation for the system so it has infinitely many solutions.

$y =$

Use x as your variable.

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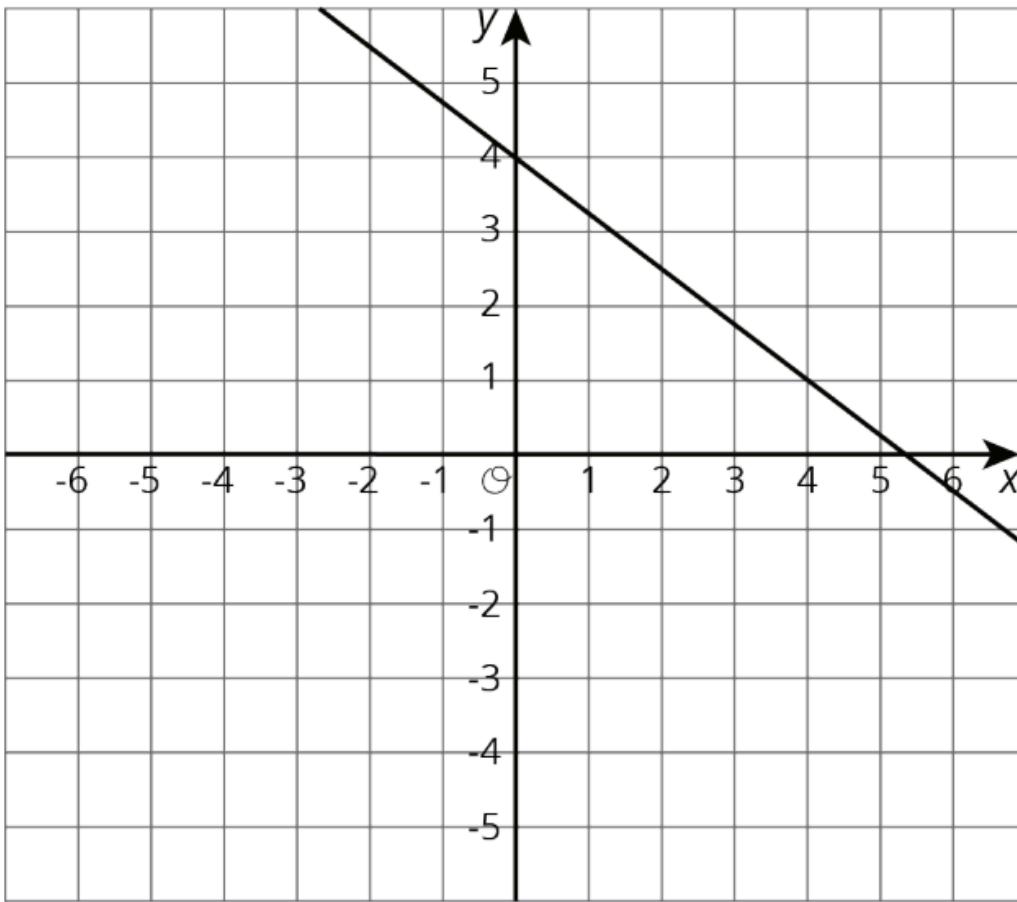
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Problem 295

Write a second equation whose graph goes through $(0, 1)$ so the system has no solutions.

$y =$

Use x as your variable.



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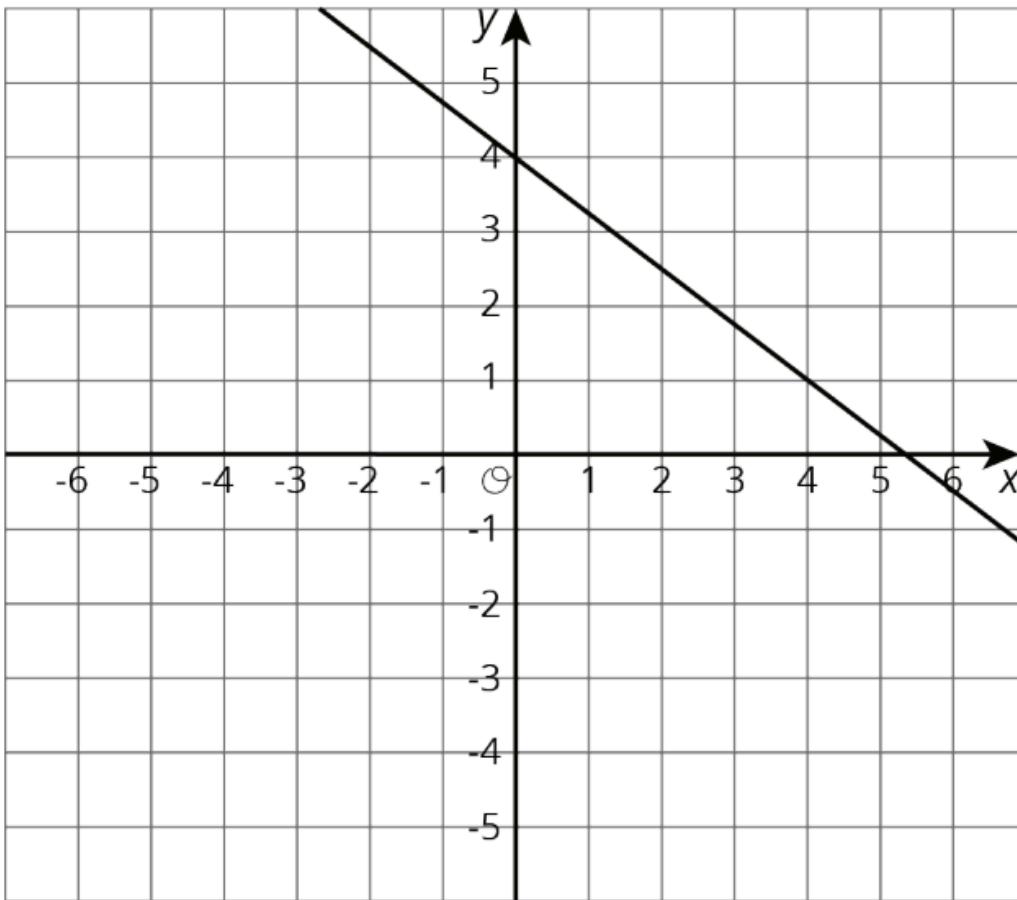
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Problem 296

Write a second equation whose graph goes through $(0, 2)$ so the system has one solution at $(4, 1)$.

$y =$

Use x as your variable.



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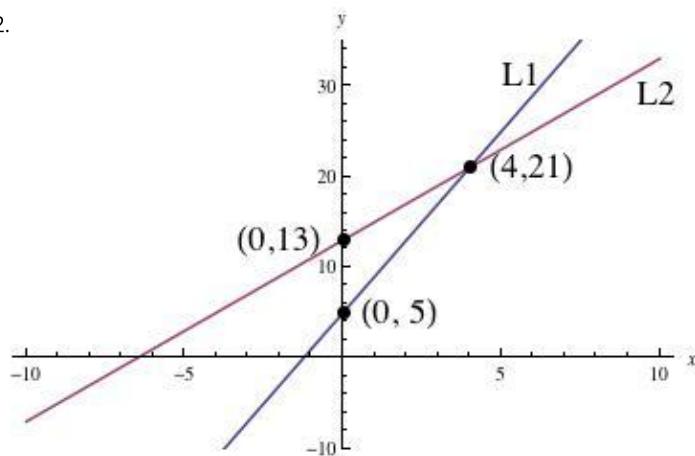
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Problem 297

Consider the graph below showing two lines, L_1 and L_2 .



Find the two corresponding linear equations.

$L_1: y =$

$L_2: y =$

Problem 298

Find the following two points other than those shown on the graph:

One that lies on L_1 but not on L_2 .

(0,13)

(0,5)

(4,21)

Problem 299

One that lies on L_2 but not on L_1 .

(0,13)

(0,5)

(4,21)

Problem 300

Darnell and Hector ride their bikes at constant speeds. Darnell leaves Hector's house to bike home. He can bike the 8 miles in 32 minutes. Five minutes after Darnell leaves, Hector realizes that Darnell left his phone. Hector rides to catch up. He can ride to Darnell's house in 24 minutes. Assuming they bike the same path, will Hector catch up to Darnell before he gets home?

Write the linear equation that represents Darnell's constant speed.

Complete the equation below

$$y = \underline{\hspace{2cm}}$$

Use x as your variable.

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Problem 301

Write the linear equation that represents Hector's constant speed. Make sure to take into account that Hector left after Darnell.

Complete the equation below:

$$y = \underline{\hspace{2cm}}$$

Use x as your variable.

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Problem 302

Write the system of linear equations that represents this situation.

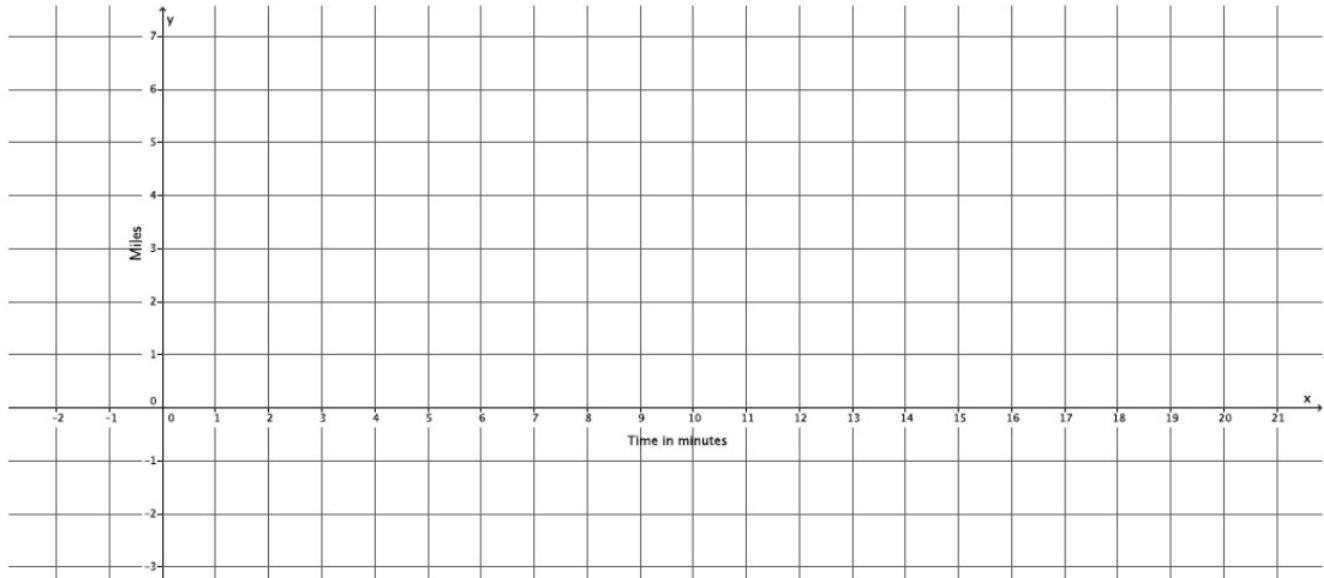
Write the systems of equations using the "WIRIS editor" button



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Problem 303

Sketch the graphs of the two equations.



Submit your graph using the tools below.

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Problem 304

Will Hector catch up to Darnell before he gets home?

Yes

No

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Problem 305

Approximately when?

Do not include units (miles) in your answer.

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Problem 306

At approximately what point do the graphs of the lines intersect?

Write your answer in the following format:

(x,y) with no spaces

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Problem 307

Your teacher will give you a page with some systems of equations.

Graph each system of equations carefully on the provided coordinate plane.

Submit your work using the tools below.

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Problem 308

Describe what the graph of a system of equations looks like when it has 1 solution.

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Problem 309

Describe what the graph of a system of equations looks like when it has 0 solutions.

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Problem 310

Describe what the graph of a system of equations looks like when it has infinitely many solutions.

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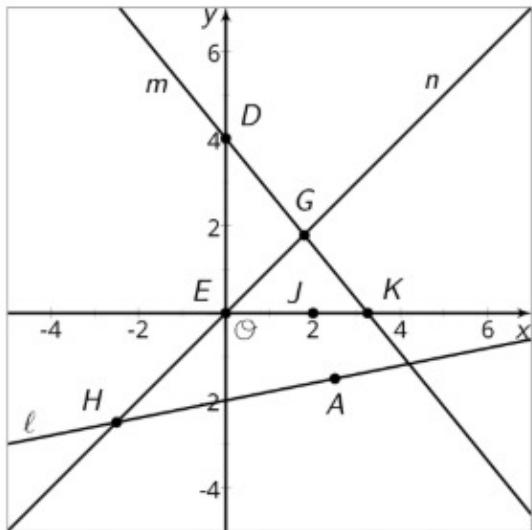
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Problem 311

Here are graphs representing three linear relationships. These relationships could also be represented with equations.



For the statement below, decide if it is true or false.

(4, 0) is a solution of the equation for line **m**.

True

False

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Problem 312

Explain your reasoning.

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Problem 313

For the statement below, decide if it is true or false.

The coordinates of the point G make both the equation for line m and the equation for line n true.

True

False

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Problem 314

Explain your reasoning.

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Problem 315

For the statement below, decide if it is true or false.

$x=0$ is a solution of the equation for line n.

True

False

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Problem 316

Explain your reasoning.

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Problem 317

For the statement below, decide if it is true or false.

(2, 0) makes both the equation for line m and the equation for line n true.

True

False

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Problem 318

Explain your reasoning.

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Problem 319

For the statement below, decide if it is true or false.

There is no solution for the equation for line ℓ that has $y=0$.

True

False

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Problem 320

Explain your reasoning.

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Problem 321

For the statement below, decide if it is true or false.

The coordinates of point H are solutions to the equation for line ℓ .

True

False

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Problem 322

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Problem 323

For the statement below, decide if it is true or false.

There are exactly two solutions of the equation for line ℓ .

True

False

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Problem 324

Explain your reasoning.

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Problem 325

For the statement below, decide if it is true or false.

There is a point whose coordinates make the equations of all three lines true.

True

False

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Problem 326

Explain your reasoning.

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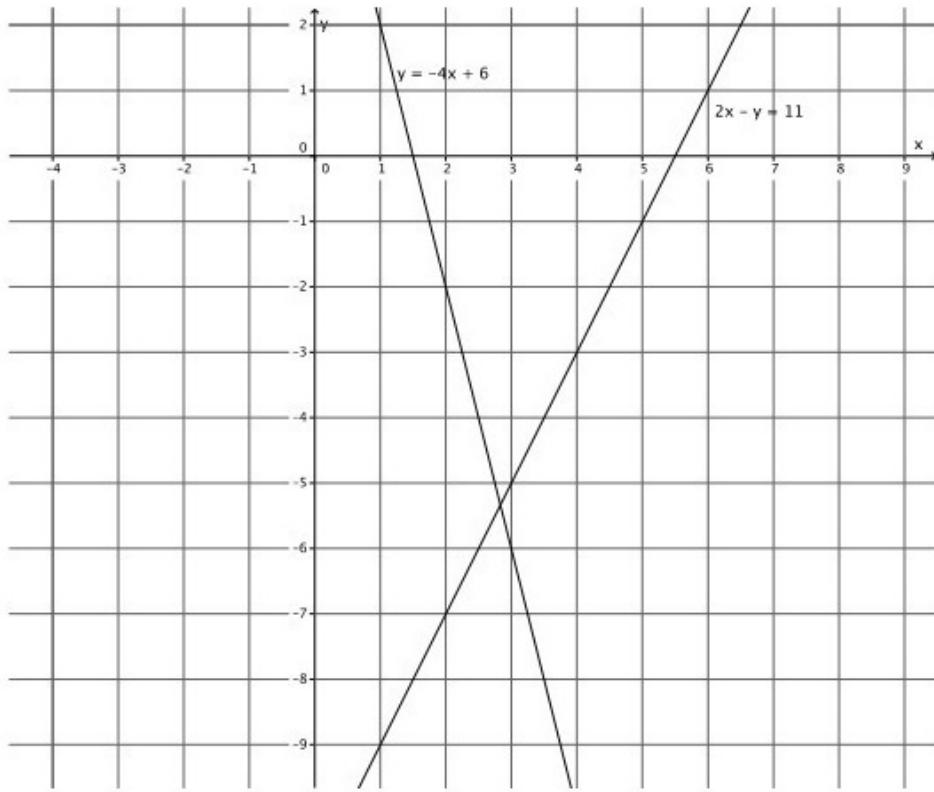
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Problem 327

Determine the solution, if it exists, for each system of linear equations. Verify your solution on the coordinate plane.

$$\begin{cases} y = -4x + 6 \\ 2x - y = 11 \end{cases}$$



Does it have a solution?

- Yes (one solution)
- No
- Infinitely many

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Problem 328

Enter the solution.

Write your answer in the format:

(x,y) with no spaces.

Express any non-integer values as fractions.

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Problem 329

Sketch the graphs of the linear system on a coordinate plane:

$$\begin{cases} y = \frac{1}{3}x + 1 \\ y = -3x + 11 \end{cases}$$

Submit your graph using the tools below.

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Problem 330

Name the ordered pair where the graphs of the two linear equations intersect.

$$(\underline{\hspace{2cm}}, \underline{\hspace{2cm}})$$

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Problem 331

Verify that the ordered pair named in the previous part is a solution to

$$y = \frac{1}{3}x + 1$$

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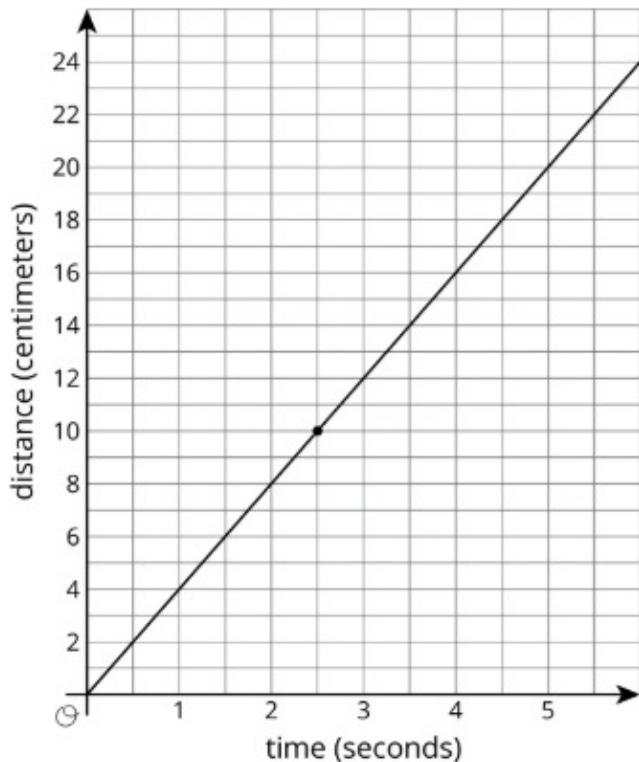
Problem 332

Verify that the ordered pair named in the previous part is a solution to $y = -3x + 11$.

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Problem 333

A different ant and ladybug are a certain distance apart, and they start walking toward each other. The graph shows the ladybug's distance from its starting point over time and the labeled point $(2.5, 10)$ indicates when the ant and the ladybug pass each other.



The ant is walking 2 centimeters per second.

Write an equation representing the relationship between the ant's distance from the ladybug's starting point and the amount of time that has passed.

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Problem 334

If you haven't already, draw the graph of your equation on the same coordinate plane.

Submit your graph using the tools below.

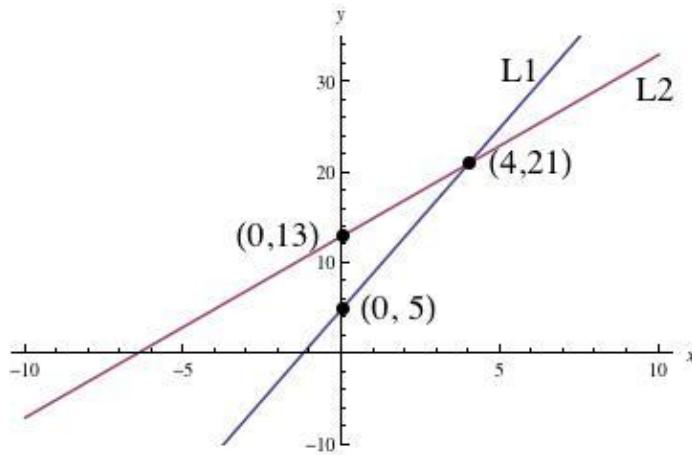
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Problem 335

Consider the graph below showing two lines, L_1 and L_2 .



Find the two corresponding linear equations.

$L_1: y =$

$L_2: y =$

Problem 336

Find the following point other than those shown on the graph:

- One that lies on $L1$ but not on $L2$.

(0,13)

(0,5)

(4,21)

Problem 337

Find the following point other than those shown on the graph:

- One that lies on $L2$ but not on $L1$.

(0,5)

(0,13)

(4,21)

Problem 338

A school is selling t-shirts and sweatshirts for a fund-raiser. The table shows the number of t-shirts and the number of sweatshirts in each of three recent orders. The total cost of orders A and B are given. Each t-shirt has the same cost, and each sweatshirt has the same cost.

Order	Number of T-shirts	Number of Sweatshirts	Total Cost of Order (dollars)
A	2	2	38
B	3	1	35
C	1	2	?

The system of equations shown can be used to represent this situation.

$$\begin{cases} 2x + 2y = 38 \\ 3x + y = 35 \end{cases}$$

What is the total cost, in dollars, of 1 t-shirt?

\$ _____

Problem 339

A school is selling t-shirts and sweatshirts for a fund-raiser. The table shows the number of t-shirts and the number of sweatshirts in each of three recent orders. The total cost of orders A and B are given. Each t-shirt has the same cost, and each sweatshirt has the same cost.

Order	Number of T-shirts	Number of Sweatshirts	Total Cost of Order (dollars)
A	2	2	38
B	3	1	35
C	1	2	?

The system of equations shown can be used to represent this situation.

$$\begin{cases} 2x + 2y = 38 \\ 3x + y = 35 \end{cases}$$

What is the cost of 1 sweatshirt?

\$ _____

Problem 340

A school is selling t-shirts and sweatshirts for a fund-raiser. The table shows the number of t-shirts and the number of sweatshirts in each of three recent orders. The total cost of orders A and B are given. Each t-shirt has the same cost, and each sweatshirt has the same cost.

Order	Number of T-shirts	Number of Sweatshirts	Total Cost of Order (dollars)
A	2	2	38
B	3	1	35
C	1	2	?

The system of equations shown can be used to represent this situation.

$$\begin{cases} 2x + 2y = 38 \\ 3x + y = 35 \end{cases}$$

In the system of equations, what does x represent?

Problem 341

A school is selling t-shirts and sweatshirts for a fund-raiser. The table shows the number of t-shirts and the number of sweatshirts in each of three recent orders. The total cost of orders A and B are given. Each t-shirt has the same cost, and each sweatshirt has the same cost.

Order	Number of T-shirts	Number of Sweatshirts	Total Cost of Order (dollars)
A	2	2	38
B	3	1	35
C	1	2	?

The system of equations shown can be used to represent this situation.

$$\begin{cases} 2x + 2y = 38 \\ 3x + y = 35 \end{cases}$$

In the system of equations, what does y represent?

Problem 342

A school is selling t-shirts and sweatshirts for a fund-raiser. The table shows the number of t-shirts and the number of sweatshirts in each of three recent orders. The total cost of orders A and B are given. Each t-shirt has the same cost, and each sweatshirt has the same cost.

Order	Number of T-shirts	Number of Sweatshirts	Total Cost of Order (dollars)
A	2	2	38
B	3	1	35
C	1	2	?

The system of equations shown can be used to represent this situation.

$$\begin{cases} 2x + 2y = 38 \\ 3x + y = 35 \end{cases}$$

If the system of equations is graphed in a coordinate plane, what are the coordinates (

x, y) of the intersection of the two lines?

$$(\underline{\hspace{2cm}}, \underline{\hspace{2cm}})$$

Problem 343

A school is selling t-shirts and sweatshirts for a fund-raiser. The table shows the number of t-shirts and the number of sweatshirts in each of three recent orders. The total cost of orders A and B are given. Each t-shirt has the same cost, and each sweatshirt has the same cost.

Order	Number of T-shirts	Number of Sweatshirts	Total Cost of Order (dollars)
A	2	2	38
B	3	1	35
C	1	2	?

The system of equations shown can be used to represent this situation.

$$\begin{cases} 2x + 2y = 38 \\ 3x + y = 35 \end{cases}$$

What is the total cost, in dollars, of order C?

\$

Problem 344

Does the system below have a solution?

$$\begin{cases} 8x + 5y = 19 \\ -8x + y = -1 \end{cases}$$

Yes (one solution)

No

Infinitely many

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Problem 345

Determine the solution for the given system of linear equations.

Express any non-integer values as fractions.

Write your answer in the format:

(x,y) with no spaces.

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Problem 346

Verify your solution on the coordinate plane.

Draw your graph on paper, take a picture, and upload it using the image upload icon 
If you do not have the ability to upload an image of your work type "Graph is on paper."

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Problem 347

Sketch the graphs of the linear system on a coordinate plane:

$$\begin{cases} y = \frac{1}{2}x + 4 \\ x + 4y = 4 \end{cases}$$

Submit your graph using the tools below.

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Problem 348

Name the ordered pair where the graphs of the two linear equations intersect.

Write your answer in the format:

(**x,y**) with no spaces.

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Problem 349

Verify that the ordered pair named in the previous part is a solution to $y = \frac{1}{2}x + 4$.

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Problem 350

Verify that the ordered pair named in the previous part is a solution to $x + 4y = 4$.

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Problem 351

Does the system below have a solution?

$$\begin{cases} y = 3x + 2 \\ 4y = 12 + 12x \end{cases}$$

Yes (one solution)

No

Infinitely many

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Problem 352

Verify your solution on the coordinate plane.



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Problem 353

Sketch the graphs of the linear system on a coordinate plane:

$$\begin{cases} y = 2 \\ x + 2y = 10 \end{cases}$$

Submit your graph using the tools below.

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Problem 354

Name the ordered pair where the graphs of the two linear equations intersect.

Write your answer in the format:

(x,y) with no spaces.

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Problem 355

Verify that the ordered pair named in the previous part is a solution to $y = 2$.

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Problem 356

Verify that the ordered pair named in the previous part is a solution to $x + 2y = 10$.

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Problem 357

Sketch the graphs of the linear system on a coordinate plane:

$$\begin{cases} -2x + 3y = 18 \\ 2x + 3y = 6 \end{cases}$$

Submit your graph using the tools below.

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Problem 358

Name the ordered pair where the graphs of the two linear equations intersect.

Write your answer in the format:

(x,y) with no spaces.

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Problem 359

Verify that the ordered pair named in the previous part is a solution to $-2x + 3y = 18$.

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Problem 360

Verify that the ordered pair named in the previous part is a solution to $2x + 3y = 6$.

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Problem 361

Does the system below have a solution?

$$\begin{cases} y = 2x - 2 \\ 2y = 4x - 4 \end{cases}$$

Yes (one solution)

No

Infinitely many

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Problem 362

Verify your solution on the coordinate plane.

Draw your graph on paper, take a picture, and upload it using the image upload icon
If you do not have the ability to upload an image of your work type "Graph is on paper."

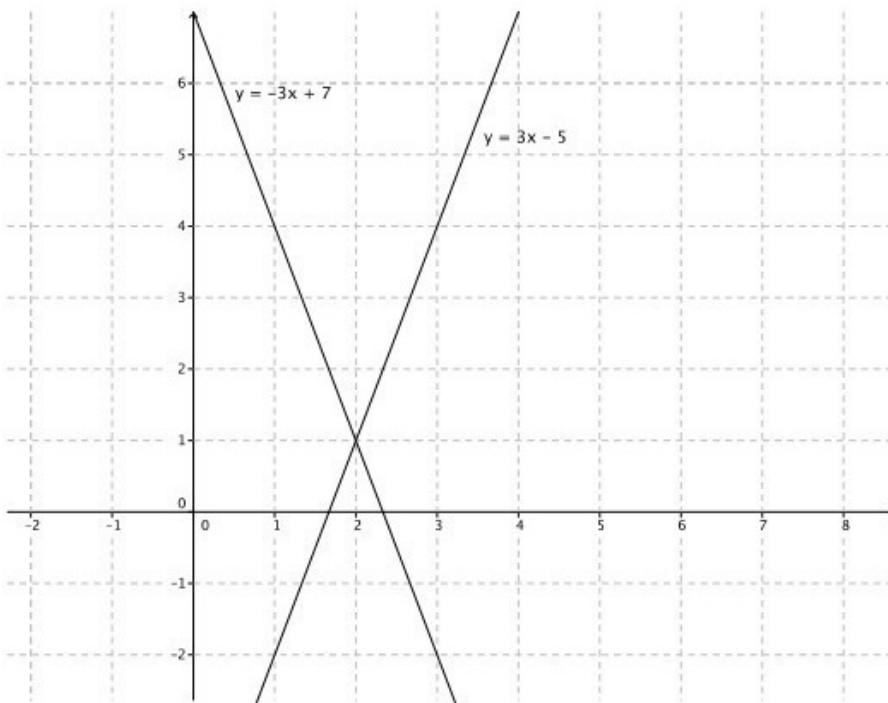


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Problem 363

Determine the solution, if it exists, for each system of linear equations. Verify your solution on the coordinate plane.

$$\begin{cases} y = 3x - 5 \\ y = -3x + 7 \end{cases}$$



Does it have a solution?

Yes (one solution)

No

Infinitely many

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Problem 364

Enter the solution.

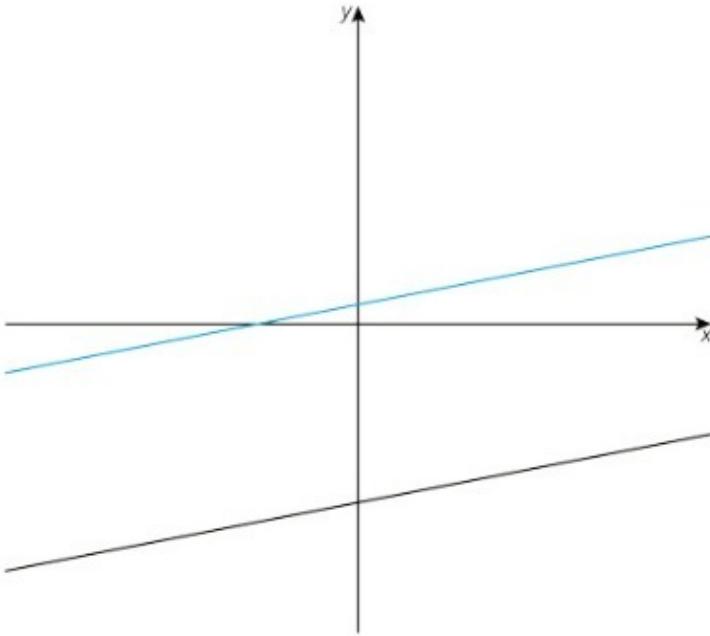
Write your answer in the format:

(x,y) with no spaces.

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Problem 365

Given the lines shown here, what are two possible equations for this system of equations?



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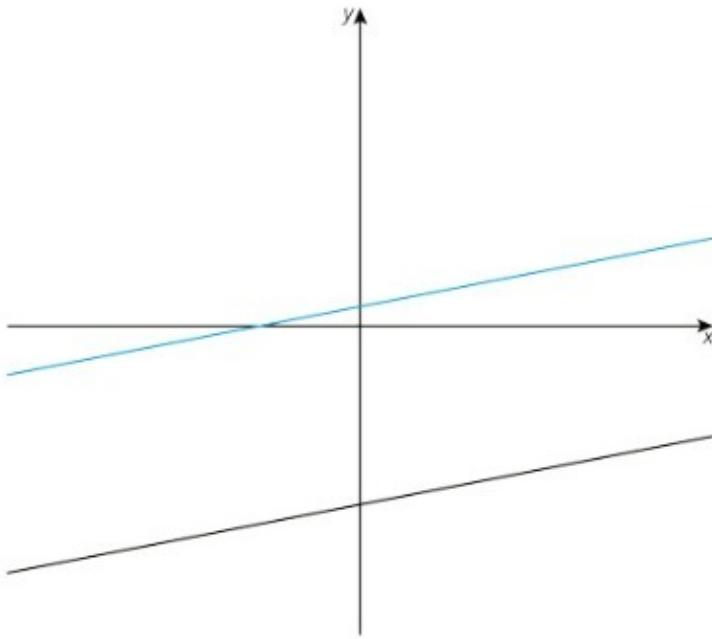
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Problem 366

How many solutions does this system of equations have?



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Problem 367

Explain your reasoning.

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Problem 368

Does the system below have a solution?

$$\begin{cases} x + 3 = y \\ 3x + 4y = 7 \end{cases}$$

Yes (one solution)

No

Infinitely many

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Problem 369

Determine the solution for the given system of linear equations.

Express any non-integer values as fractions.

Write your answer in the format:

(x,y) with no spaces.

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Problem 370

Verify your solution on the coordinate plane.

Draw your graph on paper, take a picture, and upload it using the image upload icon 
If you do not have the ability to upload an image of your work type "Graph is on paper."

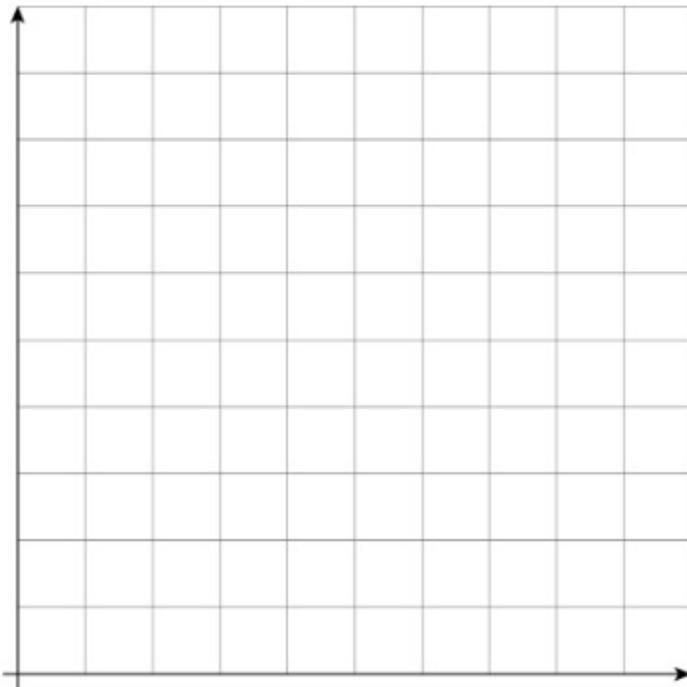
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Problem 371

Elena and Jada were racing 100 meters on their bikes. Both racers started at the same time and rode at constant speed. Here is a table that gives information about Jada's bike race:

time from start (seconds)	distance from start (meters)
6	36
9	54

Graph the relationship between distance and time for Jada's bike race. Make sure to label and scale the axes appropriately.



Submit your graph using the tools below.

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Problem 372

Elena travels the entire race at a steady 6 meters per second. On the same set of axes, graph the relationship between distance and time for Elena's bike race.

Submit your graph using the tools below.

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Problem 373

Who won the race?

Elena

Jada

It's a tie

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Problem 374

Does the system below have a solution?

$$\begin{cases} \frac{1}{2}x + 5 = y \\ 2x + y = 1 \end{cases}$$

- Yes (one solution)
- No
- Infinitely many

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Problem 375

Determine the solution for the given system of linear equations.

Express any non-integer values as fractions.

Write your answer in the format:

(x,y) with no spaces.

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Problem 376

Verify your solution on the coordinate plane.

Draw your graph on paper, take a picture, and upload it using the image upload icon 
If you do not have the ability to upload an image of your work type "Graph is on paper."

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Problem 377

Does the system below have a solution?

$$\begin{cases} 9x + 2y = 9 \\ -3x + y = 2 \end{cases}$$

Yes (one solution)

No

Infinitely many

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Problem 378

Determine the solution for the given system of linear equations.

Express any non-integer values as fractions.

Write your answer in the format:

(x,y) with no spaces.

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Problem 379

Verify your solution on the coordinate plane.

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Problem 380

Sketch the graphs of the linear system on a coordinate plane:

$$\begin{cases} x + 2y = 2 \\ y = \frac{2}{3}x - 6 \end{cases}$$

Submit your graph using the tools below.

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Problem 381

Name the ordered pair where the graphs of the two linear equations intersect.

Write your answer in the format:

(**x,y**) with no spaces.

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Problem 382

Verify that the ordered pair named in the previous part is a solution to $x + 2y = 2$.

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Problem 383

Verify that the ordered pair named in the previous part is a solution to $y = \frac{2}{3}x - 6$.

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Problem 384

Does the system below have a solution?

$$\begin{cases} y = 5x - 1 \\ 10x = 2y + 2 \end{cases}$$

Yes (one solution)

No

Infinitely many

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Problem 385

Verify your solution on the coordinate plane.



Draw your graph on paper, take a picture, and upload it using the image upload icon
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Problem 386

Does the system below have a solution?

$$\begin{cases} 2x + 2y = 4 \\ 12 - 3x = 3y \end{cases}$$

Yes (one solution)

No

Infinitely many

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Problem 387

Verify your solution on the coordinate plane.



Draw your graph on paper, take a picture, and upload it using the image upload icon
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Problem 388

Does the system below have a solution?

$$\begin{cases} y = \frac{4}{3}x - 9 \\ y = x + 3 \end{cases}$$

Yes (one solution)

No

Infinitely many

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Problem 389

Determine the solution for the given system of linear equations.

Express any non-integer values as fractions.

Write your answer in the format:

(x,y) with no spaces.

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Problem 390

Verify your solution on the coordinate plane.

Draw your graph on paper, take a picture, and upload it using the image upload icon
If you do not have the ability to upload an image of your work type "Graph is on paper."



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Problem 391

Does the system below have a solution?

$$\begin{cases} y = -2x + 6 \\ 3y = x - 3 \end{cases}$$

Yes (one solution)

No

Infinitely many

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Problem 392

Determine the solution for the given system of linear equations.

Express any non-integer values as fractions.

Write your answer in the format:

(x,y) with no spaces.

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Problem 393

Verify your solution on the coordinate plane.

Draw your graph on paper, take a picture, and upload it using the image upload icon
If you do not have the ability to upload an image of your work type "Graph is on paper."



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Problem 394

Does the system below have a solution?

$$\begin{cases} 4x - 7y = 11 \\ x + 2y = 10 \end{cases}$$

Yes (one solution)

No

Infinitely many

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Problem 395

Determine the solution for the given system of linear equations.

Express any non-integer values as fractions.

Write your answer in the format:

(x,y) with no spaces.

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Problem 396

Verify your solution on the coordinate plane.

Draw your graph on paper, take a picture, and upload it using the image upload icon 
If you do not have the ability to upload an image of your work type "Graph is on paper."

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Problem 397

Does the system below have a solution?

$$\begin{cases} 3x - 5y = 17 \\ 6x + 5y = 10 \end{cases}$$

Yes (one solution)

No

Infinitely many

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Problem 398

Determine the solution for the given system of linear equations.

Express any non-integer values as fractions.

Write your answer in the format:

(x,y) with no spaces.

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Problem 399

Verify your solution on the coordinate plane.

Draw your graph on paper, take a picture, and upload it using the image upload icon 
If you do not have the ability to upload an image of your work type "Graph is on paper."

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Problem 400

Does the system below have a solution?

$$\begin{cases} 4x - 3y = 16 \\ -2x + 4y = -2 \end{cases}$$

Yes (one solution)

No

Infinitely many

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Problem 401

Determine the solution for the given system of linear equations.

Express any non-integer values as fractions.

Write your answer in the format:

(x,y) with no spaces.

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Problem 402

Verify your solution on the coordinate plane.

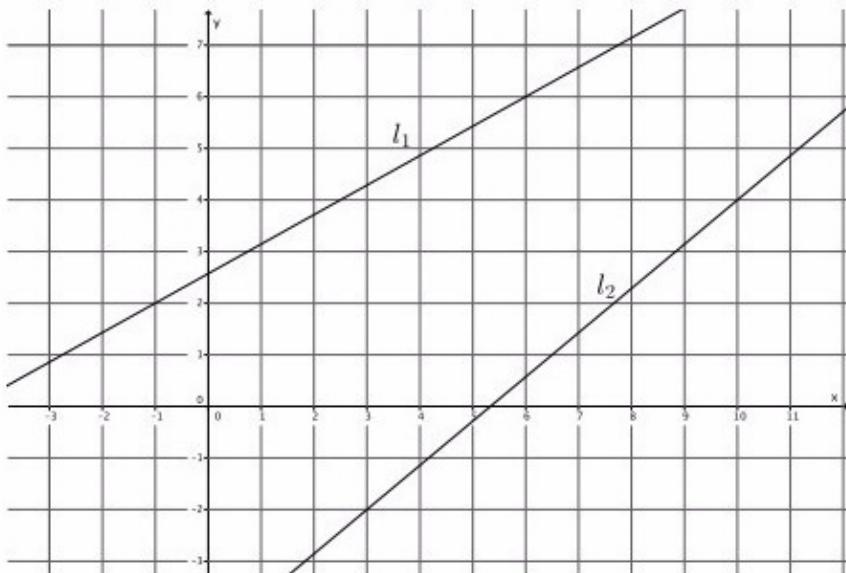
Draw your graph on paper, take a picture, and upload it using the image upload icon
If you do not have the ability to upload an image of your work type "Graph is on paper."



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Problem 403

Given the graphs of a system of linear equations below, is there a solution to the system that we cannot see on this portion of the coordinate plane? That is, will the lines intersect somewhere on the plane not represented in the picture?



Yes

No

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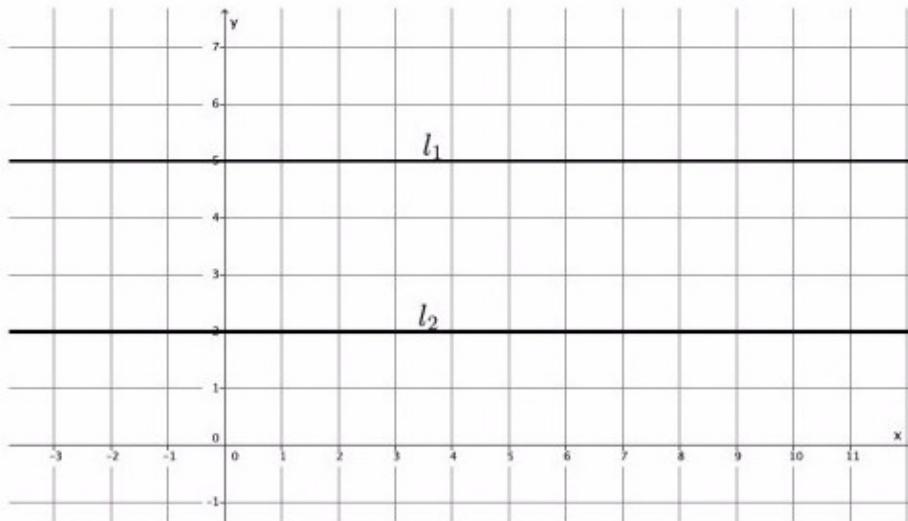
Problem 404

Explain.

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Problem 405

Given the graphs of a system of linear equations below, is there a solution to the system that we cannot see on this portion of the coordinate plane? That is, will the lines intersect somewhere on the plane not represented in the picture?



- Yes
- No

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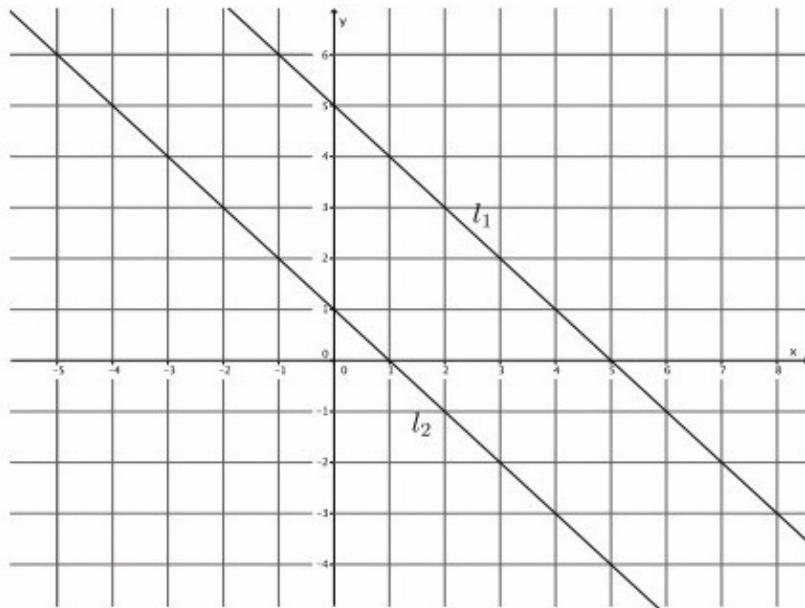
Problem 406

Explain.

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Problem 407

Given the graphs of a system of linear equations below, is there a solution to the system that we cannot see on this portion of the coordinate plane? That is, will the lines intersect somewhere on the plane not represented in the picture?



Yes

No

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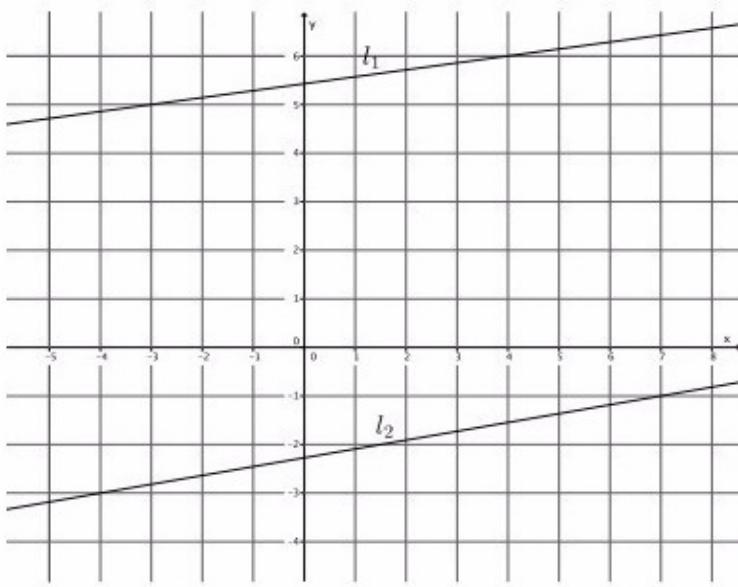
Problem 408

Explain.

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Problem 409

Given the graphs of a system of linear equations below, is there a solution to the system that we cannot see on this portion of the coordinate plane? That is, will the lines intersect somewhere on the plane not represented in the picture?



Yes

No

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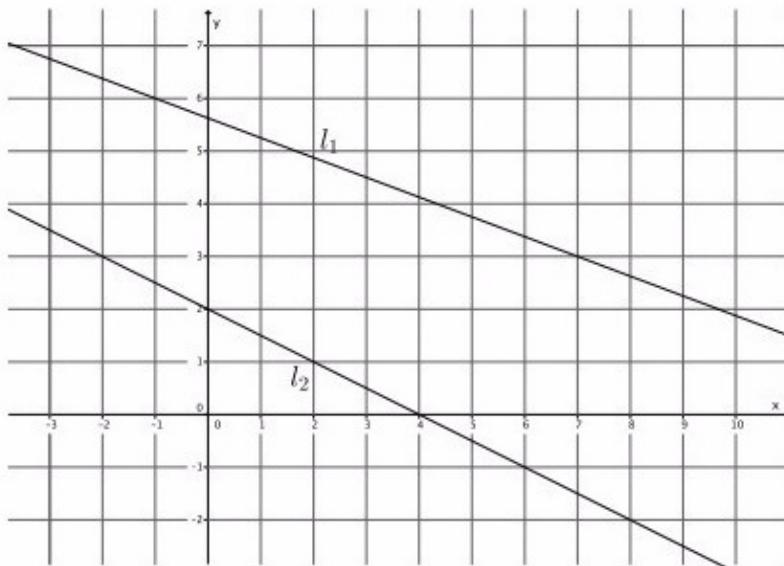
Problem 410

Explain.

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Problem 411

Given the graphs of a system of linear equations below, is there a solution to the system that we cannot see on this portion of the coordinate plane? That is, will the lines intersect somewhere on the plane not represented in the picture?



- Yes
- No

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Problem 412

Explain.

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Problem 413

Does the system below have a solution?

$$\begin{cases} 21x + 14y = 7 \\ 12x + 8y = 16 \end{cases}$$

Yes (one solution)

No

Infinitely many

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Problem 414

Verify your solution on the coordinate plane.



Draw your graph on paper, take a picture, and upload it using the image upload icon

If you do not have the ability to upload an image of your work type "Graph is on paper."

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Problem 415

Determine the nature of the solution to the given system of linear equations.

$$\begin{cases} 7x - 10 = y \\ y = 5x + 12 \end{cases}$$

Does the system above have a solution?

Yes (one solution)

No

Yes (Infinitely many solutions)

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Problem 416

Find the solution to the system algebraically.

Write your answer in the format:

(x,y) with no spaces.

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Problem 417

Verify that your solution is correct by graphing.

Draw your graph on paper, take a picture, and upload it using the image upload icon . If you do not have the ability to upload an image of your work type "Graph is on paper."

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Problem 418

Determine the nature of the solution to the given system of linear equations.

$$\begin{cases} x + 9 = y \\ x = 4y - 6 \end{cases}$$

Does the system above have a solution?

Yes (one solution)

No

Yes (Infinitely many solutions)

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Problem 419

Find the solution to the system algebraically.

Write your answer in the format:

(x,y) with no spaces.

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Problem 420

Verify that your solution is correct by graphing.

Draw your graph on paper, take a picture, and upload it using the image upload icon . If you do not have the ability to upload an image of your work type "Graph is on paper."

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Problem 421

Determine the nature of the solution to the given system of linear equations.

$$\begin{cases} 3y = 5x - 15 \\ 3y = 13x - 2 \end{cases}$$

Does the system above have a solution?

Yes (one solution)

No

Yes (Infinitely many solutions)

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Problem 422

Find the solution to the system algebraically.

Write your answer in the format:

(x,y) with no spaces.

Express any non-integer values as fractions.

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Problem 423

Verify that your solution is correct by graphing.

Draw your graph on paper, take a picture, and upload it using the image upload icon  . If you do not have the ability to upload an image of your work type "Graph is on paper."

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Problem 424

Determine the nature of the solution to the given system of linear equations.

$$\begin{cases} x = 6y + 7 \\ x = 10y + 2 \end{cases}$$

Does the system above have a solution?

Yes (one solution)

No

Yes (Infinitely many solutions)

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Problem 425

Find the solution to the system algebraically.

Write your answer in the format:

(x,y)

with no spaces.

Express any non-integer values as fractions.

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Problem 426

Verify that your solution is correct by graphing.

Draw your graph on paper, take a picture, and upload it using the image upload icon  . If you do not have the ability to upload an image of your work type "Graph is on paper."

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Problem 427

Determine the nature of the solution to the given system of linear equations.

$$\begin{cases} y = \frac{3}{2}x - 6 \\ 2y = 7 - 4x \end{cases}$$

Does the system above have a solution?

Yes (one solution)

No

Yes (Infinitely many solutions)

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Problem 428

Find the solution to the system algebraically.

Write your answer in the format:

(x,y) with no spaces.

Express any non-integer values as fractions.

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Problem 429

Verify that your solution is correct by graphing.

Draw your graph on paper, take a picture, and upload it using the image upload icon . If you do not have the ability to upload an image of your work type "Graph is on paper."

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Problem 430

Determine the nature of the solution to the given system of linear equations.

$$\begin{cases} 2x - 5 = y \\ -3x - 1 = 2y \end{cases}$$

Does the system above have a solution?

Yes (one solution)

No

Yes (Infinitely many solutions)

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Problem 431

Find the solution to the system algebraically.

Write your answer in the format:

(x,y)

with no spaces.

Express any non-integer values as fractions.

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Problem 432

Verify that your solution is correct by graphing.

Draw your graph on paper, take a picture, and upload it using the image upload icon
If you do not have the ability to upload an image of your work type "Graph is on paper."



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Problem 433

Jeremy and Gerardo run at constant speeds. Jeremy can run 1 mile in 8 minutes, and Gerardo can run 3 miles in 33 minutes. Jeremy started running 10 minutes after Gerardo. Assuming they run the same path, when will Jeremy catch up to Gerardo?

Write the linear equation that represents Jeremy's constant speed.

Complete the equation below

y = _____

Use x as your variable.

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Problem 434

Write the linear equation that represents Gerardo's constant speed. Make sure to include in your equation the extra time that Gerardo was able to run.

Complete the equation below

y = _____

Use x as your variable.

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Problem 435

Write the system of linear equations that represents this situation.

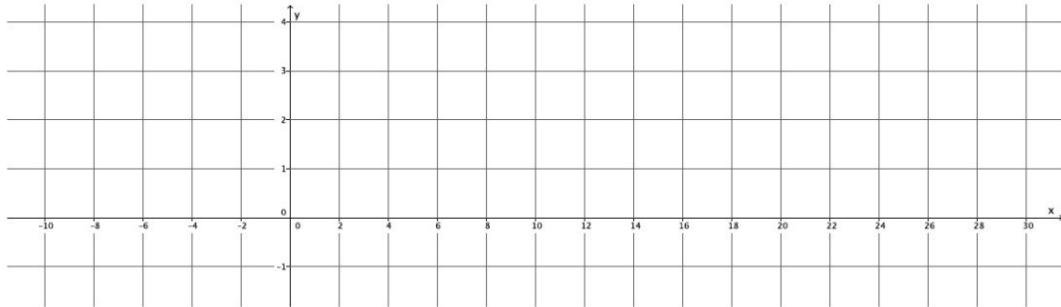
Write the system of equations using the "WIRIS editor" button



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Problem 436

Sketch the graphs of the two equations.



Draw your graph on paper, take a picture, and upload it using the image upload icon . If you do not have the ability to upload an image of your work type "Graph is on paper."

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Problem 437

Will Jeremy ever catch up to Gerardo?

Yes

No

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Problem 438

Approximately when?

Around ____ minutes later

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Problem 439

At approximately what point do the graphs of the lines intersect?

Write your answer in the format:

(x,y) with no spaces.

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Problem 440

Choose the method you feel is easiest for the given problem (graphing, substitution, or elimination).

$$\begin{aligned}y &= 4x \\x + y &= 5\end{aligned}$$

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Graphing

Substitution

Elimination

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Problem 441

Solve the system of equations.

If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions". If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 442

Choose the method you feel is easiest for the given problem (graphing, substitution, or elimination).

$$y = -x + 10$$

$$y = 10 - x$$

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Graphing

Substitution

Elimination

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Problem 443

Solve the system of equations.

If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions".

If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 444

Choose the method you feel is easiest for a given problem (graphing, substitution, or elimination).

$$y = 2x$$

$$x + y = 12$$

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Graphing

Substitution

Elimination

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Problem 445

Solve the system of equations.

If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions".

If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 446

Find the value of each shape.

Give the value of the  (the triangle).

$$\triangle + \triangle + \triangle + \text{hexagon} = 27$$

$$\triangle + \triangle + \text{hexagon} = 20$$

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Problem 447

Give the value of the  (the hexagon).

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Problem 448

Explain how you determined each.

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Problem 449

Verify your answers.

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Problem 450

Here are a lot of systems of equations:

- $\begin{cases} y = -2x + 6 \\ y = x - 3 \end{cases}$
- $\begin{cases} y = 5x - 4 \\ y = 4x + 12 \end{cases}$
- $\begin{cases} y = \frac{2}{3}x - 4 \\ y = -\frac{4}{3}x + 9 \end{cases}$
- $\begin{cases} 4y + 7x = 6 \\ 4y + 7x = -5 \end{cases}$
- $\begin{cases} y = x - 6 \\ x = 6 + y \end{cases}$
- $\begin{cases} y = 0.24x \\ y = 0.18x + 0.9 \end{cases}$
- $\begin{cases} y = 4.5x + 15 \\ y = 5x + 12.5 \end{cases}$
- $\begin{cases} y = 3x \\ x + y = 52 \end{cases}$

Without solving, identify 3 systems that you think would be the least difficult for you to solve and 3 systems you think would be the most difficult. Be prepared to explain your reasoning.

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Problem 451

Choose 4 systems to solve. At least one should be from your "least difficult" list and one should be from your "most difficult" list.

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Problem 452

Given the equation $3x + 9y = -8$, write a second linear equation to create a system that:

Has exactly one solution. Explain your reasoning.

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Problem 453

Given the equation $3x + 9y = -8$, write a second linear equation to create a system that:

Has no solution. Explain your reasoning.

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Problem 454

Given the equation $3x + 9y = -8$, write a second linear equation to create a system that:

Has infinitely many solutions. Explain your reasoning.

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Problem 455

Interpret the meaning of the solution, if it exists, in the context of the graph of the following system of equations.

$$\begin{cases} -5x + 2y = 10 \\ 10x - 4y = -20 \end{cases}$$

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Problem 456

Choose the method you feel is easiest for the given problem (graphing, substitution, or elimination).

$$y = x - 1$$

$$y = -x + 3$$

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Graphing

Substitution

Elimination

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Problem 457

Solve the system of equations.

If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions".

If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 458

Indicate whether each system of equations has no solution, one solution or infinitely many solutions by selecting the correct answer.

$$\begin{cases} y = -x \\ 8y = -8x \end{cases}$$

No solution

One solution

Infinitely many solutions

Problem 459

$$\begin{cases} y = 3x + 1 \\ y = -4 \end{cases}$$

 No solution One solution Infinitely Many solutions**Problem 460**

Choose the method you feel is easiest for the given problem (graphing, substitution, or elimination).

$$x = -4y$$

$$3x + 2y = 20$$

The Utah Middle School Math Project Graphing Substitution Elimination[The Utah Middle School Math Project](#) (CC by 4.0)**Problem 461**

Solve the system of equations.

If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions".

If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 462

Consider the equation $x - y = 3$. If possible, write a second linear equation to create a system of equations that has, and for each case, how many equations are possible:

(a) Exactly 1 solution.

Problem 463

(b) Exactly 2 solutions.

Problem 464

(c) No solutions.

Problem 465

(d) Infinitely many solutions.

Problem 466

Determine the equation of the line connecting the points $(0,-1)$ and $(2,3)$.

Complete the equation below

$$y = \underline{\hspace{2cm}}$$

Use x as your variable.

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Problem 467

Will the line described by the equation in part (a) intersect the line passing through the points $(-2, 4)$ and $(-3, 3)$?

Yes

No

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Problem 468

Explain why or why not.

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Problem 469

A cable company charges \$70 per month for cable service to existing customers.

Find a linear equation representing the relationship between

x , the number of months of service, and

y , the total amount paid in dollars by an existing customer.

$$y = \underline{\hspace{2cm}}$$

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Problem 470

A cable company charges \$70 per month for cable service to existing customers.

For new customers, there is an additional one-time \$100 service fee. Repeat the previous problem for new customers.

y = _____

Use x as your variable.

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Problem 471

When the two equations are graphed in the coordinate plane, how are they related to each other geometrically?

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Problem 472

Choose the method you feel is easiest for the given problem (graphing, substitution, or elimination).

$$x + 5y = 4$$

$$3x + y = -2$$

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Graphing

Substitution

Elimination

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Problem 473

Solve the system of equations.

If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions".

If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 474

Choose the method you feel is easiest for the given problem (graphing, substitution, or elimination).

$$3x - y = 4$$

$$2x - 3y = -9$$

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Graphing

Substitution

Elimination

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Problem 475

Solve the system of equations.

If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions".

If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 476

Here are a lot of systems of equations:

$$\text{A. } \begin{cases} y = 4 \\ x = -5y + 6 \end{cases}$$

$$\text{E. } \begin{cases} y = -3x - 5 \\ y = 4x + 30 \end{cases}$$

$$\text{I. } \begin{cases} 3x + 4y = 10 \\ x = 2y \end{cases}$$

$$\text{B. } \begin{cases} y = 7 \\ x = 3y - 4 \end{cases}$$

$$\text{F. } \begin{cases} y = 3x - 2 \\ y = -2x + 8 \end{cases}$$

$$\text{J. } \begin{cases} y = 3x + 2 \\ 2x + y = 47 \end{cases}$$

$$\text{C. } \begin{cases} y = \frac{3}{2}x + 7 \\ x = -4 \end{cases}$$

$$\text{G. } \begin{cases} y = 3x \\ x = -2y + 56 \end{cases}$$

$$\text{K. } \begin{cases} y = -2x + 5 \\ 2x + 3y = 31 \end{cases}$$

$$\text{D. } \begin{cases} y = -3x + 10 \\ y = -2x + 6 \end{cases}$$

$$\text{H. } \begin{cases} x = 2y - 15 \\ y = -2x \end{cases}$$

$$\text{L. } \begin{cases} x + y = 10 \\ x = 2y + 1 \end{cases}$$

Without solving, identify 3 systems that you think would be the least difficult to solve and 3 systems that you think would be the most difficult to solve. Be prepared to explain your reasoning.

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Problem 477

Choose 4 systems to solve. At least one should be from your "least difficult" list and one should be from your "most difficult" list.

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Problem 478

Choose the method you feel is easiest for the given problem (graphing, substitution, or elimination).

$$y = 2x - 5$$

$$4x - y = 7$$

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Graphing

Substitution

Elimination

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Problem 479

Solve the system of equations.

If there is no solution, write "no solution". If there are infinitely many solutions, write "infinitely many solutions". If there is one solution, write your answer in the following format:

(x,y)

with no spaces.

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Problem 480

Find the value of each shape.

Give the value of the  (the circle).

$$\text{circle} + \text{circle} + \text{circle} + \text{circle} + \square + \square = 34$$

$$\text{circle} + \text{circle} + \square + \square = 26$$

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Problem 481

Give the value of the (the square).

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Problem 482

Explain how you determined each.

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Problem 483

Verify your answers.

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Problem 484

Here are two equations:

$$6x+4y=34$$

Equation 1:

$$5x-2y=15$$

Decide whether $(3, 4)$ is a solution to one equation, both equations, or neither of the equations.

- Solution to Equation 1
- Solution to Equation 2
- Solution to both
- Solution to neither

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Problem 485

Here are two equations:

$$6x+4y=34$$

$$5x-2y=15$$

Decide whether $(4, 2.5)$ is a solution to one equation, both equations, or neither of the equations.

- Solution to Equation 1
- Solution to Equation 2
- Solution to both
- Solution to neither

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Problem 486

Here are two equations:

$$\text{Equation 1: } 6x + 4y = 34$$

$$\text{Equation 2: } 5x - 2y = 15$$

Decide whether $(5, 5)$ is a solution to one equation, both equations, or neither of the equations.

- Solution to Equation 1
- Solution to Equation 2
- Solution to both
- Solution to neither

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Problem 487

Here are two equations:

$$\text{Equation 1: } 6x + 4y = 34$$

$$\text{Equation 2: } 5x - 2y = 15$$

Decide whether $(3, 2)$ is a solution to one equation, both equations, or neither of the equations.

- Solution to Equation 1
- Solution to Equation 2
- Solution to both
- Solution to neither

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Problem 488

Is it possible to have more than one pair that is a solution to both equations? Explain or show your reasoning.

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Problem 489

The amount of water in two tanks every 5 minutes is shown in the table.

time (minutes)	tank 1 (liters)	tank 2 (liters)
0	25	1000
5	175	900
10	325	800
15	475	700
20	625	600
25	775	500
30	925	400
35	1075	300
40	1225	200
45	1375	100
50	1525	0

Describe what is happening in each tank. Either draw a picture, say it verbally, or write a few sentences.

Submit your work using the tools below.

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Problem 490

The amount of water in two tanks every 5 minutes is shown in the table.

time (minutes)	tank 1 (liters)	tank 2 (liters)
0	25	1000
5	175	900
10	325	800
15	475	700
20	625	600
25	775	500
30	925	400
35	1075	300
40	1225	200
45	1375	100
50	1525	0

Use the table to estimate when the tanks will have the same amount of water.

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Problem 491

The amount of water (in liters) in tank 1 after t minutes is $30t + 25$. The amount of water (in liters) in tank 2 after t minutes is $1000 - 20t$. Find the time when the amount of water will be equal.

minutes

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Problem 492

Small boxes contain DVDs, and large boxes contain one gaming machine. Three boxes of gaming machines and a box of DVDs weigh 48 pounds. Three boxes of gaming machines and five boxes of DVDs weigh 72 pounds. How much does each box weigh?

Enter the weight of a small box.

Do not include units (pounds) in your answer.

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Problem 493

Enter the weight of a large box.

Do not include units (pounds) in your answer.

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Problem 494

Kiran and his cousin work during the summer for a landscaping company. Kiran's cousin has been working for the company longer, so his pay is 30% more than Kiran's. Last week his cousin worked 27 hours, and Kiran worked 23 hours. Together, they earned \$493.85. What is Kiran's hourly pay?

\$

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Problem 495

Explain or show your reasoning.

Submit your reasoning using the tools below.

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Problem 496

A language arts test is worth 100 points. There is a total of 26 questions. There are spelling word questions that are worth 2 points each and vocabulary word questions worth 5 points each. How many of each type of question are there?

Enter the number of spelling questions.

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Problem 497

A language arts test is worth 100 points. There is a total of 26 questions. There are spelling word questions that are worth 2 points each and vocabulary word questions worth 5 points each. How many of each type of question are there?

Enter the number of vocabulary questions.

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Problem 498

Tickets for a matinee are \$5 for children and \$8 for adults. The theater sold a total of 142 tickets for one matinee. Ticket sales were \$890. How many of each type of ticket did the theater sell?

First define your unknowns.

The Utah Middle School Math Project

Problem 499

Write the system of equations.

Write the equation using the "WIRIS editor" button



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Problem 500

Solve. Write the solution in a complete sentence.

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Problem 501

Drake was trying to write an equation to help him predict the cost of his monthly phone bill. He is charged \$35 just for having a phone, and his only additional expense comes from the number of texts that he sends. He is charged \$0.05 for each text.

How much was his phone bill in July when he sent 750 texts?

Do not include units (dollars) in your answer.

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Problem 502

How much was his phone bill in August when he sent 823 texts?

Do not include units (dollars) in your answer.

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Problem 503

How much was his phone bill in September when he sent 579 texts?

Do not include units (dollars) in your answer.

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Problem 504

Let y represent the total cost of Drake's phone bill. Write an equation that represents the total cost of his phone bill t texts in October if he sends

Complete the equation below

$$y = \underline{\hspace{2cm}}$$

Use t as your variable.

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Problem 505

Another phone plan charges \$20 for having a phone and \$0.10 per text. Let

y represent the total cost of the phone bill for sending

t texts. Write an equation to represent his total bill.

Complete the equation below

$$y = \underline{\hspace{2cm}}$$

Use t as your variable.

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Problem 506

Write your equations in parts (d) and (e) as a system of linear equations.

Write the equation using the "WIRIS editor" button



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Problem 507

Solve the system you defined above.

Write your answer in the following format:

(t,y)
with no spaces

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Problem 508

Interpret the meaning of the solution in terms of the phone bill.

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Problem 509

You are a representative for a cell phone company and it is your job to promote different cell phone plans.

Your boss asks you to visually display the costs of three plans and compare them so you can point out the advantages of each plan to your customers.

The information on the plans is shown in the boxes below.

Plan A:
Basic fee: \$29.95 per month
Text messages: 10 cents each
Unlimited calling Free nights/weekends Includes long distance

Plan B:
Basic fee: \$90.20 per month
Text messages: unlimited, no cost
Unlimited calling Free nights/weekends Includes long distance

Plan C:
Basic fee: \$49.95 per month
Text messages: 5 cents each
Unlimited calling Free nights/weekends Includes long distance

(a) Use this information to write equations for each plan, and then graph the equations and estimate their intersections.

Problem 510

(b) A customer wants to know how to decide which plan will save her the most money. Describe which plan has the lowest cost for each possible range of numbers of text messages a customer might send.

Problem 511

Decide which story can be represented by the system of equations $y = x + 6$ and $x + y = 100$.

- 1 Diego's teacher writes a test worth 100 points. There are 6 more multiple choice questions than short answer questions.
- 2 Lin and her younger cousin measure their heights. They notice that Lin is 6 inches taller, and their heights add up to exactly 100 inches.

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Problem 512

Explain your reasoning.

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Problem 513

Diego has \$11 and begins saving \$5 each week toward buying a new phone. At the same time that Diego begins saving, Lin has \$60 and begins spending \$2 per week on supplies for her art class.

Is there a week when they have the same amount of money?

Select 1	▲
Yes	
No	

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Problem 514

Diego has \$11 and begins saving \$5 each week toward buying a new phone. At the same time that Diego begins saving, Lin has \$60 and begins spending \$2 per week on supplies for her art class.

After how many weeks?

After _____ weeks

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Problem 515

Diego has \$11 and begins saving \$5 each week toward buying a new phone. At the same time that Diego begins saving, Lin has \$60 and begins spending \$2 per week on supplies for her art class.

How much do they have at that time?

\$ _____

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Problem 516

Students sold 275 tickets for a fundraiser at school. Some tickets are for children and cost \$3, while the rest are adult tickets that cost \$5. If the total value of all tickets sold was \$1,025, how many of each type of ticket was sold?

How many children's tickets were sold?

Do not include units (tickets) in your answer.

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Problem 517

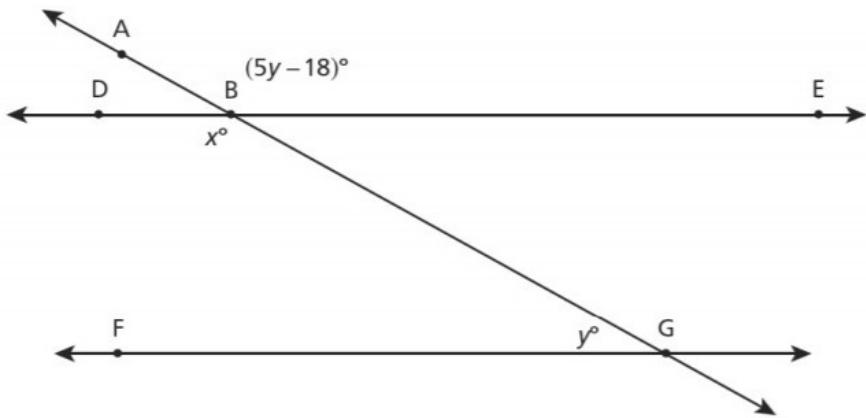
How many adult tickets were sold?

Do not include units (tickets) in your answer.

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Problem 518

In the figure below, line DE is parallel to line FG, with transversal AG.



Write and solve a system of linear equations to determine the values of x and y .

$$x =$$

$$y =$$

Massachusetts Department of Elementary and Secondary Education

Problem 519

Show your work.

Massachusetts Department of Elementary and Secondary Education

Problem 520

Diego's history teacher writes a test for the class with 26 questions. The test is worth 123 points and has two types of questions: multiple choice worth 3 points each, and essays worth 8 points each. How many essay questions are on the test?

essay questions.

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Problem 521

Explain or show your reasoning.

Submit your reasoning using the tools below.

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Problem 522

Kimi and Jordan are both working during the summer to earn money in addition to their weekly allowances, and they are saving all their money.

Kimi earns \$9 an hour at her job, and her allowance is \$8 per week. Jordan earns \$7.50 an hour, and his allowance is \$16 per week.

Number of hours worked in a week, h	0	1	2	3	4	5	6	7
Kimi's weekly total savings, K								

Number of hours worked in a week, h	0	1	2	3	4	5	6	7
Jordan's weekly total savings, J								

Complete the tables.

Problem 523

(b) Write an equation that can be used to calculate the total of Kimi's allowance and job earnings at the end of one week given the number of hours she works.

Problem 524

(c) Write an equation that can be used to calculate the total of Jordan's allowance and job earnings at the end of one week given the number of hours he works.

Problem 525

(d) Jordan wonders who will save more money in one week if they both work the same number of hours. Who will save more money? Assume they work 40 hours in one week.

Kimi

Jordan

Problem 526

An exam worth 145 points contains 50 questions. Some of the questions are worth two points and some are worth five points. How many two-point questions are on the test?

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Problem 527

How many five-point questions are on the test?

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Problem 528

Jasper has a coin collection consisting of quarters and dimes. He has 50 coins worth \$8.60. How many of each coin does he have?

First define your unknowns.

The Utah Middle School Math Project

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Problem 529

Write the system of equations.

Write the equation using the "WIRIS editor" button



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Problem 530

Solve. Write the solution in a complete sentence.

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Problem 531

Clare and Noah play a game in which they earn the same number of points for each goal and lose the same number of points for each penalty.

Clare makes 6 goals and 3 penalties, ending the game with 6 points.

Noah earns 8 goals and 9 penalties and ends the game with -22 points.

Write a system of equations that describes Clare and Noah's outcomes. Use x to represent the number of points for a goal and

y to represent the number of points for a penalty.

Write the system of equations using the "WIRIS editor" button. ✓

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Problem 532

Solve the system.

$$\left(\frac{\underline{\hspace{2cm}}}{\underline{\hspace{2cm}}}, \frac{\underline{\hspace{2cm}}}{\underline{\hspace{2cm}}} \right)$$

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Problem 533

What does your solution mean?

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Problem 534

While conducting an inventory in their bicycle shop, the owner noticed the number of bicycles is 2 fewer than 10 times the number of tricycles. They also know there are 410 wheels on all the bicycles and tricycles in the store. Write a system of equations to find the number of bicycles in the store.

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Problem 535

Solve the system of equations to find the number of bicycles in the store.

bicycles

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Problem 536

Mai earns \$7 per hour mowing her neighbors' lawns. She also earned \$14 for hauling away bags of recyclables for some neighbors.

Priya babysits her neighbor's children.

The table shows the amount of money m she earns in h hours.

Priya and Mai have agreed to go to the movies the weekend after they have earned the same amount of money for the same number of work hours.

h	m
1	\$8.40
2	\$16.80
4	\$33.60

How many hours do they each have to work before they go to the movies?

hours

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Problem 537

How much will each of them have earned?

\$

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Problem 538

Explain where the solution can be seen in tables of values, graphs, and equations that represent Priya's and Mai's hourly earnings.

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Problem 539

Priya and Han are biking in the same direction on the same path.

Han is riding at a constant speed of 16 miles per hour. Write an expression that shows how many miles Han has gone after t hours.

Use t as your variable.

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Problem 540

Priya started riding a half hour before Han. If Han has been riding for t hours, how long has Priya been riding?

hours

Use t as your variable.

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Problem 541

Priya is riding at a constant speed of 12 miles per hour. Write an expression that shows how many miles Priya has gone after Han has been riding for t hours.

Use t as your variable.

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Problem 542

Use your expressions to find when Han and Priya meet.

$$t = \text{hours}$$

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