Name _____

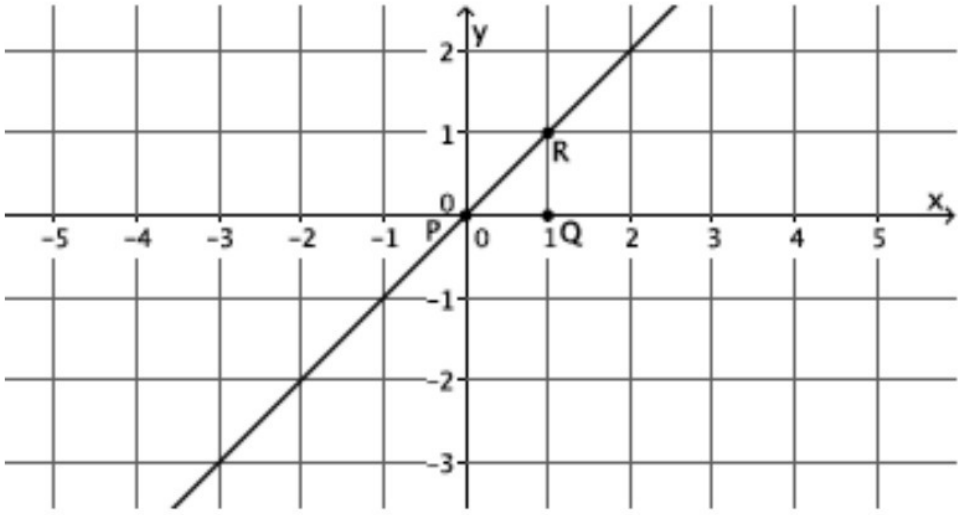
Date _____

8 EE B5 B6

Foundations for Algebra-P03-308893-801-Salvo • Released Thursday, Apr 03, 2025 1:00 PM

Problem 1

What is the slope of this non-vertical line? Use your transparency if needed.

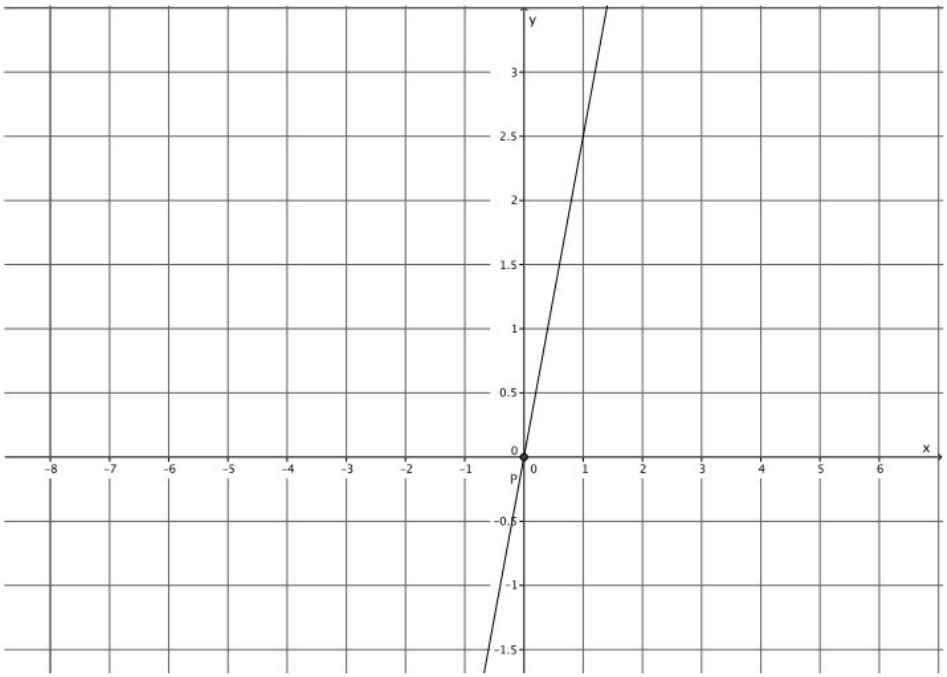


m = _____

Modified from EngageNY ©GreatMinds Full Attribution

Problem 2

What is the slope of this non-vertical line? Use your transparency if needed.

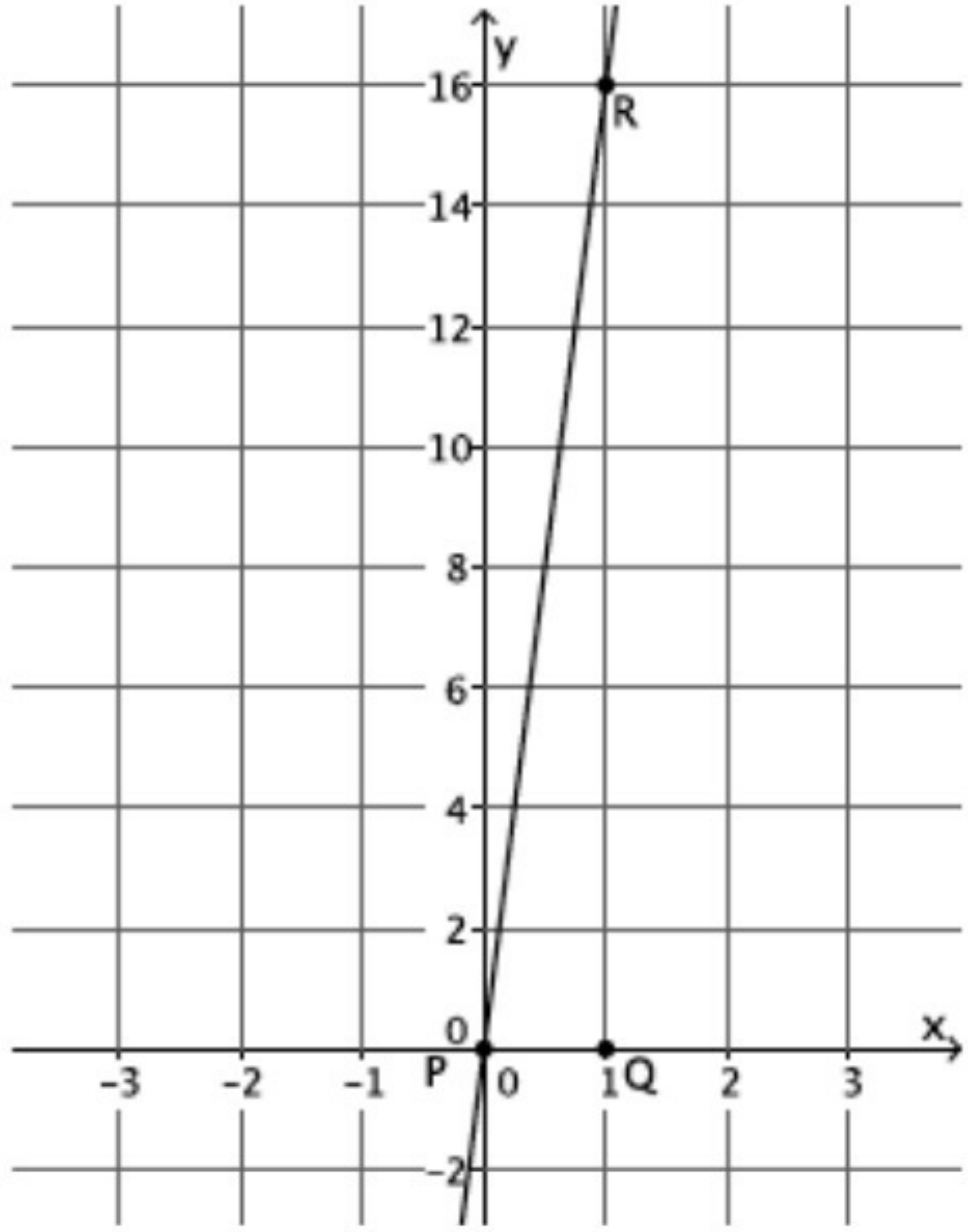


m = _____

Modified from EngageNY ©GreatMinds Full Attribution

Problem 3

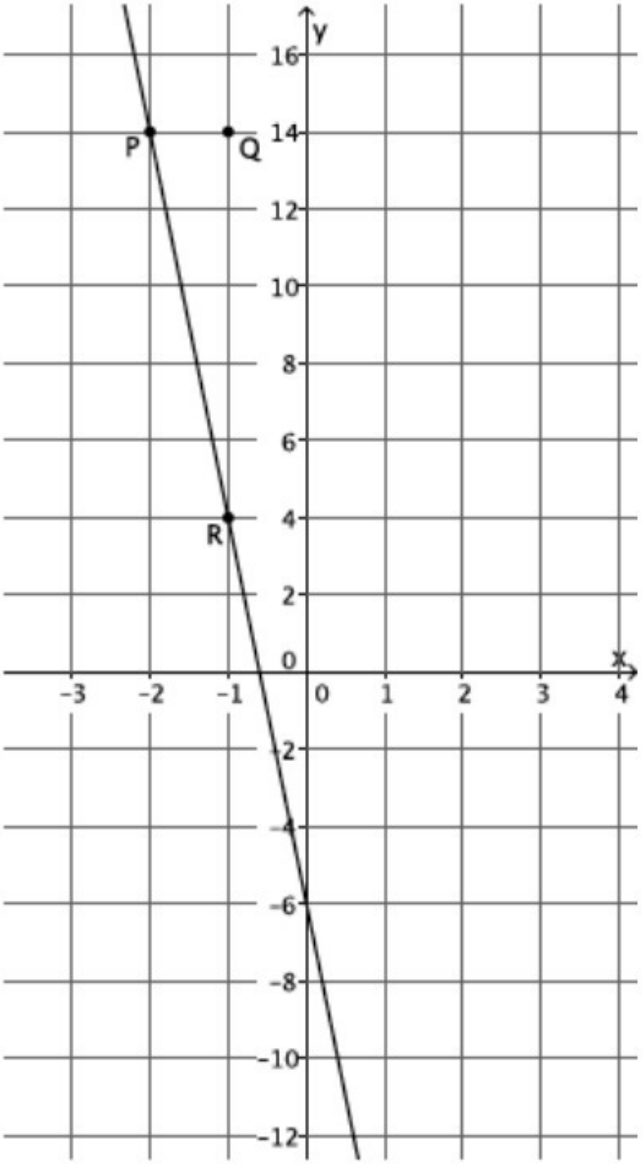
What is the slope of this non-vertical line? Use your transparency if needed.



m = _____

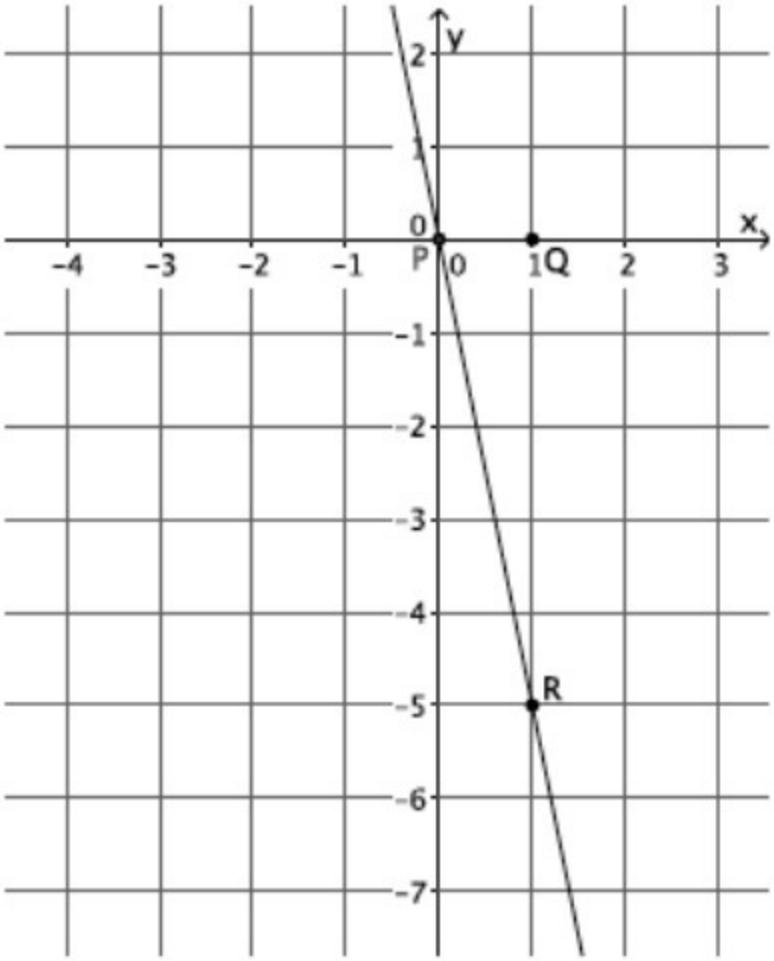
Problem 4

What is the slope of this non-vertical line? Use your transparency if needed.



Problem 5

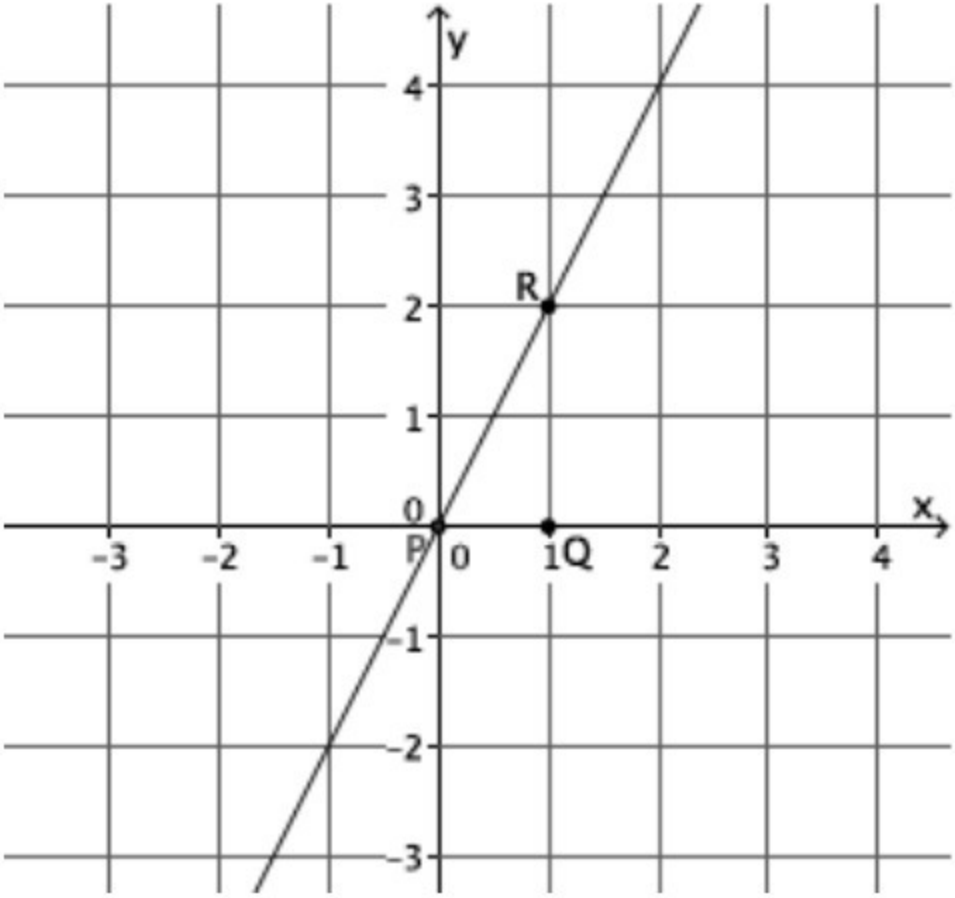
What is the slope of this non-vertical line? Use your transparency if needed.



m = _____

Problem 6

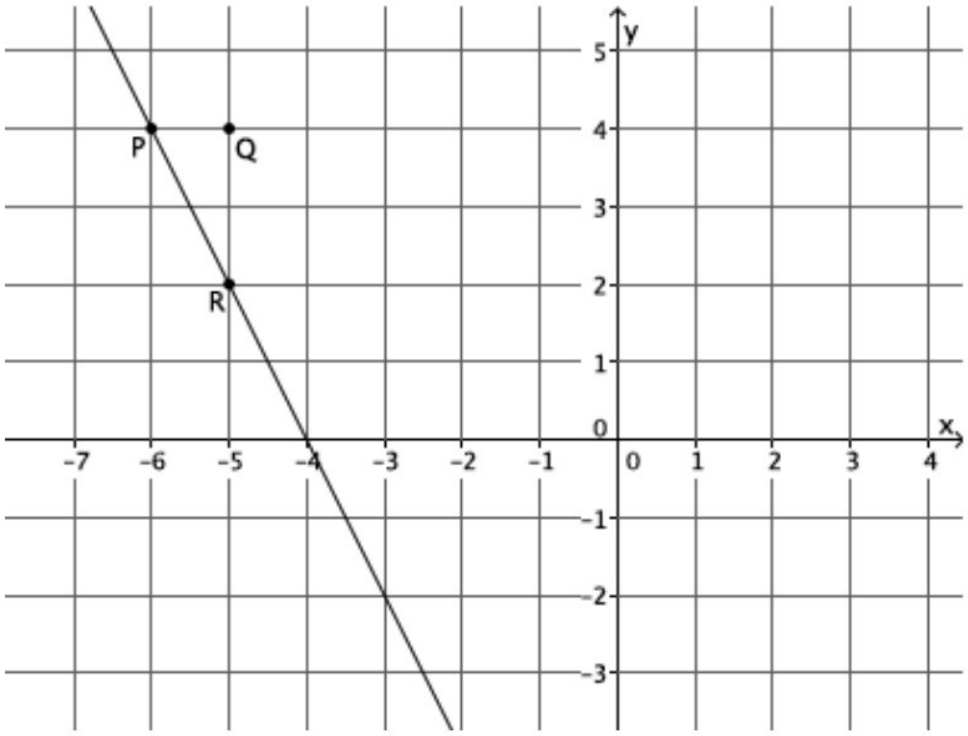
What is the slope of this non-vertical line? Use your transparency if needed.



m = _____

Problem 7

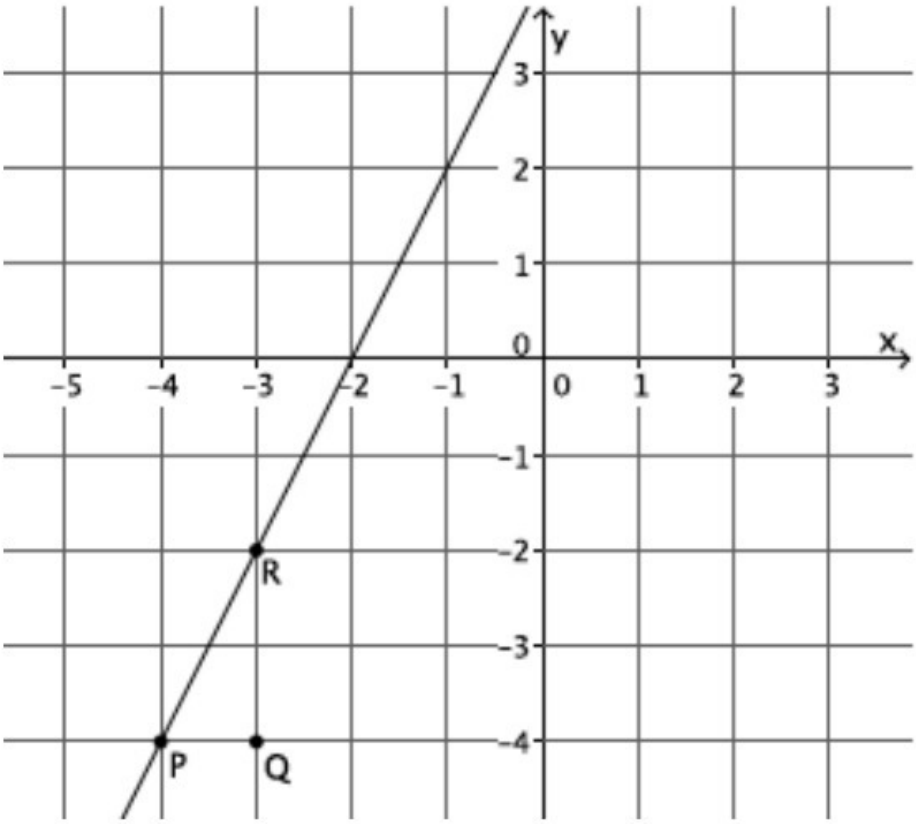
What is the slope of this non-vertical line? Use your transparency if needed.



m = _____

Problem 8

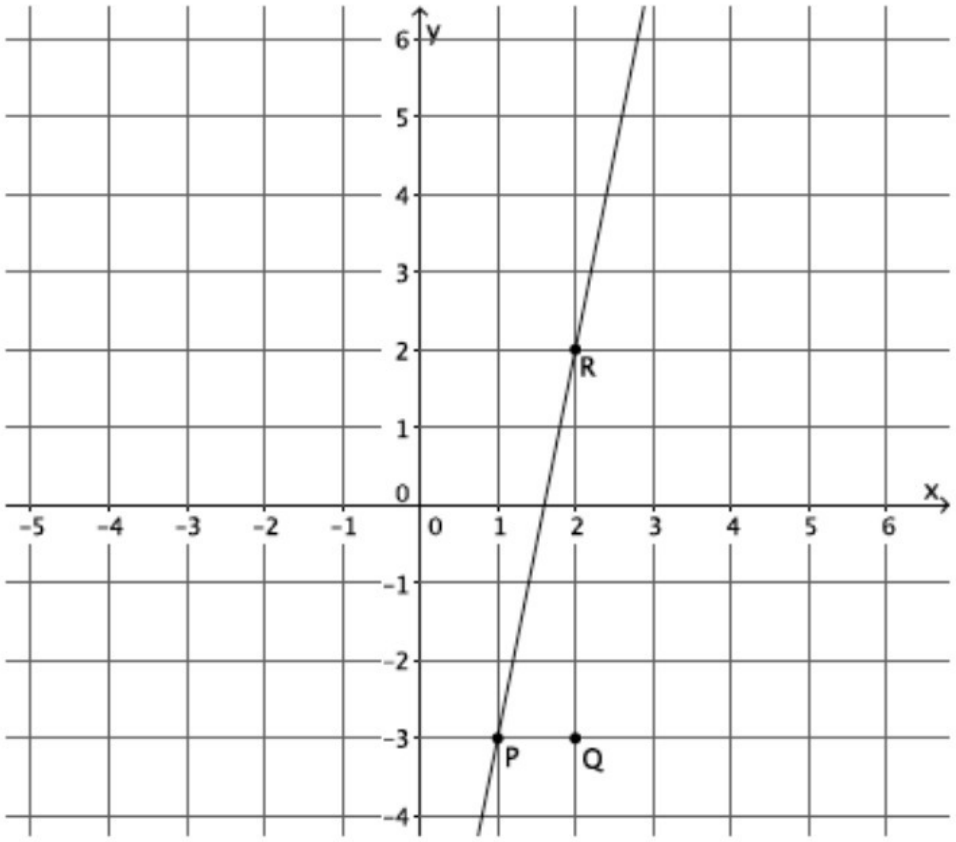
What is the slope of this non-vertical line? Use your transparency if needed.



m = _____

Problem 9

What is the slope of this non-vertical line? Use your transparency if needed.

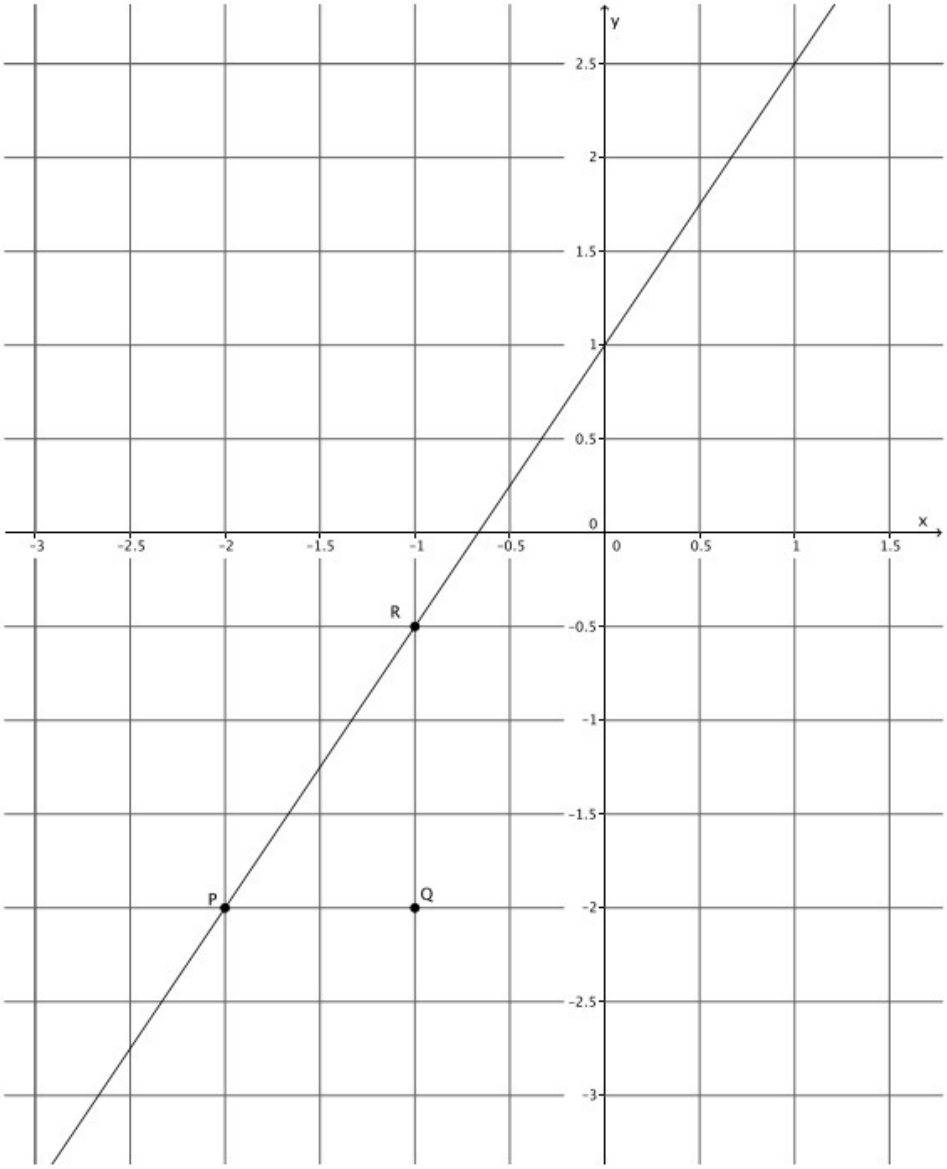


m = _____

Modified from EngageNY ©GreatMinds Full Attribution

Problem 10

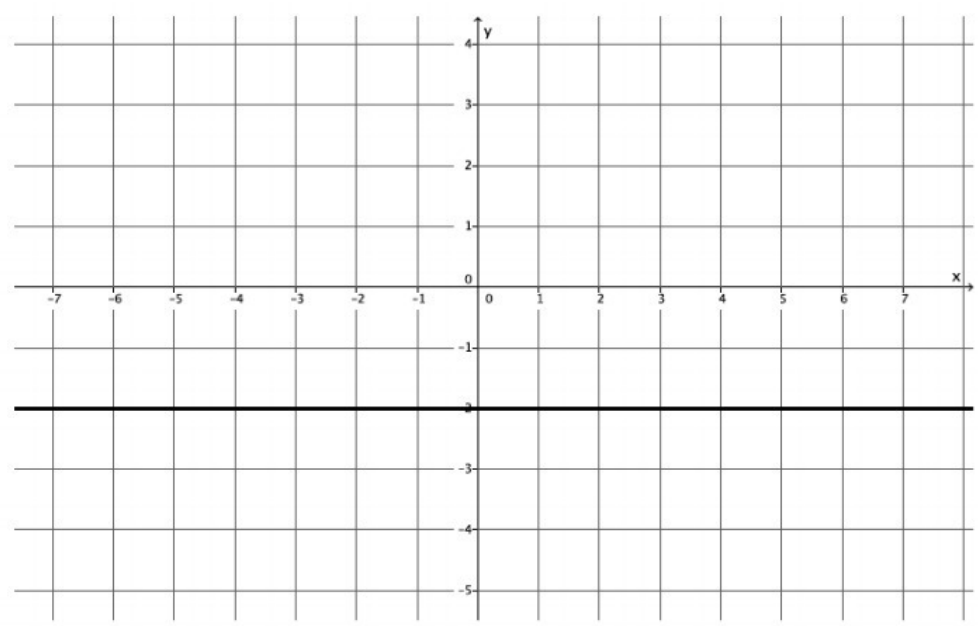
What is the slope of this non-vertical line? Use your transparency if needed.



m = _____

Problem 11

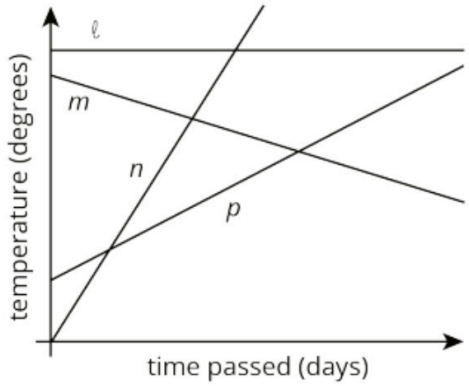
What is the slope of this non-vertical line? Use your transparency if needed.



m = _____

Problem 12

For two weeks, the highest temperature each day was recorded in four different cities. Lines l, m, n, and p are graphs of the temperature over time in Lubbock, Memphis, New Orleans, and Phoenix. Which statement is true?



A The high temperature in Lubbock increased as time passed.

B The high temperature in Memphis decreased steadily.

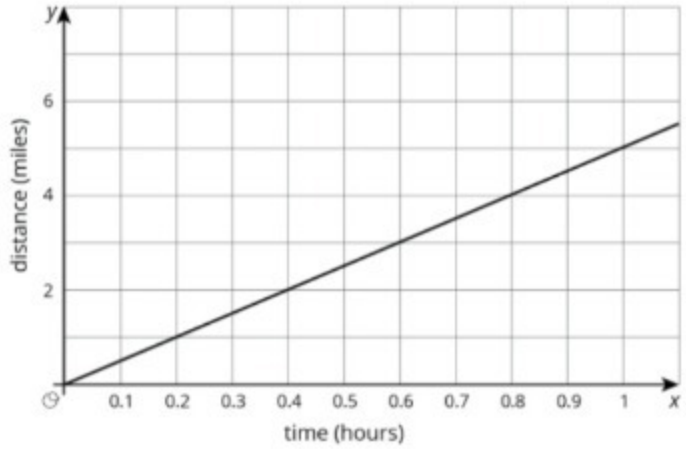
C Initially, the high temperature was warmer in Phoenix than in Memphis.

D The high temperature in Phoenix rose faster than the temperature in New Orleans.

source: Louisiana Department of Education

Problem 13

Priya jogs at a constant speed. The relationship between her distance and time is shown on the graph. Diego bikes at a constant speed twice as fast as Priya.



How many miles will Diego bike in an hour?

miles

source: *Louisiana Department of Education*

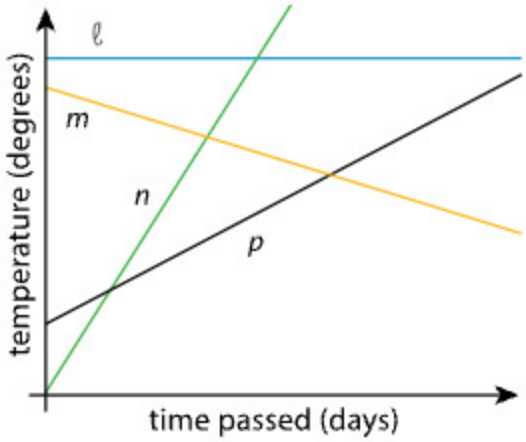
Problem 14

Select **all** the points that are on the graph of the line.

- [ ] A (0, 5)
- [ ] B (0, 10)
- [ ] C (1, 2)
- [ ] D (1, 4)
- [ ] E (5, 0)
- [ ] F (10, 0)

Problem 15

For two weeks, the highest temperature each day was recorded in four different cities. Lines l, m, n, p are graphs of the temperature over time in Lubbock, Memphis, New Orleans, and Phoenix.



Which statement is true?

- A The high temperature in Lubbock increased as time passed.
- B The high temperature in Memphis decreased steadily.
- C Initially, the high temperature was warmer in Phoenix than in Memphis.
- D The high temperature in Phoenix rose faster than the temperature in NewOrleans.

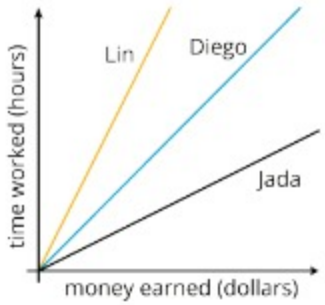
Problem 16

Jada earns twice as much money per hour as Diego. Diego earns twice as much money per hour as Lin.

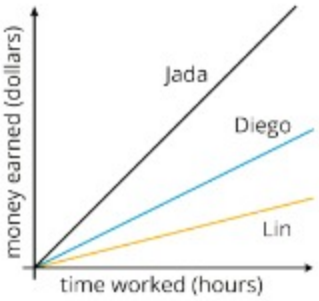
Select **all** the graphs that could represent how much Jada, Diego, and Lin earn for different amounts of time worked.

☐ A

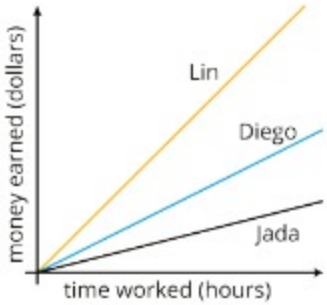
☐ B



☐ C



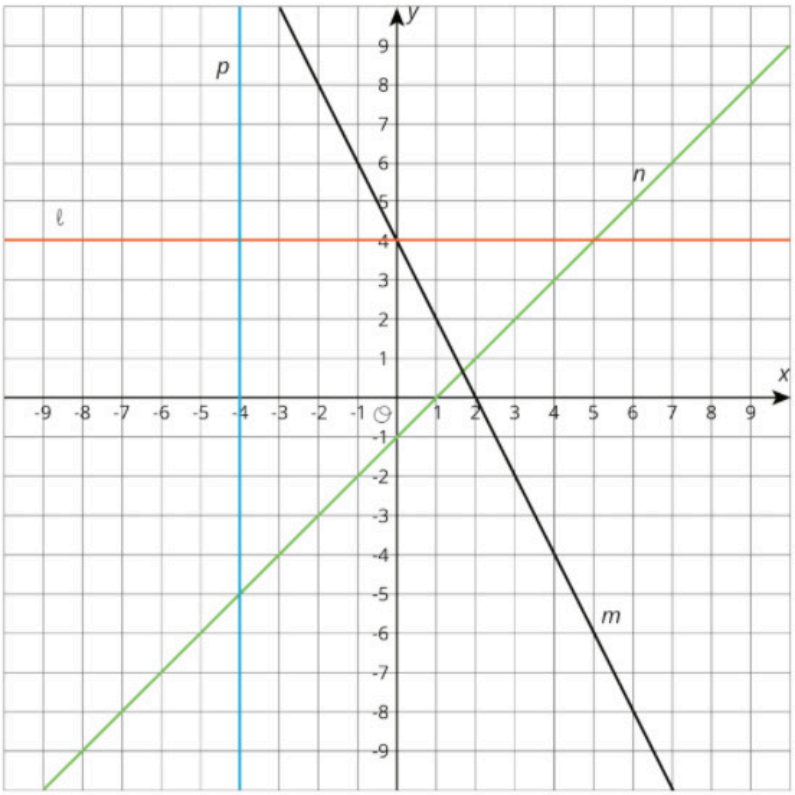
☐ D



☐ E

Problem 17

Write an equation for each line.

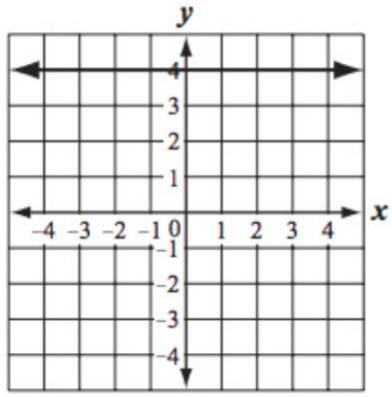


Submit your equation using the "WIRIS editor" button √

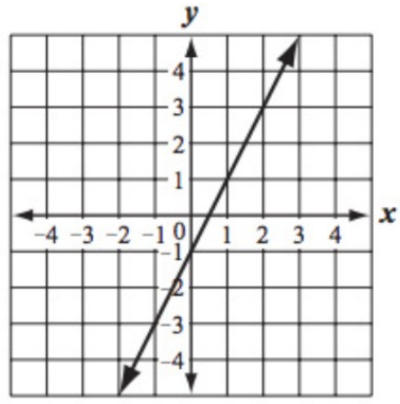
Problem 18

Which graph has the line with the greatest slope?

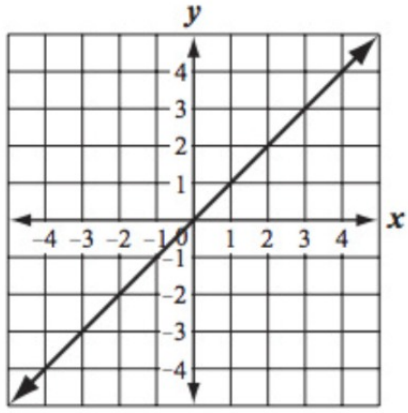
A



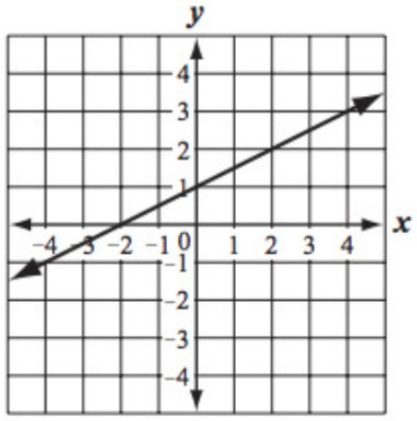
B



C



D



Massachusetts Department of Elementary and Secondary Education

Problem 19

If $5x - 8 = 7$, what is the value of $5x + 8$?

- 15
- -7
- 0
- 23

Problem 20

If $7x + 3 = 17$, what is the value of $7x - 3$?

- -3
- 0
- 14
- 11

Problem 21

Which proportional relationship has the greatest rate of change?

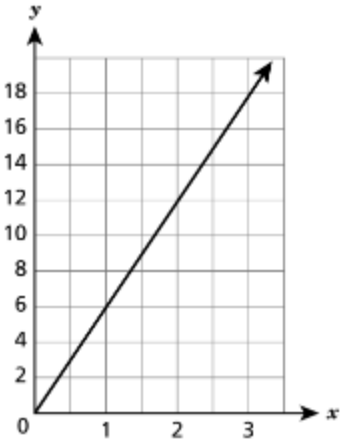
A $y = 7x$

B The value of y increases by 12 for every increase of 4 in the value of x.

C

x	*y*
0	0
2	8
4	16
6	24

D



Problem 22

Billy is comparing gasoline prices at two different gas stations.

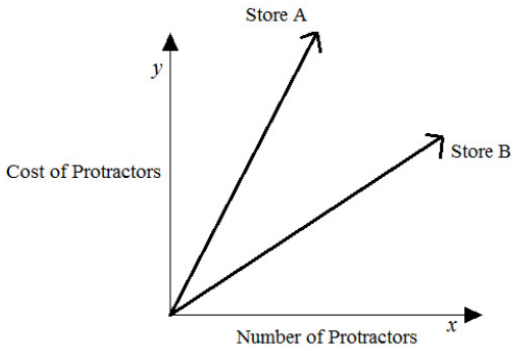
- At the first gas station, the equation gives the relationship between g, the number of gallons of gasoline, and c, the total cost, in dollars.
- At the second gas station, the cost of 2.5 gallons of gasoline is $8.30, and the cost of 5 gallons of gasoline is $16.60.

How much money, per gallon, would Billy save by going to the less expensive gas station?

$ per gallon

Problem 23

The cost of five protractors is $14.95 at Store A. The graph below compares the cost of protractors at Store A with the cost at Store B.



Estimate the cost of one protractor at Store B. Use evidence from the graph to justify your answer.

Problem 24

Solve the following equation for y: $35x - 7y = 49$.

Complete the equation below
y = _____
Use x as your variable.

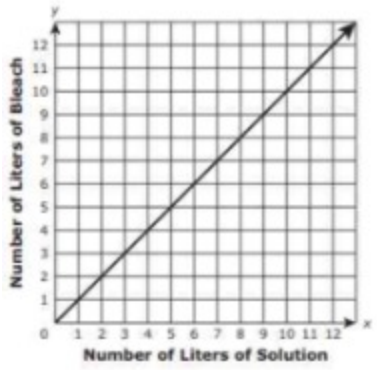
Problem 25

What is the slope of the equation in Problem 1 ($35x - 7y = 49$)?

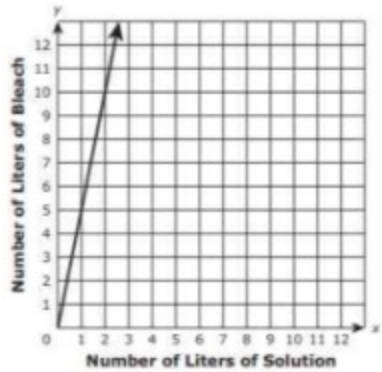
Problem 26

A solution is 20% bleach. Which graph represents the number of liters of bleach, y, contained in x liters of solution?

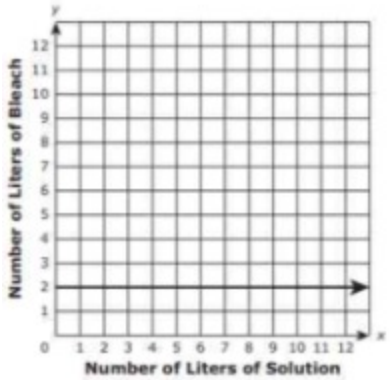
A



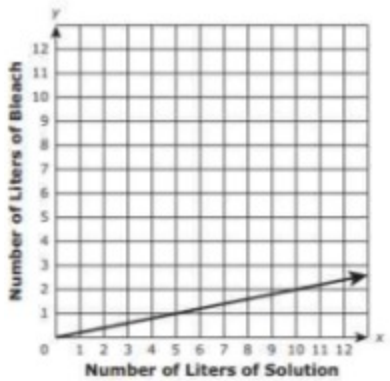
B



C



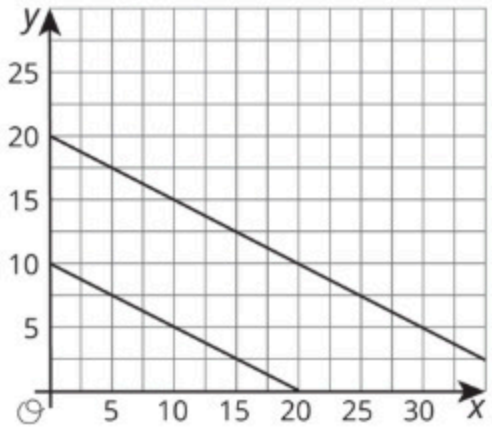
D



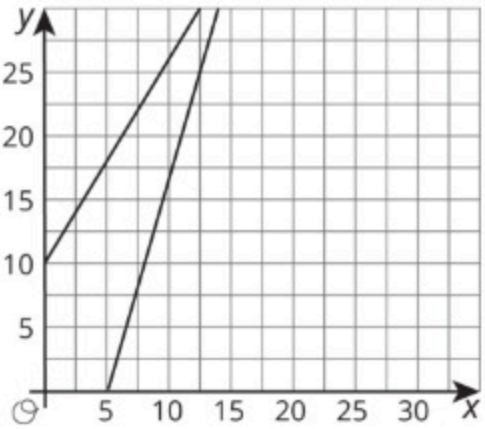
Problem 27

Which one doesn't belong?

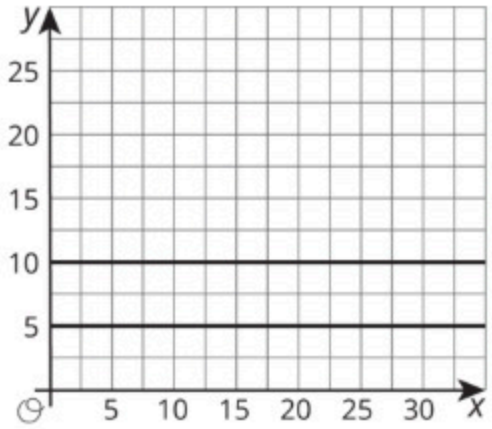
A



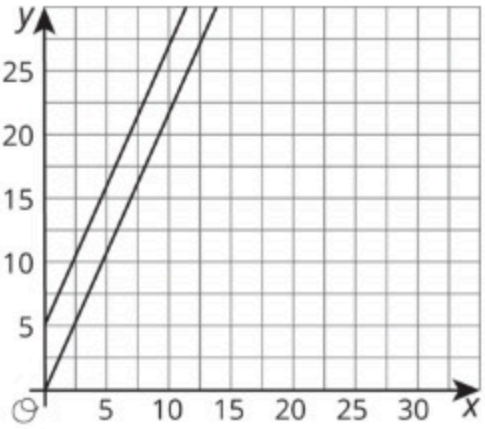
B



C

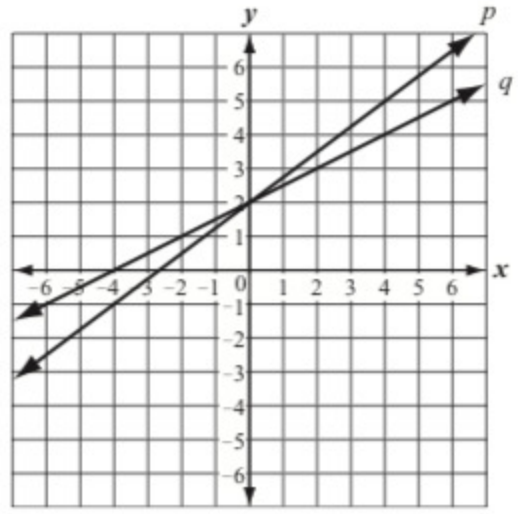


D



Problem 28

Line*p* and line q are shown on the coordinate grid below.



Which of the following statements best describes the lines?

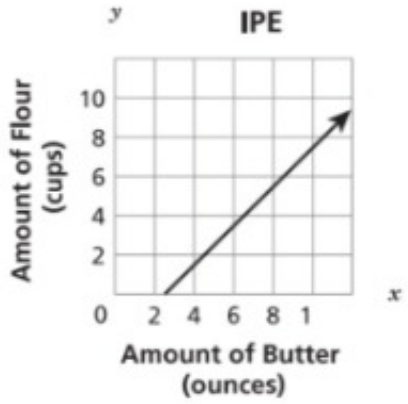
- A Line p has the same slope as line q.
- B Line p has a greater slope than line q.
- C The y-intercept of line p is greater than the y-intercept of line q.
- D The x-intercept of line q is greater than the x-intercept of line p.

Massachusetts Department of Elementary and Secondary Education

Problem 29

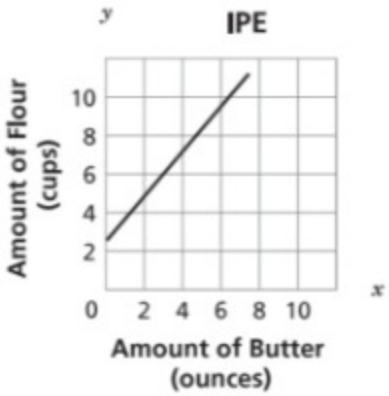
A cook uses 2.5 cups of flour for each ounce of butter in a recipe. Which graph represents the relationship between the amount of flour and the amount of butter in the recipe?

A



B

C

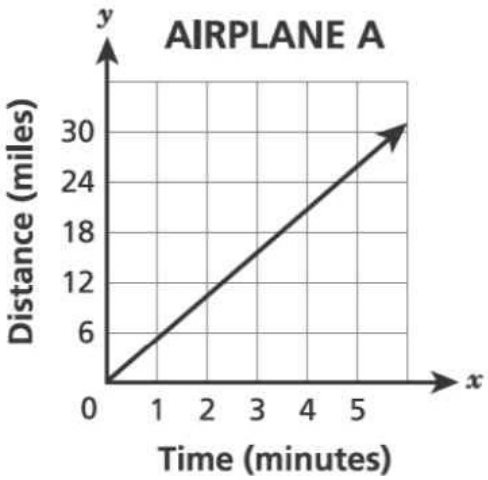


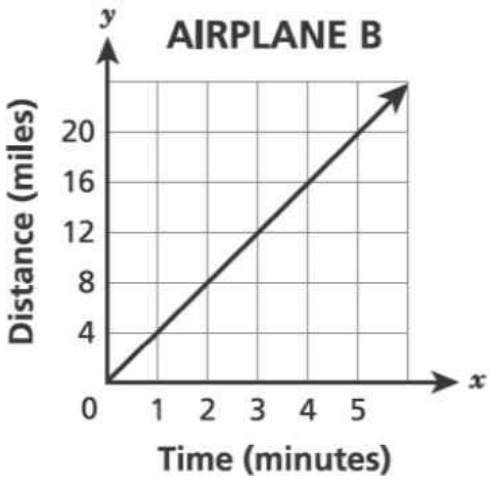
D

Massachusetts Department of Elementary and Secondary Education

Problem 30

The graphs below show the relationship between elapsed time and distance traveled by airplane A and airplane B after each airplane reaches its cruising speed.





Airplane C is traveling at a different cruising speed. The equation can be used to determine y, the number of miles traveled by airplane C in x minutes. Which statement accurately compares the cruising speed of airplane C to airplanes A and B?

- A: The cruising speed of airplane C is less than the cruising speeds of both airlines A and B.
- B: The cruising speed of airplane C is greater than the cruising speeds of both airplanes A and B.
- C: The cruising speed of airplane C is greater than the cruising speed of airplane A and less than the cruising speed of airplane B.
- D: The cruising speed of airplane C is less than the cruising speed of airplane A and greater than the cruising speed of airplane B.

Massachusetts Department of Elementary and Secondary Education

Problem 31

Graph the equation C=(32+C*1.8)

Draw your graph on your own paper and upload it using the upload photo icon 

If you do not have the ability to upload photos, type "Graph is on paper".

Problem 32

Elena's aunt pays her $1 for each call she makes to let people know about her aunt's new business.

The table shows how much money Diego receives for washing windows for his neighbors.

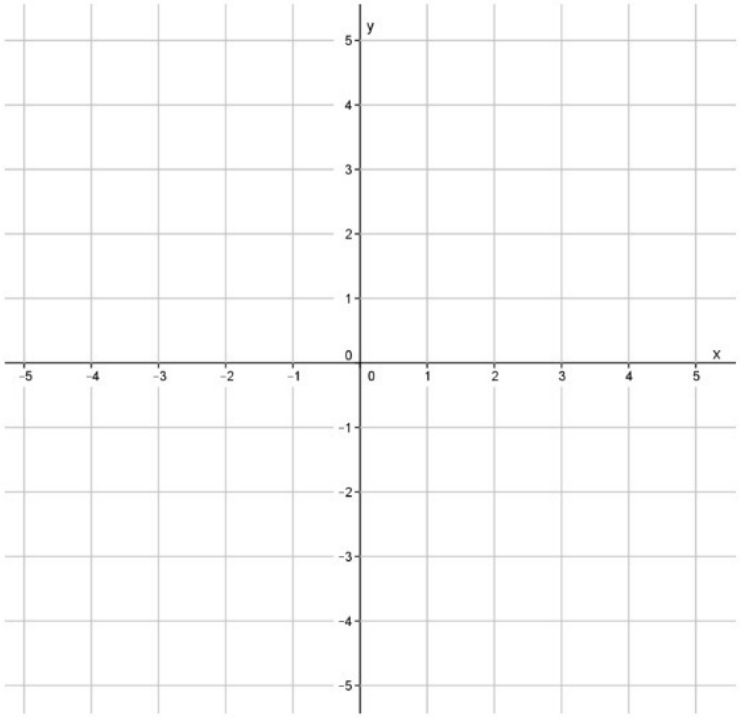
number of windows	number of dollars
27	30
45	50
81	90

Select **all** the statements about the situation that are true.

- [ ] A Elena makes more money for making 10 calls than Diego makes for washing 10 windows.
- [ ] B Diego makes more money for washing each window than Elena makes for making each call.
- [ ] C Elena makes the same amount of money for 20 calls as Diego makes for 18 windows.
- [ ] D Diego needs to wash 35 windows to make as much money as Elena makes for 40 calls.
- [ ] E The , is number of is number of windows, represents equation where dollars and Diego's situation.
- [ ] F The , is number of is number of calls, represents equation where dollars and Elena's situation.

Problem 33

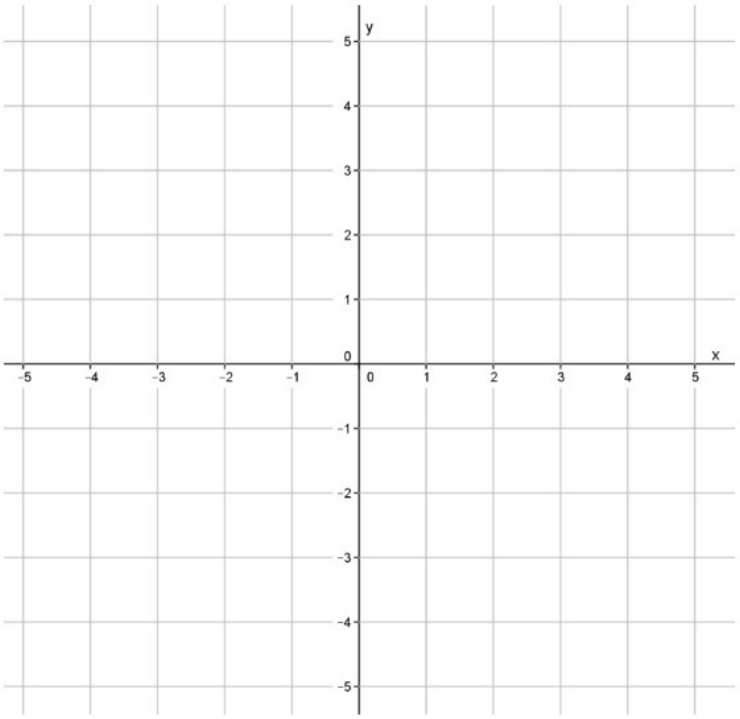
Graph the linear equation $ax + by = c$, where $a = 0$, $b = 1$, and $c = 1.5$.



Submit your graph using the tools below.

Problem 34

Graph the linear equation $ax + by = c$, where $a = 1$, $b = 0$, and $c = -\frac{5}{2}$.



Submit your graph using the tools below.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 35

What linear equation represents the graph of the line that coincides with the x-axis?

Modified from EngageNY ©GreatMinds Full Attribution

Problem 36

What linear equation represents the graph of the line that coincides with the y-axis?

Modified from EngageNY ©GreatMinds Full Attribution

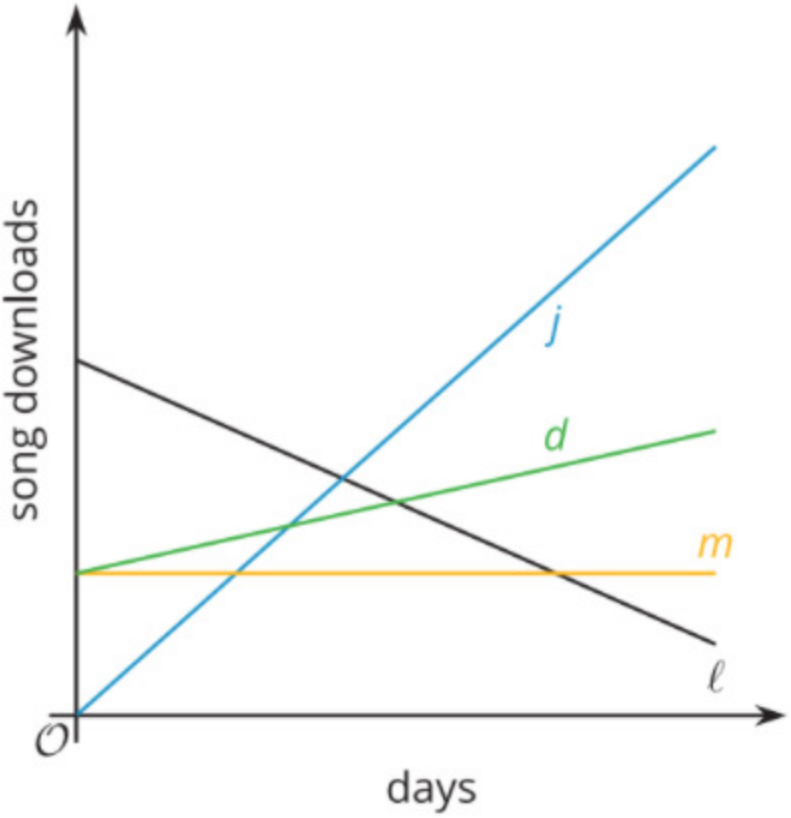
Problem 37

Select **all** the equations on which the point (10, 0) lies.

- ☐ A $5x + 2y = 15$
- ☐ B $2x + 4y = 20$
- ☐ C $x + 6y = 10$
- ☐ D $3x + 3y = 13$
- ☐ E $4x + 2y = 20$
- ☐ F $6x + y = 50$

Problem 38

A successful music app tracked the number of song downloads each day for a month for 4 music artists, represented by lines ℓ, j, m, and d over the course of a month. Which line represents an artist whose downloads remained constant over the month?



- A ℓ
- B j
- C m
- D d

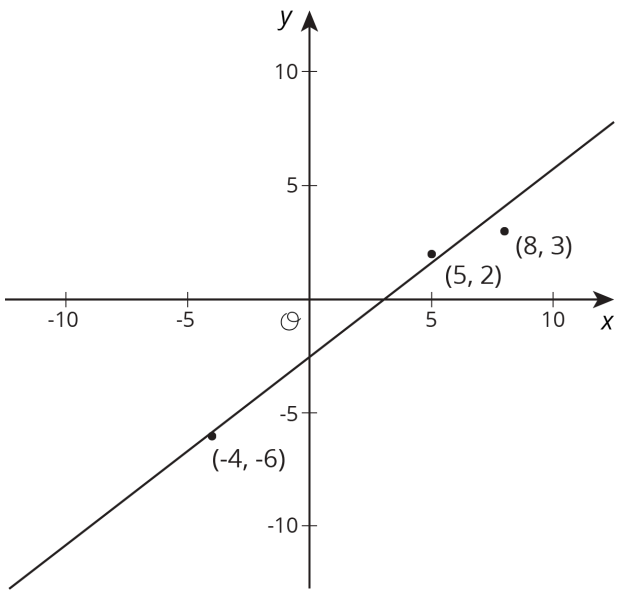
Problem 39

Find the slope of the line that passes through the following points: (5, -6) and (2, 3).

source: Louisiana Department of Education

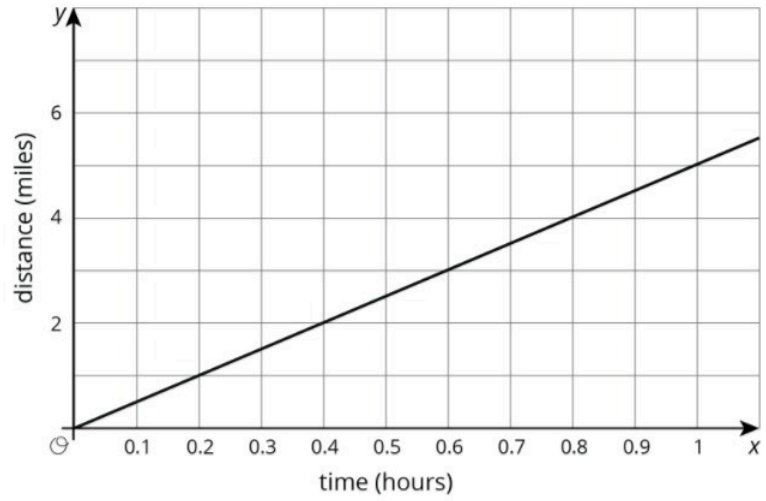
Problem 40

Estimate the slope of the line.



Problem 41

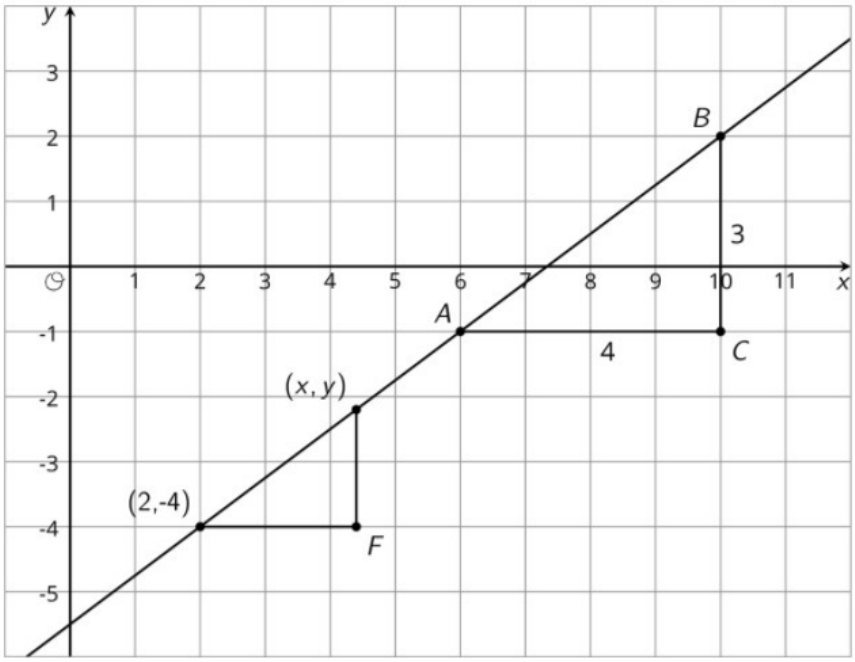
Priya jogs at a constant speed. The relationship between her distance and time is shown on the graph. Diego bikes at a constant speed twice as fast as Priya. Sketch a graph showing the relationship between Diego's distance and time.



Submit your graph using the tools below.

Problem 42

The points (2, -4), (x, y),*A*, and*B*all lie on the line. Find an equation relating*x*and*y*.



Write the equation using the "WIRIS editor" button 

Problem 43

1. Find an object that contains a right angle. This can be something in nature or something that was made by humans or machines.

2. Measure the two sides that make the right angle. Then measure the distance from the end of one side to the end of the other.

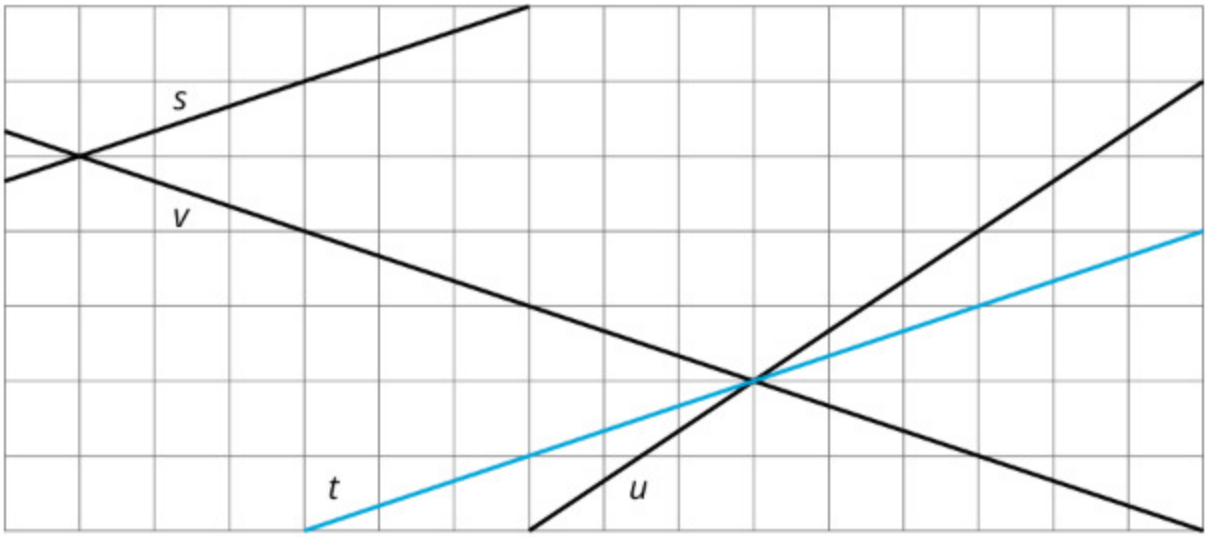
3. Draw a diagram of the object, including the measurements.

4. Use the Pythagorean Theorem to show that your object really does have a right angle.

Submit your work using the tools below.

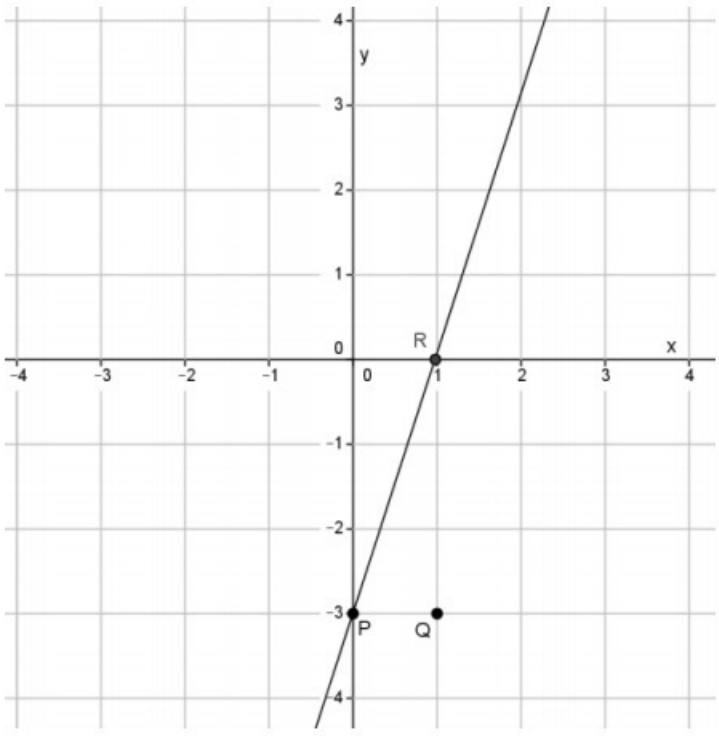
Problem 44

Which line doesn't belong?



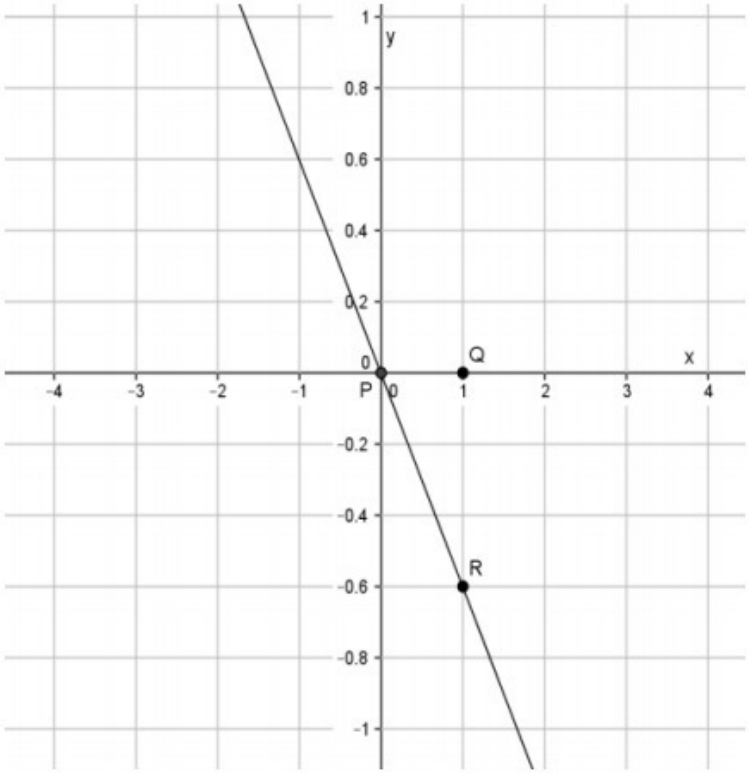
Problem 45

What is the slope of this non-vertical line? Use your transparency if needed.



Problem 46

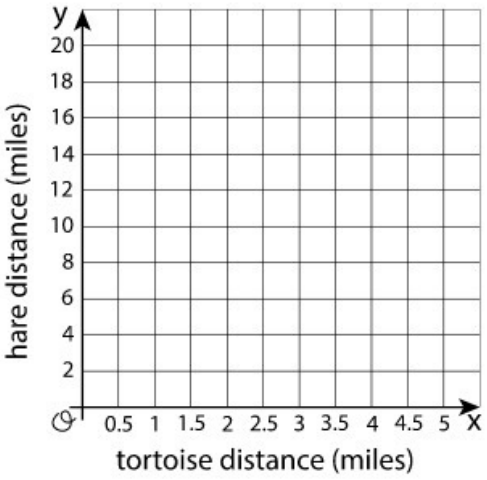
What is the slope of this non-vertical line? Use your transparency if needed.



Problem 47

The tortoise and the hare are having a race. After the hare runs 16 miles the tortoise has only run 4 miles.

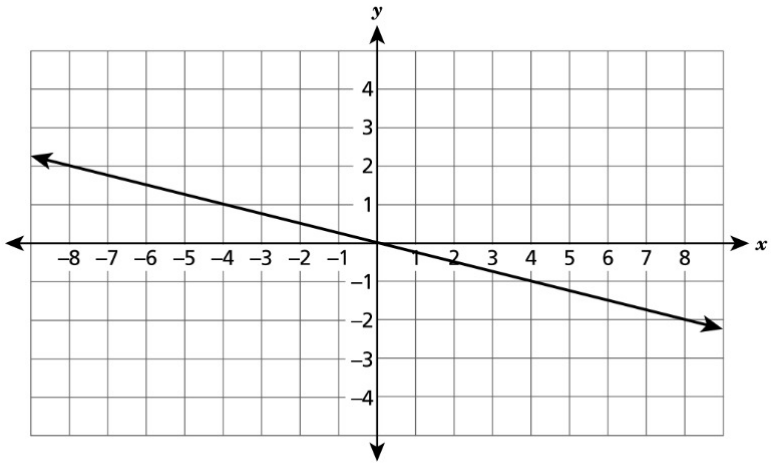
The relationship between the distance x the tortoise "runs" in miles for every y miles the hare runs is y = 4x. Graph this relationship.



Submit your graph using the tools below.

Problem 48

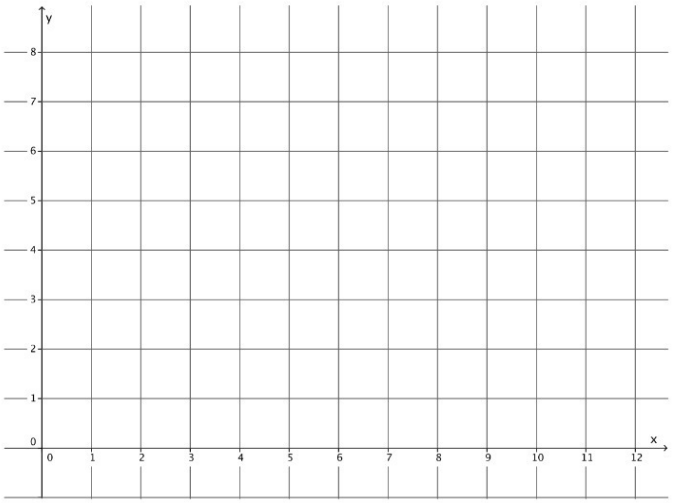
Which equation represents the line shown on the coordinate plane below?



- A
- B
- C
- D

Problem 49

Show, using similar triangles, why the graph of an equation of the form $y = mx + b$ is a line with slope m.



Submit your work using the tools below.

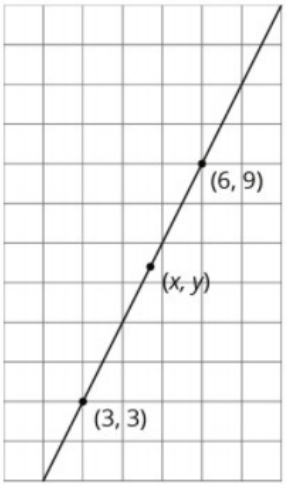
Problem 50

Select **all** the points that are on the line through and .

- [ ] A
- [ ] B
- [ ] C
- [ ] D
- [ ] E

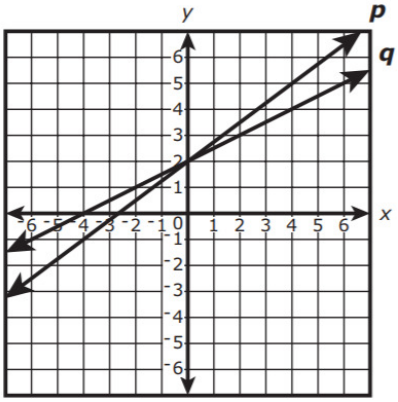
Problem 51

All three points displayed are on the line. Find an equation relating x and y.



Problem 52

Line p and line q are shown on this coordinate grid.



Which of the following statements best describes the lines?

- A Line p has the same slope as line q.
- B Line p has a greater slope than line q.
- C The y-intercept of line p is greater than the y-intercept of line q.
- D The x-intercept of line q is greater than the x-intercept of line p.

Massachusetts Department of Elementary and Secondary Education

Problem 53

Describe how you can tell whether a line's slope is greater than 1, equal to 1, or less than 1.

Problem 54

Which statement is true about the equation below?

- 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 55

Which of the following equations has infinitely many solutions?

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

Problem 56

Which one doesn't belong?

1. $5+7=7+5$
2. $5 \cdot 7=7 \cdot 5$
3. $2=7-5$
4. $5-7=7-5$

Problem 57

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

Problem 58

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 59

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 60

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.

Problem 61

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.

Problem 62

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.

Problem 63

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.

Problem 64

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.

Problem 65

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.

Problem 66

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.

Problem 67

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.

Problem 68

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.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 69

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

Problem 70

Rewrite the equation that would represent the sum in the fifth step of the Facebook problem:
$S = 7 + 7 \cdot 5 + 7 \cdot 5^2 + 7 \cdot 5^3 + 7 \cdot 5^4$.

Submit your work using the tools below.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 71

Elena began to solve this equation:

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

Problem 72

Solve the following equation for x.

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

x = ?

Problem 73

Solve the following equation for x.

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

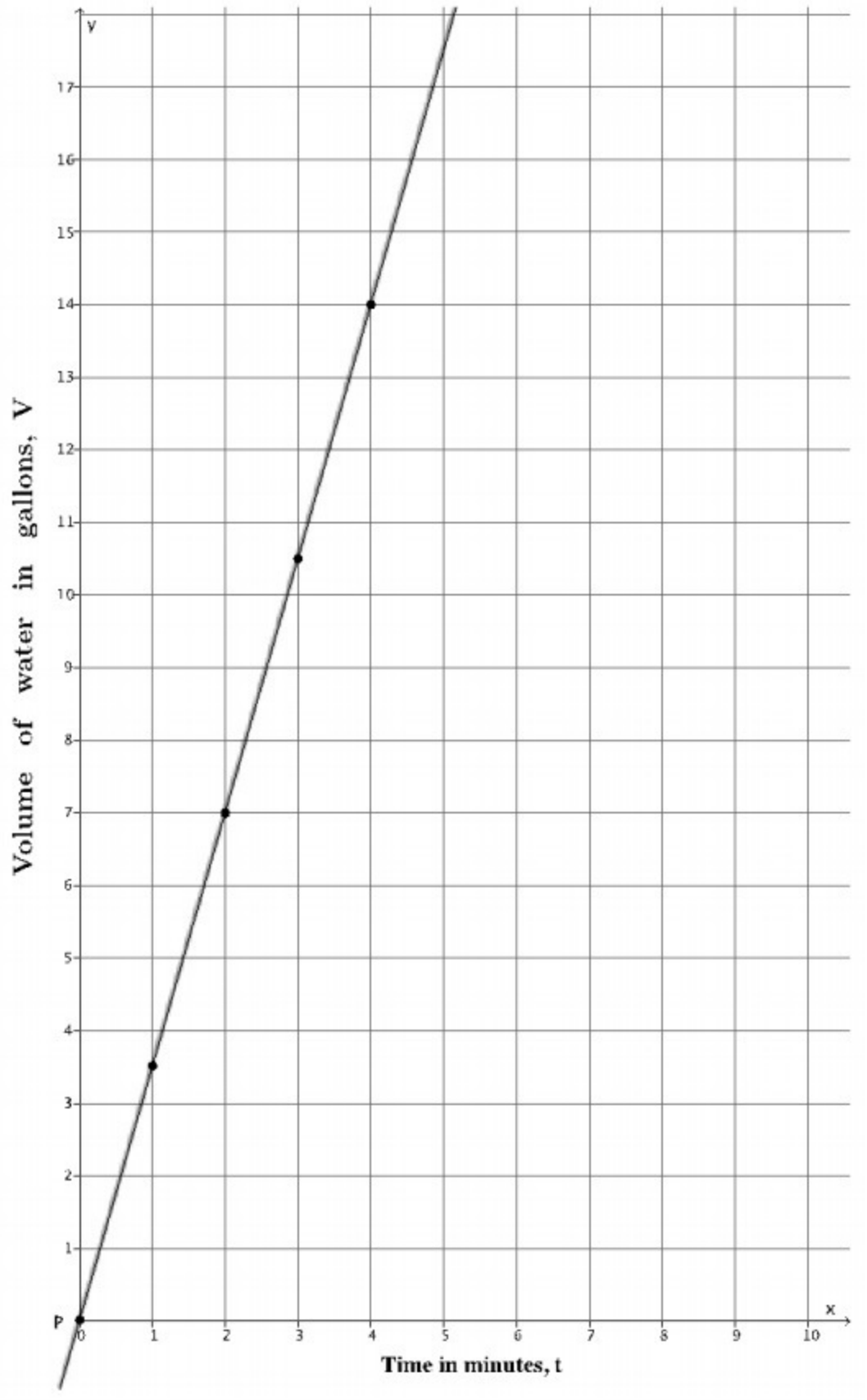
x = ?

Problem 74

Use the table and the graphs provided to answer the questions that follow.

Suppose the volume of water that comes out in three minutes is 10.5 gallons.

t (time in minutes)	Linear Equation: $V = \frac{10.5}{3}t$	V (in gallons)
0	$V = \frac{10.5}{3}(0)$	0
1	$V = \frac{10.5}{3}(1)$	$\frac{10.5}{3} = 3.5$
2	$V = \frac{10.5}{3}(2)$	$\frac{21}{3} = 7$
3	$V = \frac{10.5}{3}(3)$	$\frac{31.5}{3} = 10.5$
4	$V = \frac{10.5}{3}(4)$	$\frac{42}{3} = 14$



How many gallons of water flow out of the faucet per minute? In other words, what is the unit rate of water flow?

Do not include units (gallons per minute) in your answer.

Problem 75

Assume that the graph of the situation is a line, as shown in the graph. What is the slope of the line?

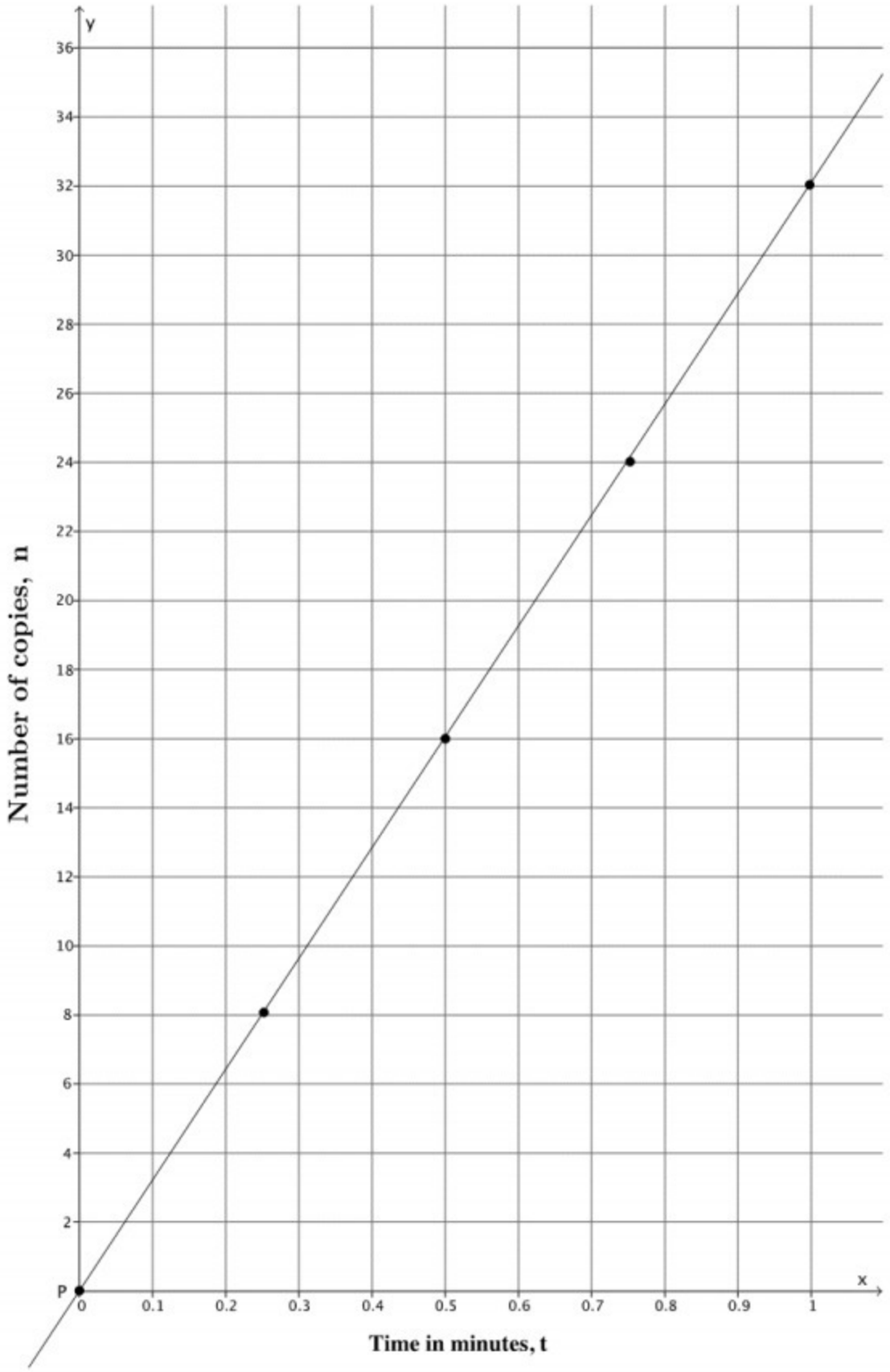
m = _____

Problem 76

Use the table and the graphs provided to answer the questions that follow.

A copy machine makes copies at a constant rate. The machine can make 80 copies in $2\frac{1}{2}$ minutes.

t (time in minutes)	Linear Equation: $n = 32t$	n (number of copies)
0	$n = 32(0)$	0
0.25	$n = 32(0.25)$	8
0.5	$n = 32(0.5)$	16
0.75	$n = 32(0.75)$	24
1	$n = 32(1)$	32



How many copies can the machine make each minute? In other words, what is the unit rate of the copy machine?

Do not include units (copies per minute) in your answer.

Problem 77

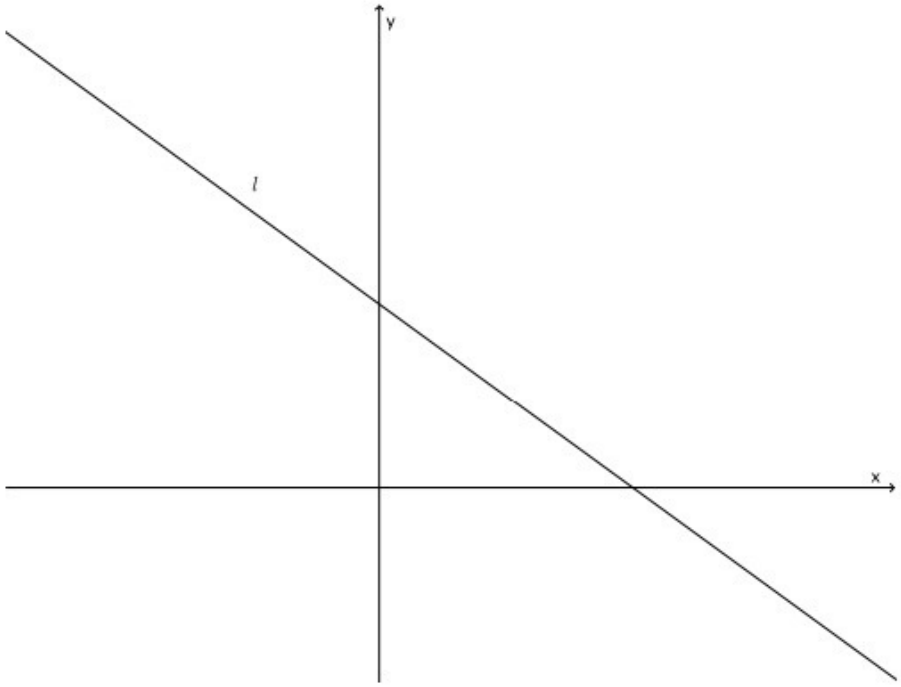
Assume that the graph of the situation is a line, as shown in the graph. What is the slope of the line?

m = _____

Modified from EngageNY ©GreatMinds Full Attribution

Problem 78

Does the graph of the line shown below have a positive or negative slope?



- ○ Positive
- ○ Negative

Modified from EngageNY ©GreatMinds Full Attribution

Problem 79

Explain.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 80

A 450-gallon tank full of water is draining at a rate of 20 gallons per minute.

Write an equation that represents the relationship between the gallons of water, a, in the tank and h, hours, the tank has been draining.

a =

Problem 81

A 450-gallon tank full of water is draining at a rate of 20 gallons per minute.

Write an equation that represents the relationship between the gallons of water, a, in the tank and s, seconds, the tank has been draining.

a =

Problem 82

Graph each of your new equations. In what way are all of the graphs the same? In what way are they all different?

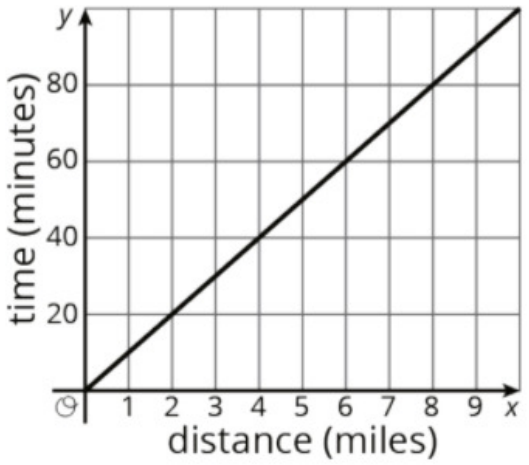
Problem 83

How would these graphs change if we used quarts of water instead of gallons? What would stay the same?

Problem 84

Three runners are training for a marathon. One day, they all run about ten miles, each at their own constant speed.

- This graph shows how long, in minutes, it takes **Runner #1** to run miles.



- The equation that relates **Runner #2**'s distance (in miles) with time (in minutes) is $t = 8.5d$.

- **Runner #3**'s information is in the table:

distance (miles)	time (minutes)
2	18
4	36
6	54
8	72
10	90

Which of the three runners has the fastest pace?

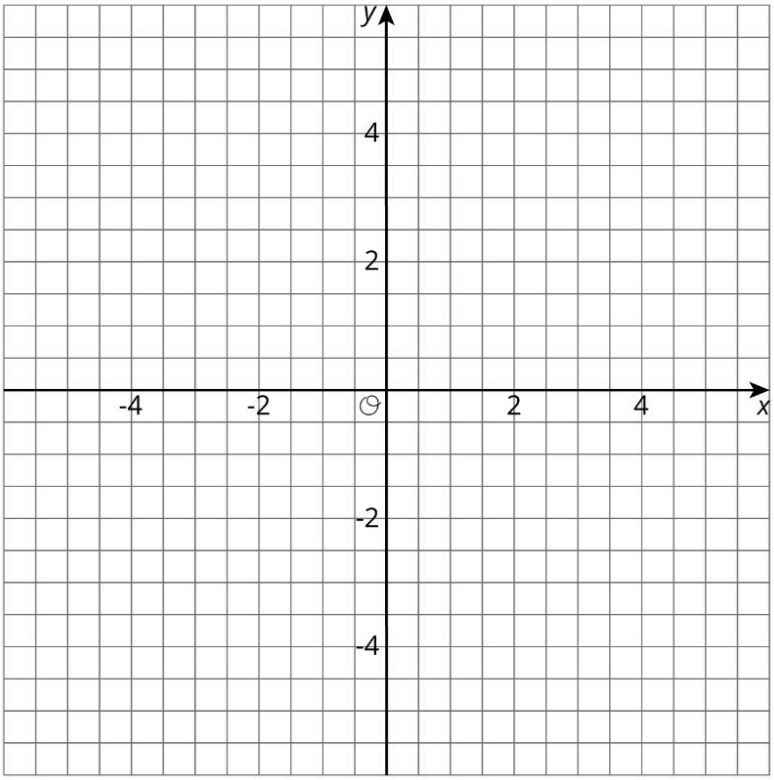
- ○ Runner #1
- ○ Runner #2
- ○ Runner #3

Problem 85

Explain how you know.

Problem 86

Plot and label 3 different points with x-coordinate 3.



Submit your graph using the tools below.

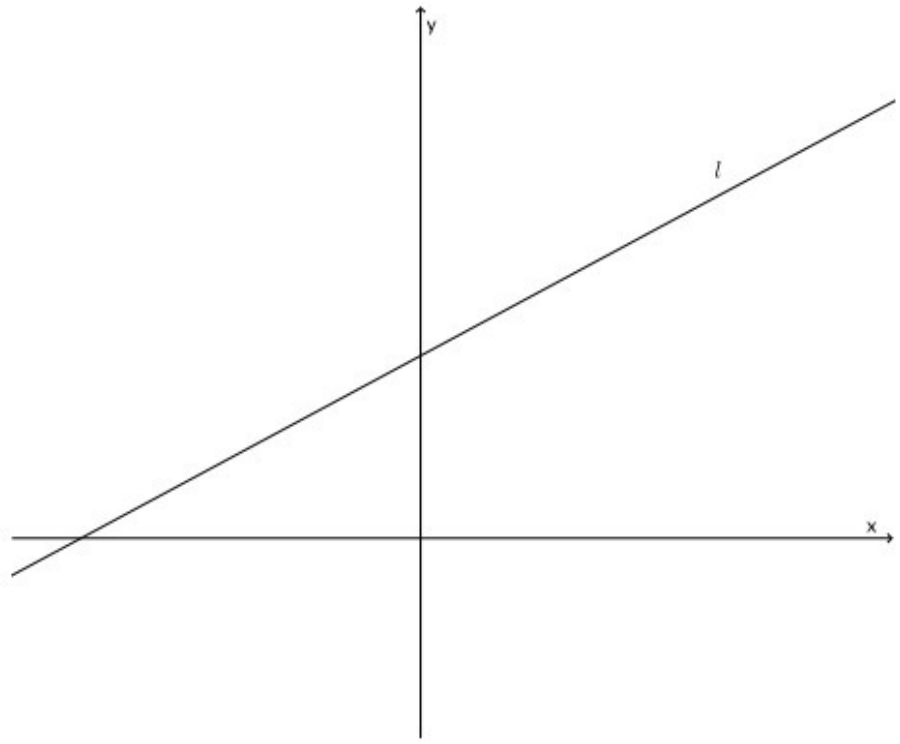
Problem 87

Sketch or describe all points in the plane with x-coordinate 3.

Submit your work using the tools below.

Problem 88

Does the graph of the line shown below have a positive or negative slope?



- ○ Positive
- ○ Negative

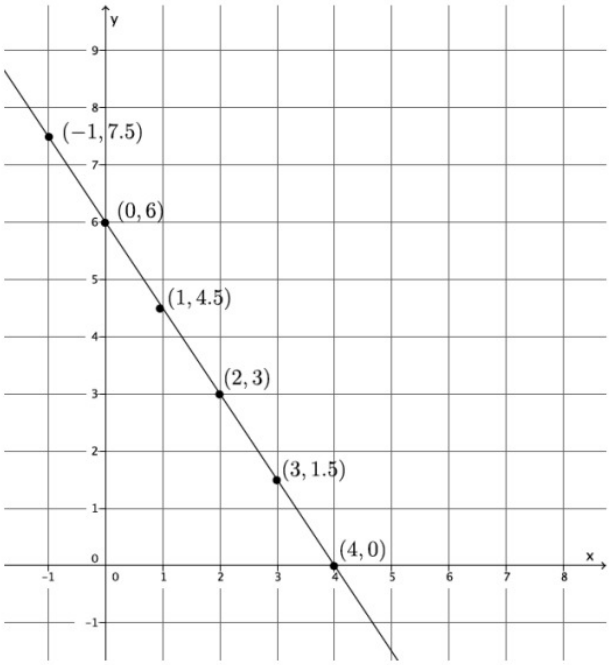
Problem 89

Explain.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 90

Use the graph below to answer the following questions.



Use any pair of points to calculate the slope of the line.

m = _____

Modified from EngageNY ©GreatMinds Full Attribution

Problem 91

Use a different pair of points to calculate the slope of the line.

m = _____

Modified from EngageNY ©GreatMinds Full Attribution

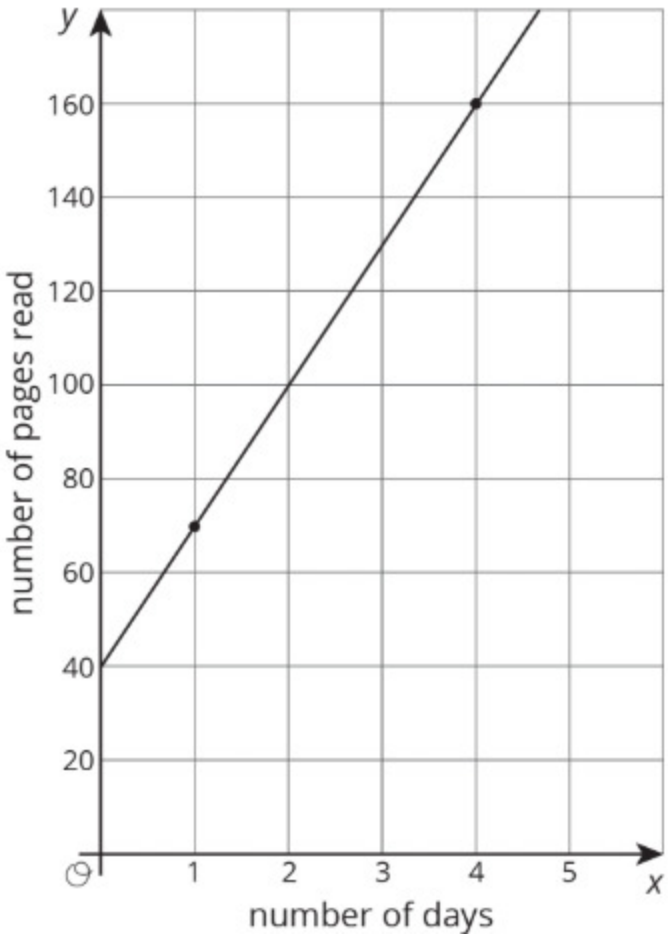
Problem 92

Explain why the slopes you calculated in parts (a) and (b) are equal.

Problem 93

Lin has a summer reading assignment. After reading the first 30 pages of the book, she plans to read 40 pages each day until she finishes. Lin makes the graph shown here to track how many total pages she'll read over the next few days.

After day 1, Lin reaches page 70, which matches the point (1, 70) she made on her graph. After day 4, Lin reaches page 190, which does not match the point (4, 160) she made on her graph. Lin is not sure what went wrong since she knows she followed her reading plan.



Sketch a line showing Lin's original plan on the axes.

Submit your sketch using the tools below.

Problem 94

What does the**vertical intercept**mean in this situation? How do the vertical intercepts of the two lines compare?

Problem 95

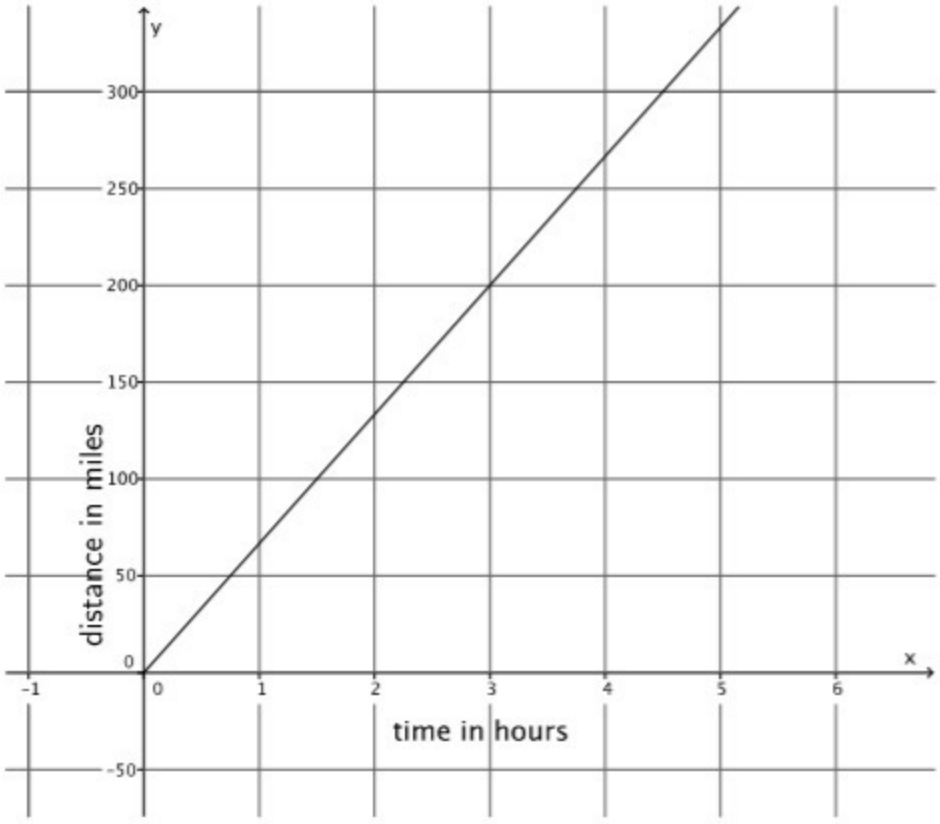
What does the slope mean in this situation? How do the slopes of the two lines compare?

Problem 96

Train A can travel a distance of 500 miles in 8 hours. Assuming the train travels at a constant rate, write the linear equation that represents the situation.

Problem 97

The figure represents the constant rate of travel for Train B.



Which train is faster?

- ○ Train A
- ○ Train B

Modified from EngageNY ©GreatMinds Full Attribution

Problem 98

Explain.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 99

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

Complete the equation below

y = _____

Use x as your variable.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 100

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

Modified from EngageNY ©GreatMinds Full Attribution

Problem 101

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 

Modified from EngageNY ©GreatMinds Full Attribution

Problem 102

Graph the points on the coordinate plane.

Submit your graph using the tools below.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 103

Find the slope between any two points.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 104

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.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 105

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

Modified from EngageNY ©GreatMinds Full Attribution

Problem 106

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

Complete the equation below

y = _____

Use x as your variable.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 107

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

Modified from EngageNY ©GreatMinds Full Attribution

Problem 108

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 

Modified from EngageNY ©GreatMinds Full Attribution

Problem 109

Graph the points on the coordinate plane.

Submit your graph using the tools below.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 110

Find the slope between any two points.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 111

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.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 112

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

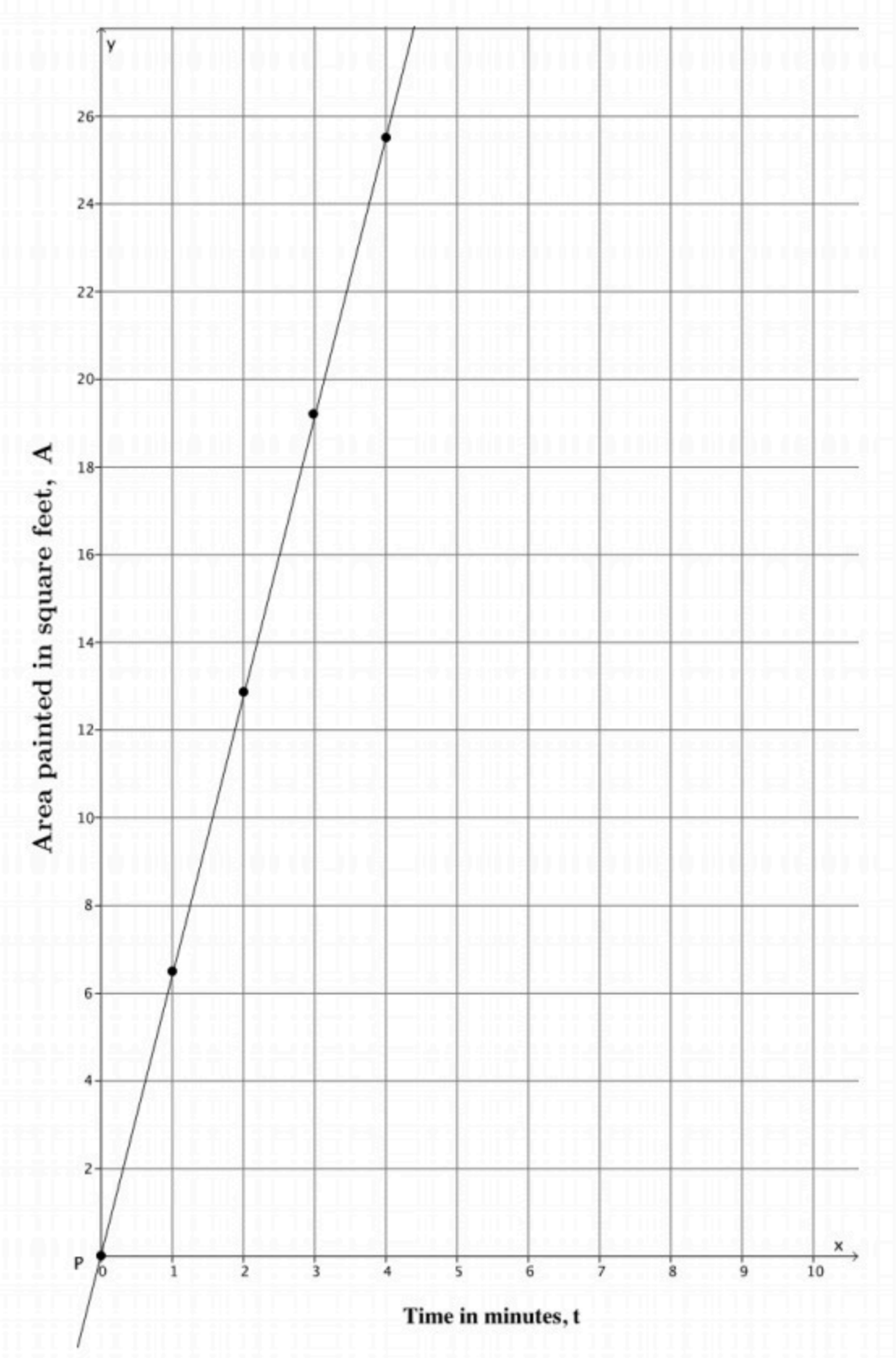
Modified from EngageNY ©GreatMinds Full Attribution

Problem 113

Use the table and the graphs provided to answer the questions that follow.

Emily paints at a constant rate. She can paint 32 square feet in five minutes.

t (time in minutes)	Linear Equation: $A = \frac{32}{5}t$	A (area painted in square feet)
0	$A = \frac{32}{5}(0)$	0
1	$A = \frac{32}{5}(1)$	$\frac{32}{5} = 6.4$
2	$A = \frac{32}{5}(2)$	$\frac{64}{5} = 12.8$
3	$A = \frac{32}{5}(3)$	$\frac{96}{5} = 19.2$
4	$A = \frac{32}{5}(4)$	$\frac{128}{5} = 25.6$



How many square feet can Emily paint in one minute? In other words, what is her unit rate of painting?

Do not include units (square feet per minute) in your answer.

Problem 114

Assume that the graph of the situation is a line, as shown in the graph. What is the slope of the line?

m = _____

Modified from EngageNY ©GreatMinds Full Attribution

Problem 115

A giant tortoise travels at 0.17 miles per hour and an arctic hare travels at 37 miles per hour.

Draw separate graphs that show the relationship between time elapsed, in hours, and distance traveled, in miles, for both the tortoise and the hare.

Submit your graphs using the tools below.

Problem 116

Would it be helpful to try to put both graphs on the same pair of axes? Why or why not?

© 2020, Open Up Resources Full Attribution
© 2019 Illustrative Mathematics (CC by 4.0) Full Attribution
© 2023 Open Up Resources. 3rd Edition. Full Attribution
© 2023 Open Up Resources 1st Edition Full Attribution

Problem 117

The tortoise and the hare start out together and after half an hour the hare stops to take a rest. How long does it take the tortoise to catch up?

Problem 118

Solve the following equation for y: $-4x + 8y = 24$.

Complete the equation below
y = _____
Use x as your variable.

Problem 119

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

Problem 120

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 

Modified from EngageNY ©GreatMinds Full Attribution

Problem 121

Graph the points on the coordinate plane.

Submit your graph using the tools below.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 122

Find the slope between any two points.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 123

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.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 124

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

Modified from EngageNY ©GreatMinds Full Attribution

Problem 125

Natalie can paint 40 square feet in 9 minutes. Assuming she paints at a constant rate, write the linear equation that represents the situation.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 126

The table of values below represents the area painted by Steven for a few selected time intervals. Assume Steven is painting at a constant rate.

Minutes (x)	Area Painted (y)
3	10
5	$\frac{50}{3}$
6	20
8	$\frac{80}{3}$

Who paints faster?

- ○ Natalie
- ○ Steven

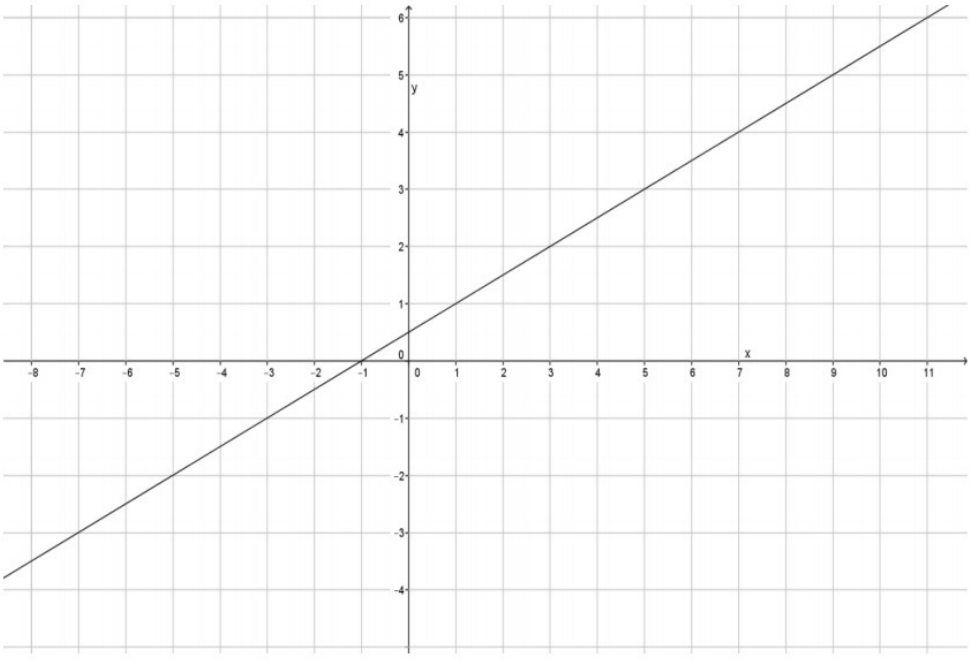
Modified from EngageNY ©GreatMinds Full Attribution

Problem 127

Explain.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 128



Select any two points on the line to label as P and R.

Submit your graph using the tools below.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 129

Enter the coordinates of points P and R.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 130

Compute the rate of change of the line.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 131

Jeremy rides his bike at a rate of 12 miles per hour. Below is a table that represents the number of hours and miles Kevin rides. Assume both bikers ride at a constant rate.

Time in Hours (x)	Distance in Miles (y)
1.5	17.25
2	23
3.5	40.25
4	46

Which biker rides at a greater speed?

- ○ Jeremy
- ○ Kevin

Modified from EngageNY ©GreatMinds Full Attribution

Problem 132

Explain your reasoning.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 133

Write an equation for a third biker, Lauren, who rides twice as fast as Kevin. Use y to represent the number of miles Lauren travels in x hours.

Complete the equation below

y = _____

Use x as your variable.

Modified from EngageNY ©GreatMinds Full Attribution

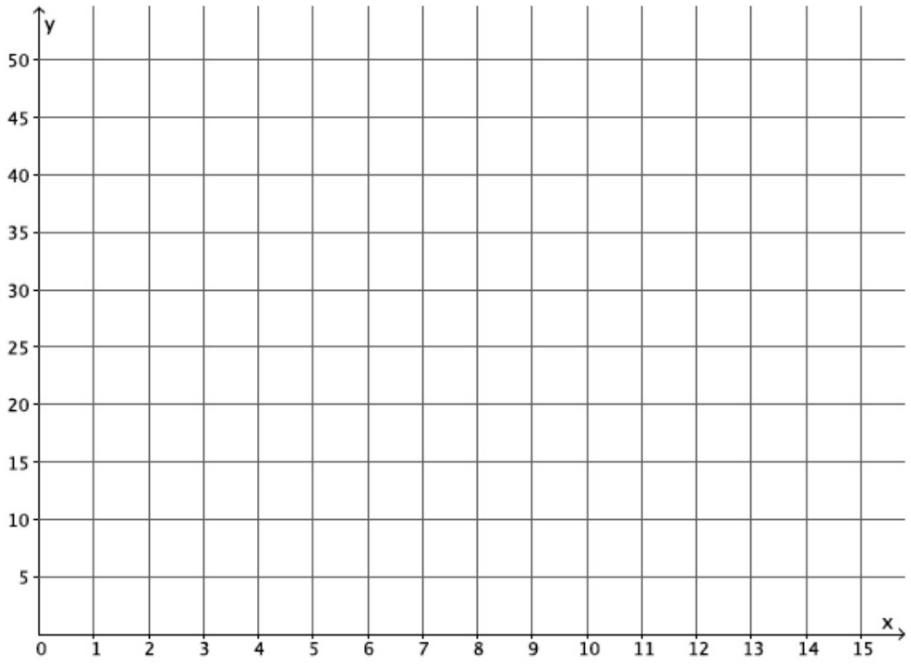
Problem 134

Explain your reasoning.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 135

Create a graph of the equation in the previous part.



Submit your graph using the tools below.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 136

Calculate the slope of the line in your previous graph.

m = _____

Modified from EngageNY ©GreatMinds Full Attribution

Problem 137

Interpret the slope's meaning in this situation.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 138

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

Complete the equation below

y = _____

Use x as your variable.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 139

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

Modified from EngageNY ©GreatMinds Full Attribution

Problem 140

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 

Modified from EngageNY ©GreatMinds Full Attribution

Problem 141

Graph the points on the coordinate plane.

Submit your graph using the tools below.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 142

Find the slope between any two points.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 143

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.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 144

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

Modified from EngageNY ©GreatMinds Full Attribution

Problem 145

Water flows out of Pipe A at a constant rate. Pipe A can fill 3 buckets of the same size in 14 minutes. Write a linear equation that represents the situation.

Complete the equation below

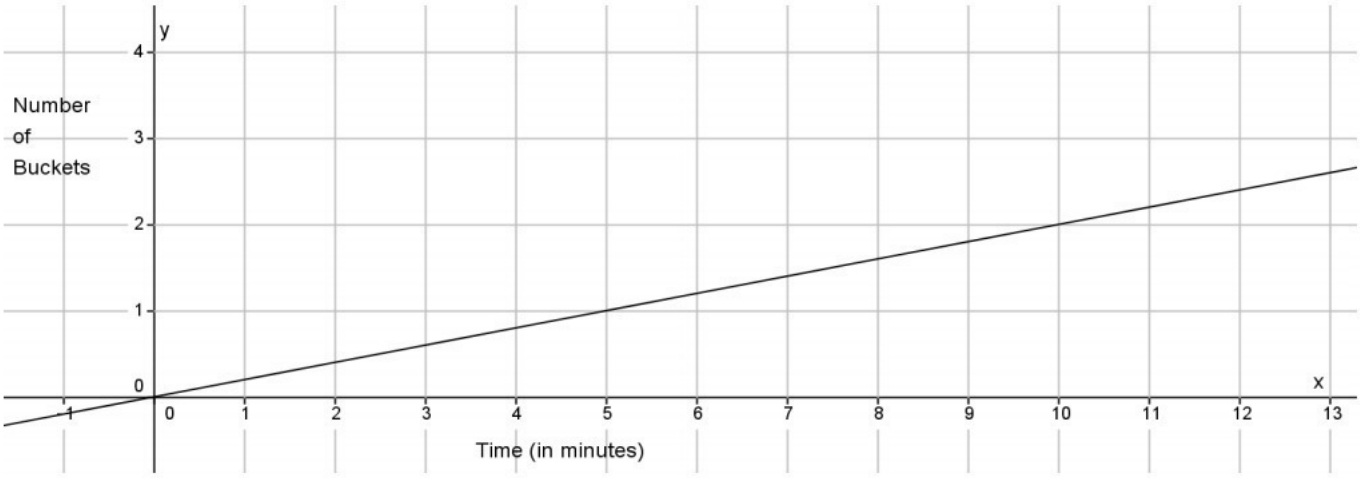
y = _____

Use x as your variable.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 146

The figure below represents the rate at which Pipe B can fill the same-sized buckets as Pipe A.



Which pipe fills buckets faster?

- ○ Pipe A
- ○ Pipe B

Modified from EngageNY ©GreatMinds Full Attribution

Problem 147

Explain how you know this pipe will fill buckets faster.

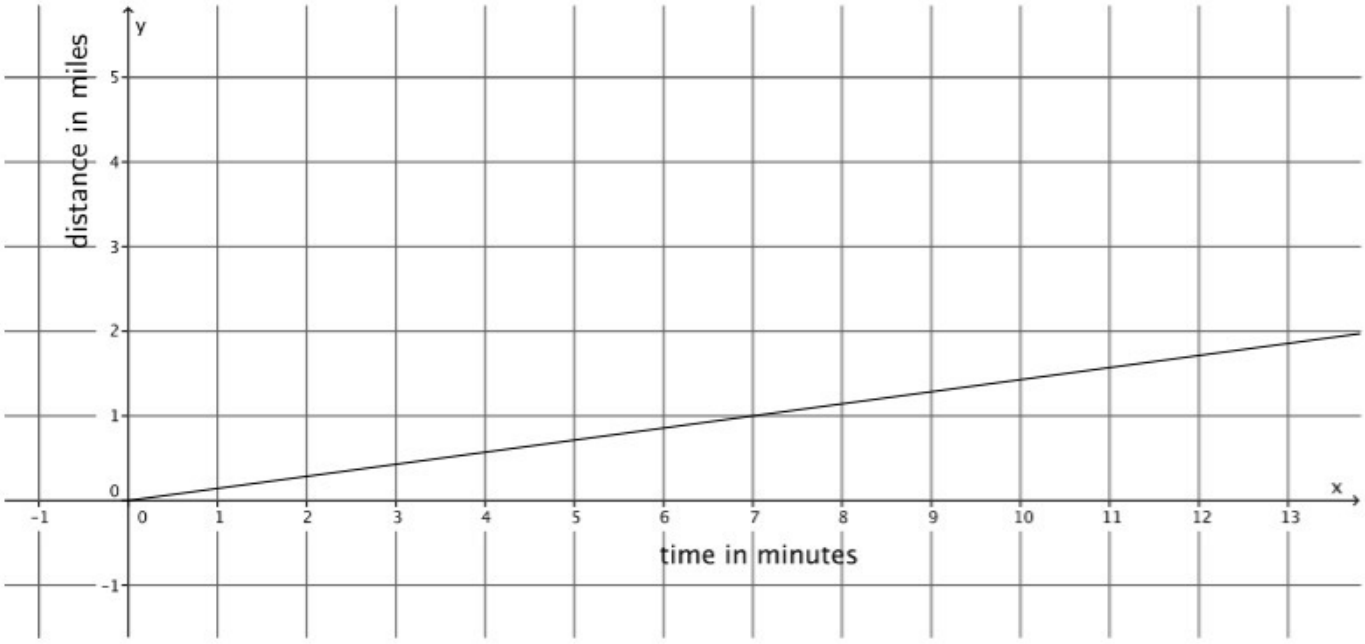
Modified from EngageNY ©GreatMinds Full Attribution

Problem 148

Bianca can run 5 miles in 41 minutes. Assuming she runs at a constant rate, write the linear equation that represents the situation.

Problem 149

The figure below represents Cynthia's constant rate of running.



Who runs faster?

- ○ Bianca
- ○ Cynthia

Problem 150

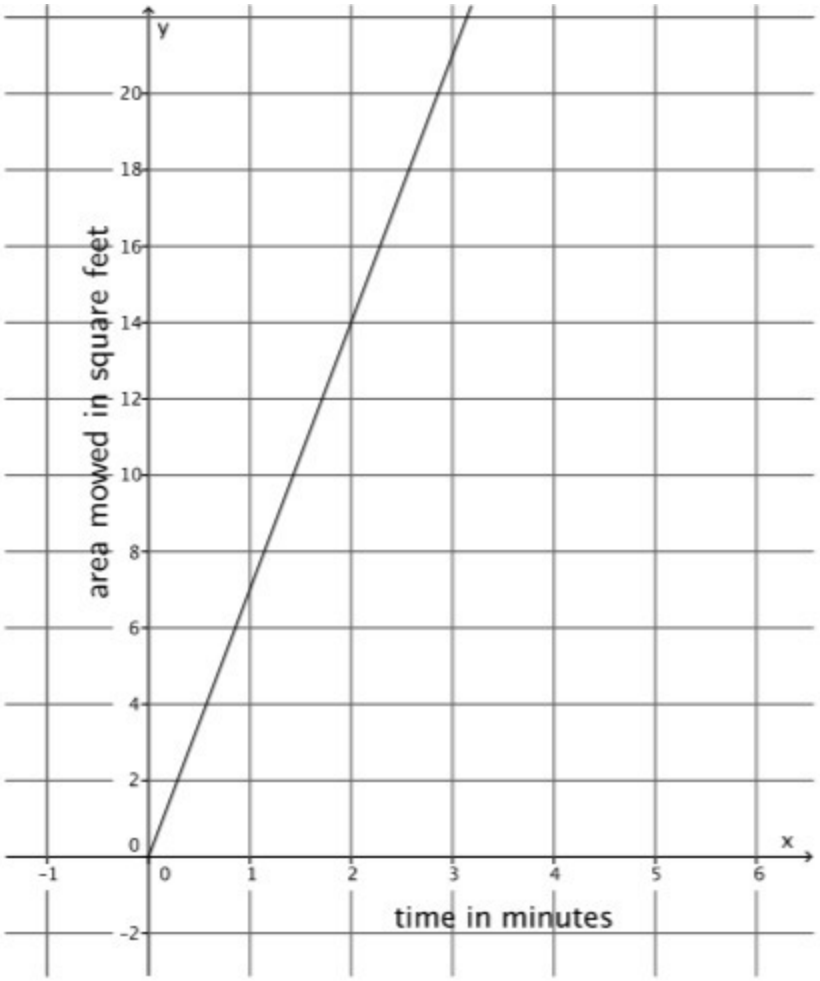
Explain.

Problem 151

Geoff can mow an entire lawn of 450 square feet in 30 minutes. Assuming he mows at a constant rate, write the linear equation that represents the situation.

Problem 152

The figure represents Mark's constant rate of mowing a lawn.



Who mows faster?

- ○ Geoff
- ○ Mark

Modified from EngageNY ©GreatMinds Full Attribution

Problem 153

Explain.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 154

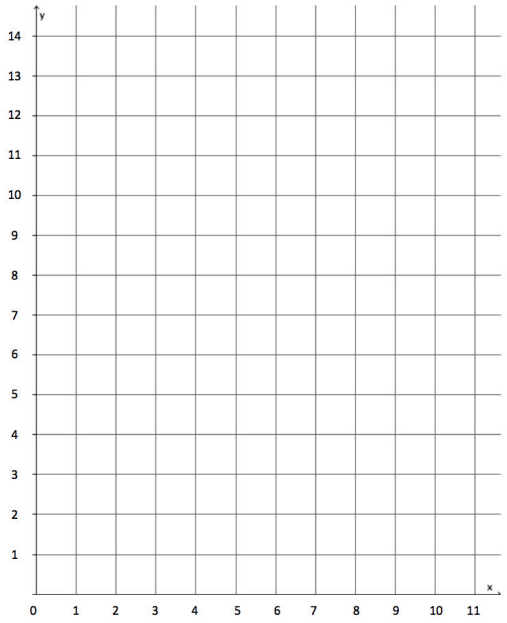
Parker paid $4.50 for three pounds of gummy candy. Assuming each pound of gummy candy costs the same amount, complete the table of values representing the cost of gummy candy in pounds.

Gummy Candy in Pounds (x)	1	2	3	4	5	6	7	8	9
Cost in Dollars (y)			4.50						

Create and fill in the table using the table button 

Problem 155

Graph the data on the coordinate plane.



Submit your graph using the tools below.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 156

On the same day, Parker's friend, Peggy, was charged $5 for 1 $\frac{1}{2}$ lb. of gummy candy. Explain in terms of the graph why this must be a mistake.

Modified from EngageNY ©GreatMinds Full Attribution

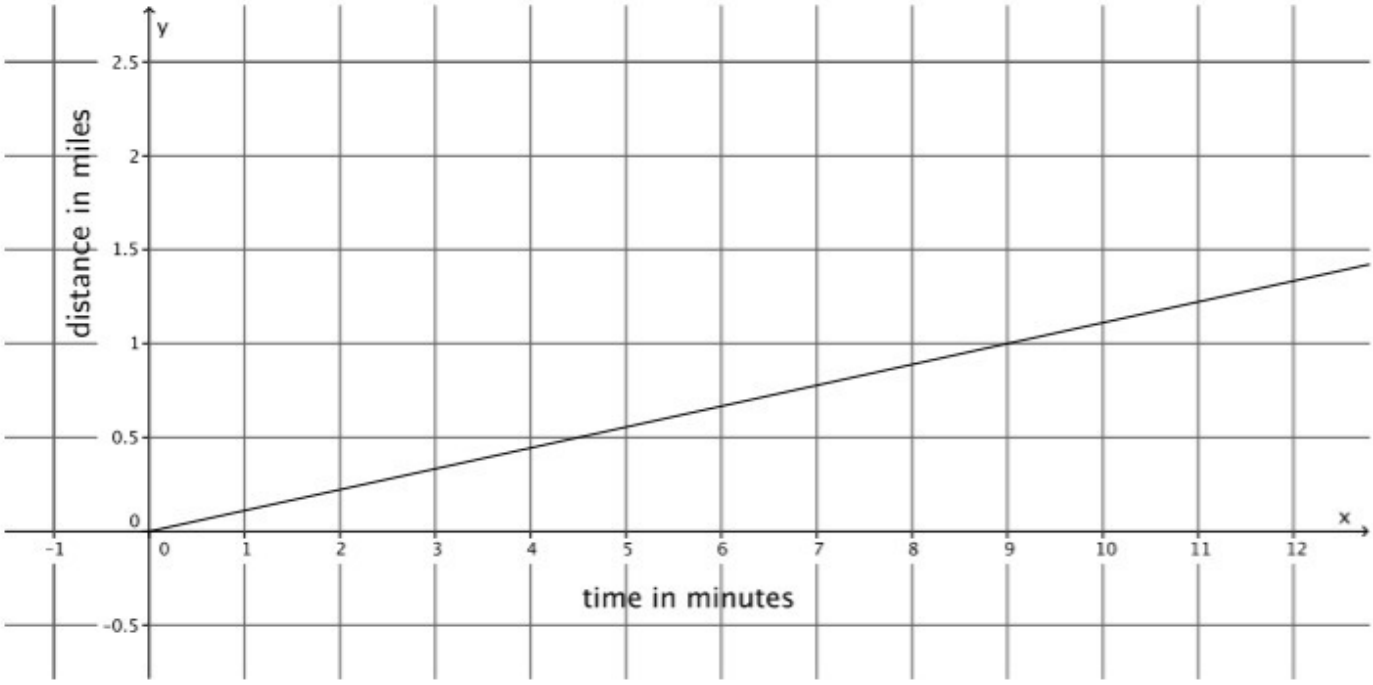
Problem 157

Juan can walk to school, a distance of 0.75 mile, in 8 minutes. Assuming he walks at a constant rate, write the linear equation that represents the situation.

engage^ny

Problem 158

The figure below represents Lena's constant rate of walking.



Who walks faster?

- Juan
- Lena

Problem 159

Explain.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 160

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

$$\begin{cases} y = \frac{1}{2}x + \frac{5}{2} \\ x - 2y = 7 \end{cases}$$

Modified from EngageNY ©GreatMinds Full Attribution

Problem 161

Does it have a solution?

- ○ Yes (one solution)
- ○ No
- ○ Infinitely many

Modified from EngageNY ©GreatMinds Full Attribution

Problem 162

The equation $y = 4.2x$ could represent a variety of different situations.

Write a description of a situation represented by this equation. Decide what quantities x and y represent in your situation.

Problem 163

Make a table and a graph that represent the situation.

Submit your work using the tools below.

Problem 164

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

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

Problem 165

Does it have a solution?

- ○ Yes (one solution)
- ○ No
- ○ Infinitely many

Modified from EngageNY ©GreatMinds Full Attribution

Problem 166

Enter the solution.

Write your answer in the format:
(x,y)
with no spaces.

Express any non-integer values as fractions.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 167

Students organized a 12-hour "dance-a-thon" as a fundraiser for their summer camp. The graph below shows the amount of money they raised during the first 8 hours.

(a) What was the amount of money raised per hour during these first 8 hours?

Problem 168

Show your work or explain how you determined your answer.

Problem 169

(b) During the next 4 hours of the dance-a-thon, the students raised money at twice the hourly rate of the first 8 hours. On the coordinate plane, complete the graph for the next 4 hours to represent the total amount of money raised at the dance-a-thon. Then, use words and numbers to explain how you knew where to draw the graph.

Problem 170

Graph the equation $y = \frac{4}{5}x - 5$.

What is the slope?

Problem 171

What is the y-intercept.

Write your answer in the format:
(x,y)with no spaces.

Problem 172

Graph the known point, and then use the slope to find a second point before drawing the line.

Submit your graph using the tools below.

Modified from EngageNY ©GreatMinds Full Attribution

Problem 173

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

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

engage^{ny}

Modified fromEngageNY©Great MindsDisclaimer

Modified from EngageNY ©GreatMinds Full Attribution

Problem 174

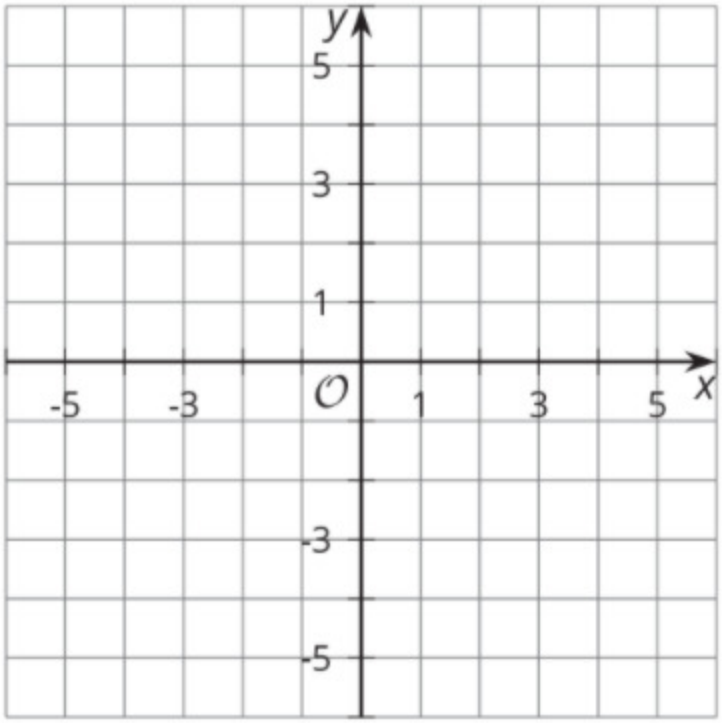
Does it have a solution?

- ○ Yes (one solution)
- ○ No
- ○ Infinitely many

Modified from EngageNY ©GreatMinds Full Attribution

Problem 175

Plot and label 3 different points with y-coordinate -4.



Submit your graph using the tools below.

Problem 176

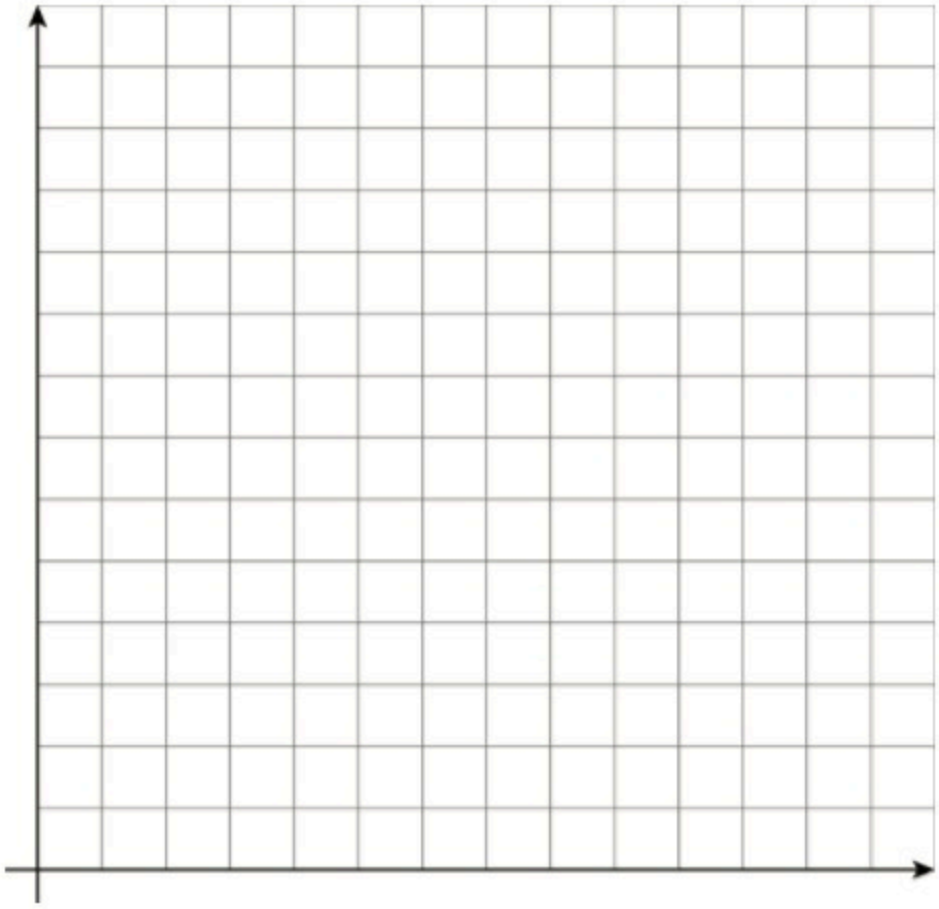
Sketch or describe all points in the plane with y-coordinate -4.

Submit your work using the tools below.

Problem 177

Elena and Jada distribute flyers for different advertising companies. Elena gets paid 65 cents for every 10 flyers she distributes, and Jada gets paid 75 cents for every 12 flyers she distributes.

Draw graphs on the coordinate plane representing the total amount each of them earned, y, after distributing x flyers.



Submit your graph using the tools below.

Problem 178

Use the graph to decide who got paid more after distributing 14 flyers.

- Elena
- Jada

Problem 179

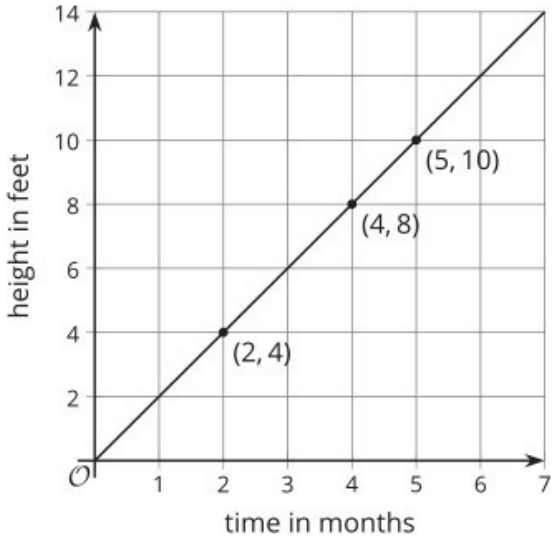
Noah is growing three different types of trees. He is keeping track of the height of each tree over time.

- This equation represents the height (in feet) of the first tree over months. $h = 3.5m$

The second tree's information is in the table:

time (months)	height of tree (feet)
2	5
4	10
5	12.5
8	20

This graph shows how long, in months, it takes the third tree to grow h feet.



Which tree is growing the slowest?

- A First tree
- B Second tree
- C Third tree

Problem 180

Explain how you know.

Problem 181

There are many possible rectangles whose perimeter is 50 units. Complete the table with lengths, ℓ, and widths, w, of at least 10 such rectangles.

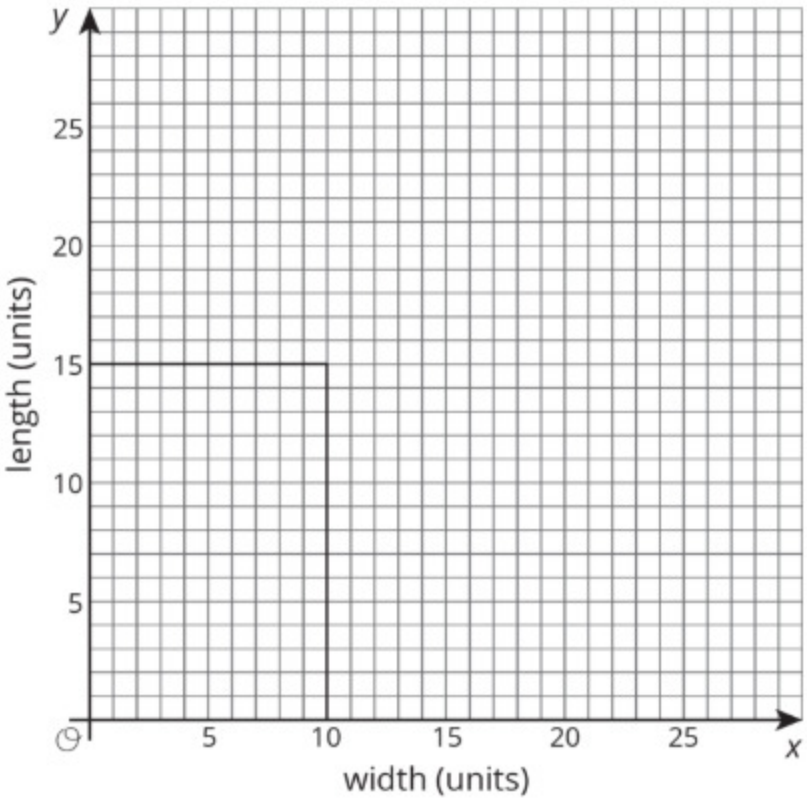
l										
w										

Create and fill in the table using the table button 

Problem 182

The graph shows one rectangle whose perimeter is 50 units, and has its lower left vertex at the origin and two sides on the axes.

On the same graph, draw more rectangles with perimeter 50 units using the values from your table. Make sure that each rectangle has a lower left vertex at the origin and two sides on the axes.



Submit your graph using the tools below.

Problem 183

Each rectangle has a vertex that lies in the first quadrant. These vertices lie on a line. Draw in this line and write an equation for it.

Submit your work using the tools below.

Problem 184

What is the slope of this line?

Problem 185

How does the slope describe how the width changes as the length changes (or vice versa)?

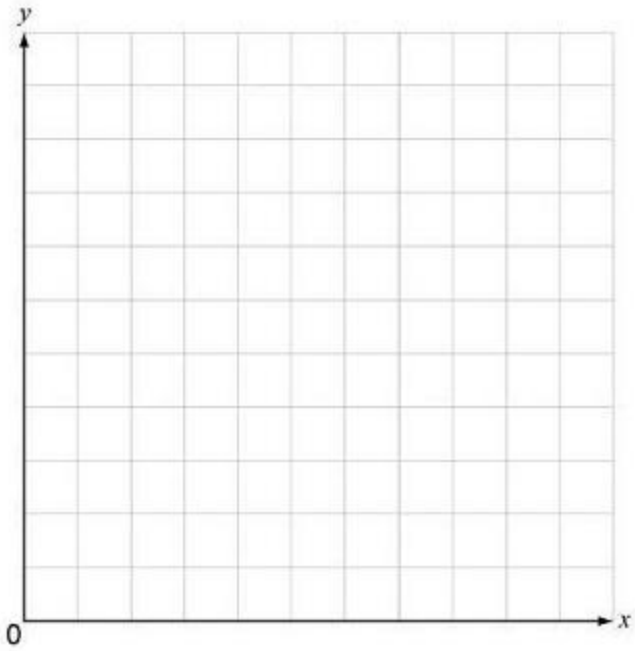
Problem 186

Mariko has a job mowing lawns that pays $7 per hour.

Kell works at an after-school program at an elementary school. The table below shows how much money he earned every day last week.

Kell's Job	Monday	Wednesday	Friday
Time worked	1.5 hours	2.5 hours	4 hours
Money earned	$12.60	$21.00	$33.60

Who would make more money for working 10 hours?



- ○ Mariko
- ○ Kell

Problem 187

Explain or show your work.

Problem 188

On the axes, draw a graph that represents y, the amount of money Kell would make for working x hours, assuming he made the same hourly rate he was making last week.

Problem 189

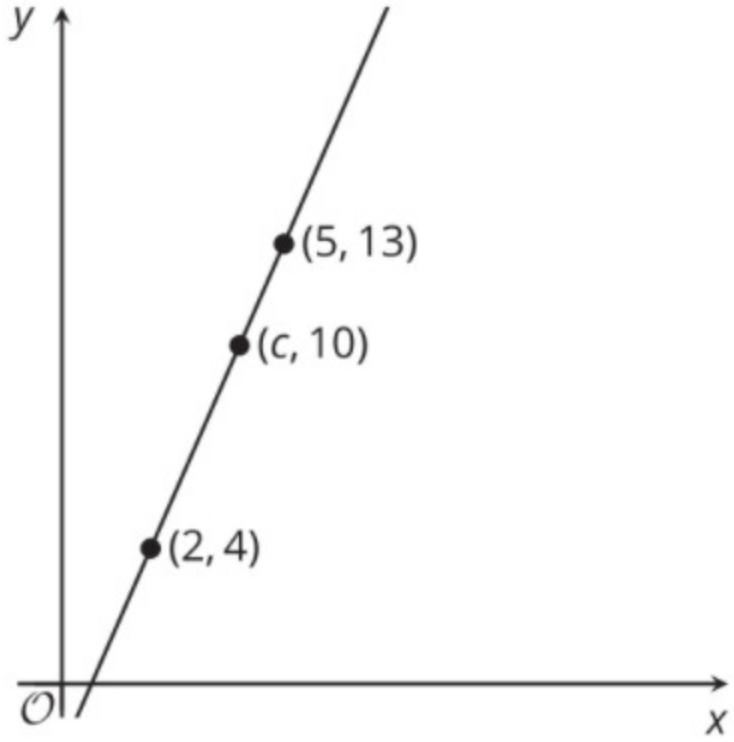
On the same axes, draw a graph that represents y, the amount of money Mariko would make for working x hours.

Problem 190

How can you see who makes more per hour just by looking at the graph? Explain.

Problem 191

All of the points in the picture are on the same line.



Find the slope of the line.

Problem 192

Explain or show your reasoning.

Submit your reasoning using the tools below.

Problem 193

Write an equation for the line.

Write the equation using the "WIRIS editor" button 

Problem 194

What is the value ofc?

Problem 195

Explain or show your reasoning.

Submit your reasoning using the tools below.

Problem 196

Is the point (0, -2) on this line?

- Yes
- No

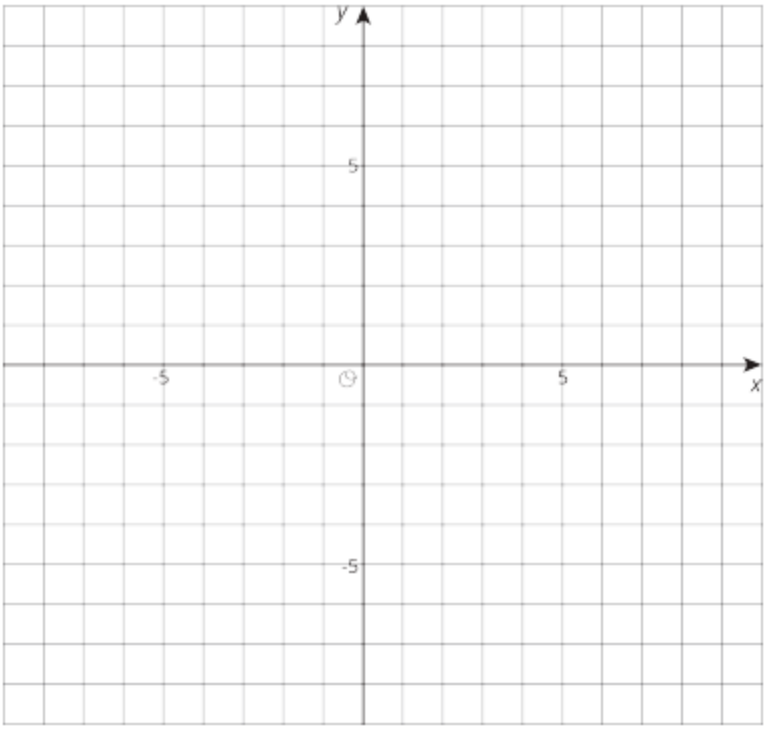
Problem 197

Explain how you know.

© 2019 Illustrative Mathematics (CC by 4.0) Full Attribution
© 2023 Open Up Resources. 3rd Edition. Full Attribution
© 2023 Open Up Resources 1st Edition Full Attribution

Problem 198

Graph the line going throughwith a slope of.



Submit your graph using the tools below.

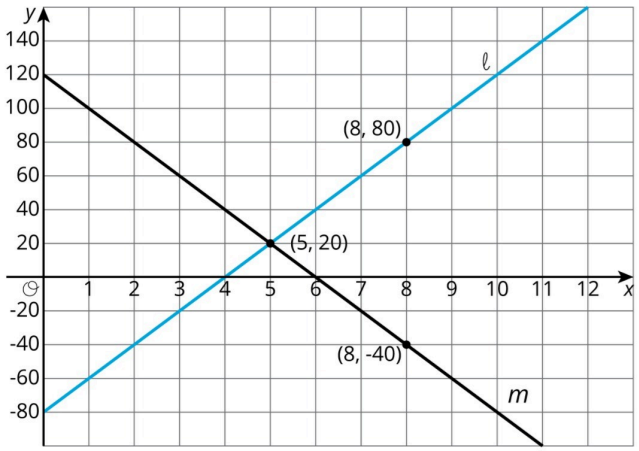
Problem 199

Write the equation of the line.

Use as your variable.

Problem 200

Consider the following graphs of linear equations. Which line has a positive slope?



Copied for free from openupresources.org

- Line l
- Line m

Problem 201

Which line has a negative slope?

- Line l
- Line m

Problem 202

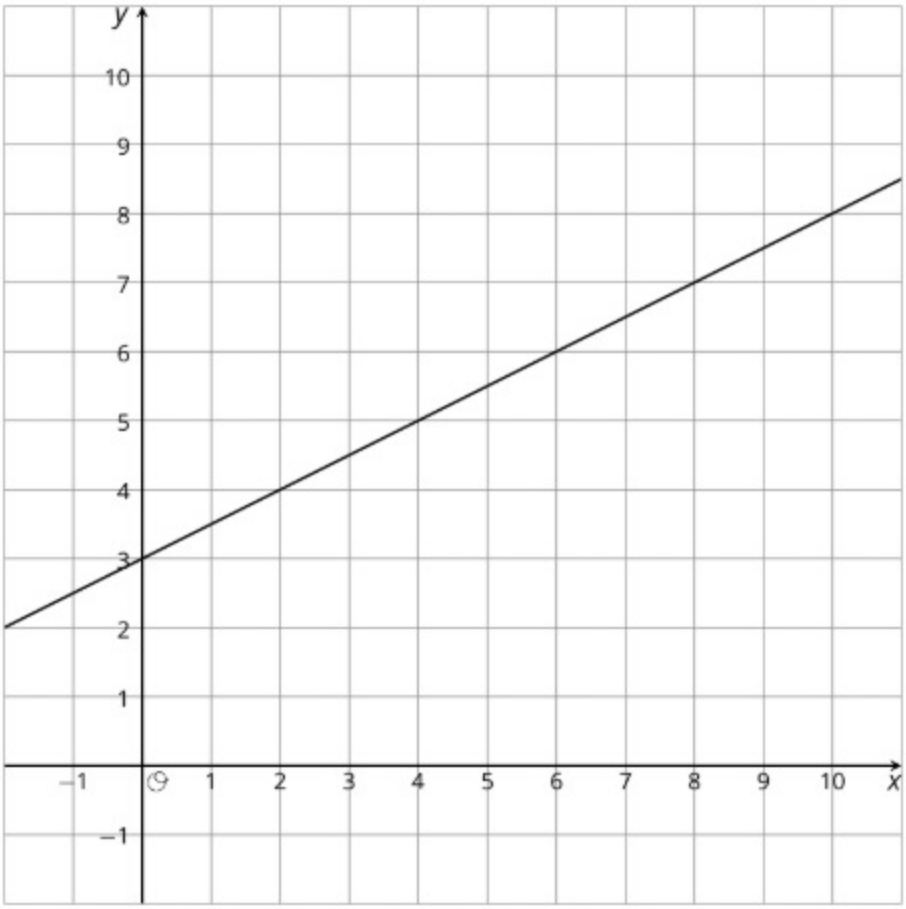
What is line l's exact slope?

Problem 203

What is line m's exact slope?

Problem 204

Is the point (20, 13) on this line?



- ○ Yes
- ○ No

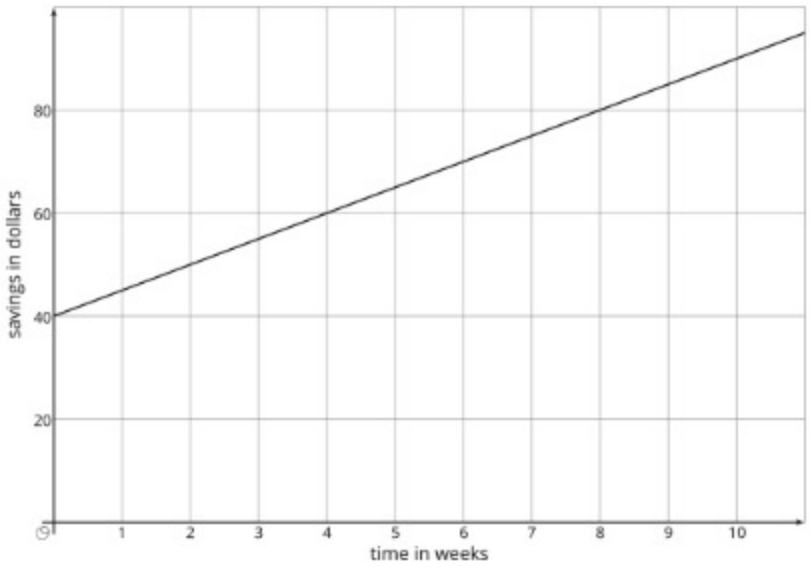
Problem 205

Explain your reasoning.

Problem 206

The graph shows the savings in Andre's bank account.

Explain what the slope represents in this situation.

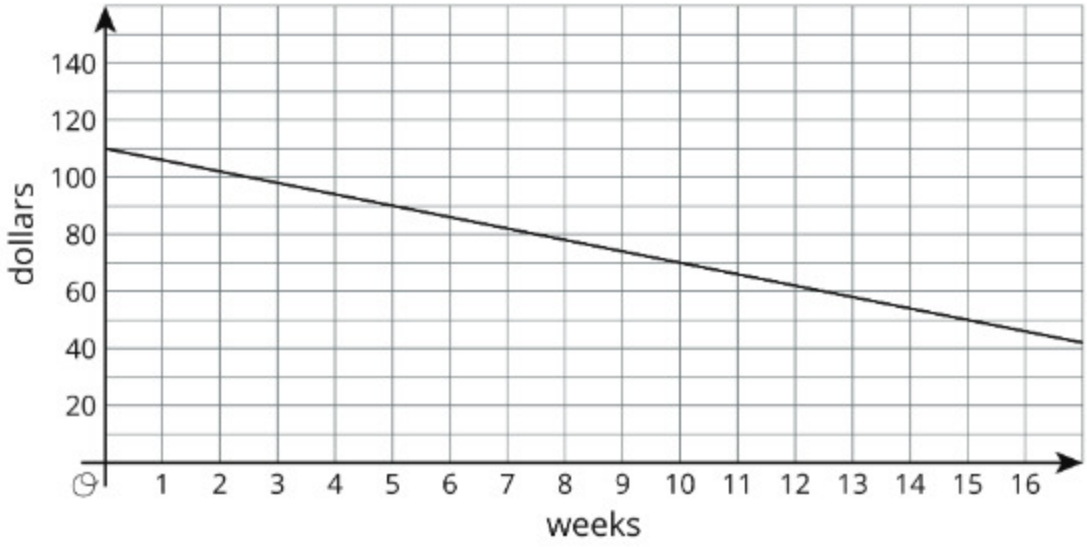


Problem 207

Explain what the vertical intercept represents in this situation.

Problem 208

Here is a graph showing the balance in someone's savings account since the beginning of the year.



Write an equation for the line shown on the graph.

Problem 209

What does the slope mean in this situation?

source: Louisiana Department of Education

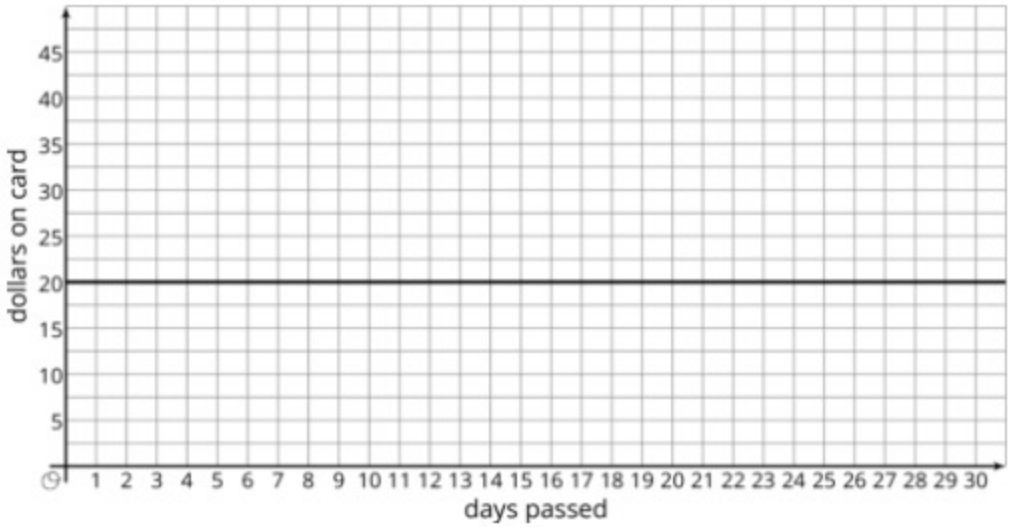
Problem 210

What does the vertical intercept mean in the situation?

source: Louisiana Department of Education

Problem 211

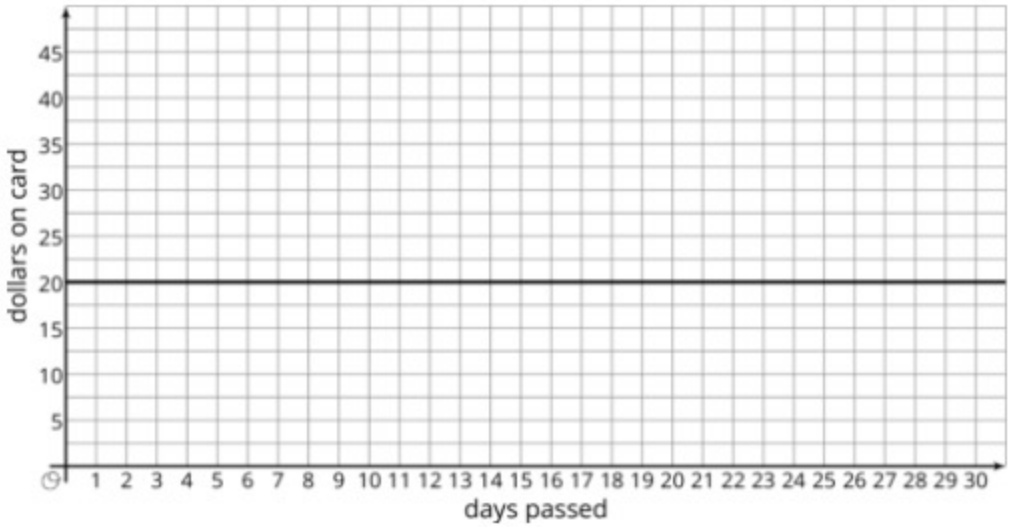
Here is a graph that shows the amount on Han's fare card for every day of last July.



Describe what happened with the amount on Han's fare card in July.

Problem 212

Here is a graph that shows the amount on Han's fare card for every day of last July.



Plot and label 3 different points on the line.

Submit your graph using the tools below.

Problem 213

Write an equation that represents the amount on the card in July, y, after x days.

Write the equation using the "WIRIS editor" button 

Problem 214

What value makes sense for the slope of the line that represents the amounts on Han's fare card in July?

Problem 215

The points with coordinates (4, 8), (2, 10), and (5, 7) all lie on the line.

Create a graph, plot the points, and sketch the line.

Submit your graph using the tools below.

Problem 216

What is the slope of the line you graphed?

Problem 217

What does this slope tell you about the relationship between lengths and widths of rectangles with perimeter 24?

Problem 218

Graph the equation you wrote relating the number of apples and the number of oranges.

Submit your graph using the tools below.

Problem 219

What is the slope of the graph? What is the meaning of the slope in terms of the context?

Problem 220

Suppose Noah has $20 to spend. Graph the equation describing this situation.

Submit your graph using the tools below.

Problem 221

What do you notice about the relationship between this graph and the earlier one?