

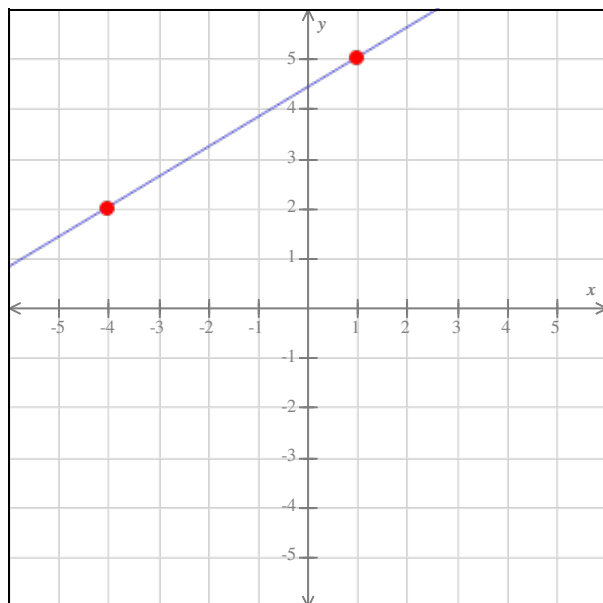
Instructor Name : **Mr. Trodick**

Instructor Note :

1. For each equation, determine whether it is linear.

Equation	Is the equation linear?	
	Yes	No
$y = x^3$	<input type="radio"/>	<input type="radio"/>
$y = x^2 - 8$	<input type="radio"/>	<input type="radio"/>
$y = -9x$	<input type="radio"/>	<input type="radio"/>
$y = -x + 3$	<input type="radio"/>	<input type="radio"/>

2. Find the slope of the line graphed below.



3. Find the slope of the line passing through the points $(-4, 6)$ and $(3, -8)$.

4. Fill in the blanks below.

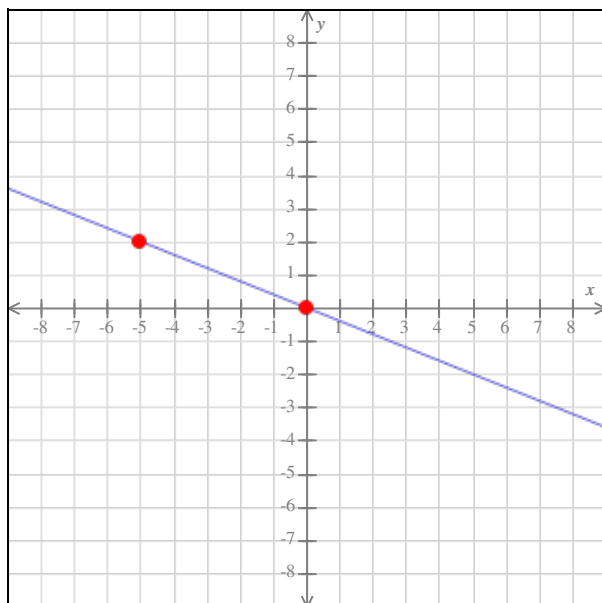
Find the slope of the line passing through the points $(-4, 7)$ and $(-4, -2)$.
slope: <input type="text"/>
Find the slope of the line passing through the points $(-7, -5)$ and $(2, -5)$.
slope: <input type="text"/>

5. Write an equation in slope-intercept form for the line with slope $\frac{2}{5}$ and y-intercept -5 .

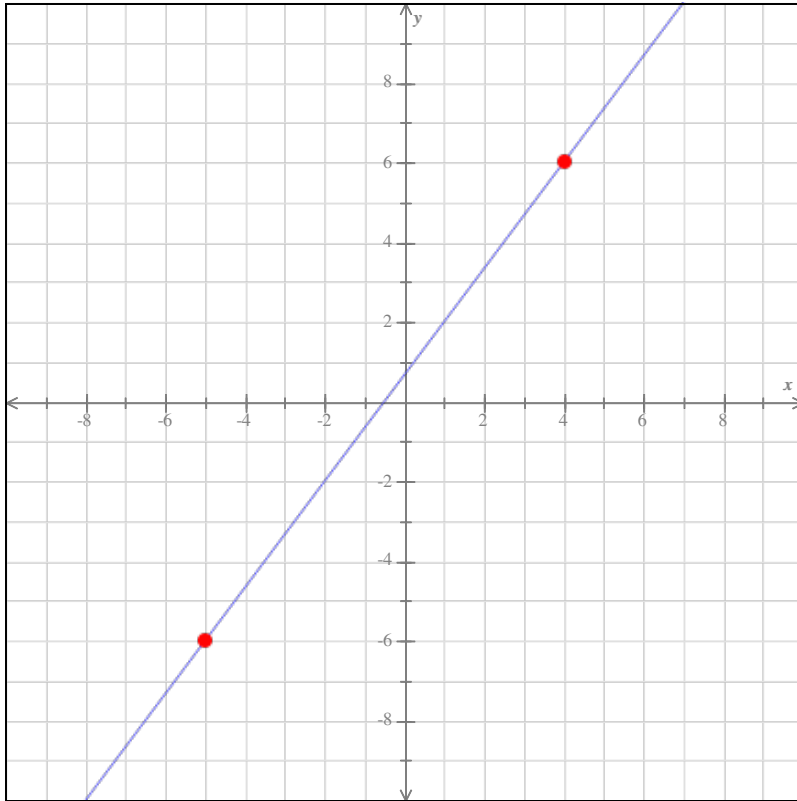
6. A line passes through the point $(-4, 9)$ and has a slope of $-\frac{5}{4}$.

Write an equation in slope-intercept form for this line.

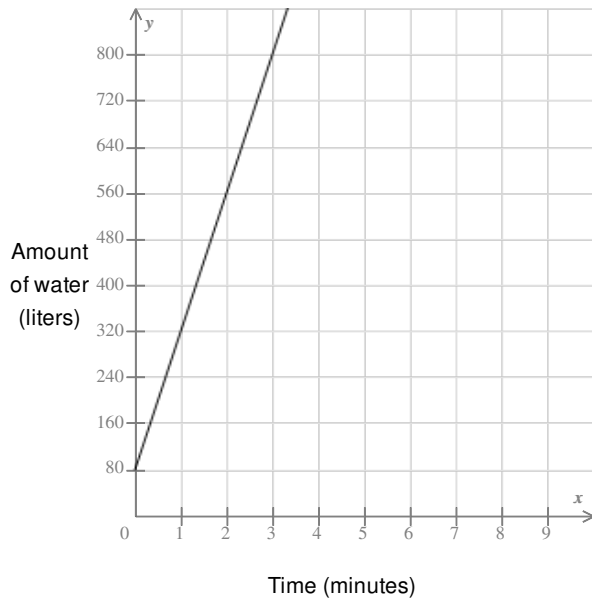
7. Write an equation of the line below.



8. Find an equation for the line below.



9. Carmen is filling a tank. The graph shows the amount of water (in liters) in the tank versus time (in minutes).



(a) What is the amount of water in the tank at 0 minutes?

_____ liters

(b) Choose the statement that best describes how the time and amount of water are related. Then fill in the blank.

- As time increases, the amount of water in the tank decreases.

At what rate is the amount of water decreasing?

_____ liters per minute

- As time increases, the amount of water in the tank increases.

At what rate is the amount of water increasing?

_____ liters per minute

10. Ivanna is a software saleswoman. Let y represent her total pay (in dollars). Let x represent the number of copies of *Math is Fun* she sells. Suppose that x and y are related by the equation $70x + 1600 = y$.

Answer the questions below.

Note that a change can be an increase or a decrease.

For an increase, use a positive number. For a decrease, use a negative number.

What is the change in Ivanna's total pay for each copy of *Math is Fun* she sells?

\$ _____

What is Ivanna's total pay if she doesn't sell any copies of *Math is Fun*?

\$ _____

11. Ashley deposits the same amount of money into a bank account every month. The table below shows the amount of money in the account after different amounts of time.

Time (months)	6	8	10	12
Money (dollars)	476	606	736	866

Answer the following questions.

(a) Choose the statement that best describes how the time and amount of money in the account are related. Then give the value requested.

- As time increases, the amount of money in the account decreases.

At what rate is the amount of money in the account decreasing?

_____ dollars per month

- As time increases, the amount of money in the account increases.

At what rate is the amount of money in the account increasing?

_____ dollars per month

(b) How much money was already in the account when Ashley started depositing money?

_____ dollars

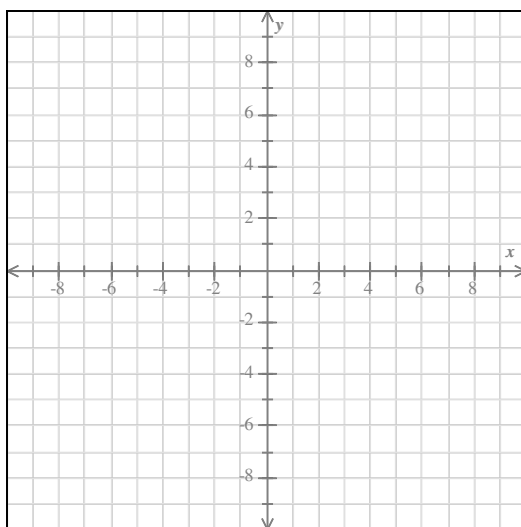
12. Fill in the table using this function rule.

$$y = -10x + 2$$

x	y
-1	
0	
1	
5	

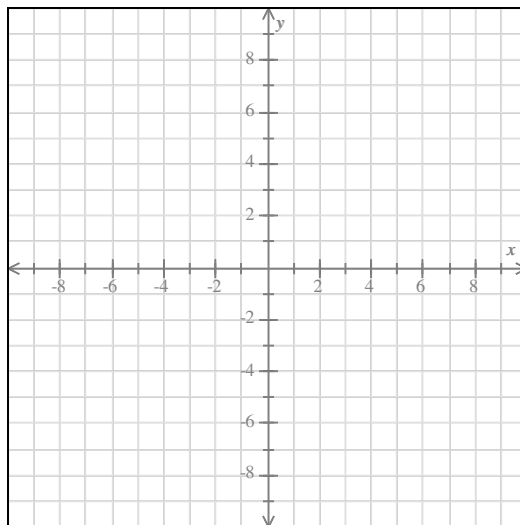
13. Graph the line.

$$y = 2x$$



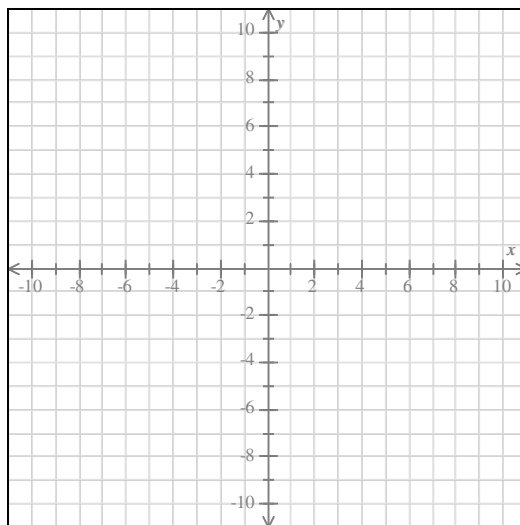
14. Graph the line.

$$y = 3x - 7$$



15. Graph the line.

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



16. The function f is defined by the following rule.

$$f(x) = 3x + 5$$

Complete the function table.

x	$f(x)$
-3	
-1	
1	
3	
4	

17. For each ordered pair, determine whether it is a solution to the system of equations.

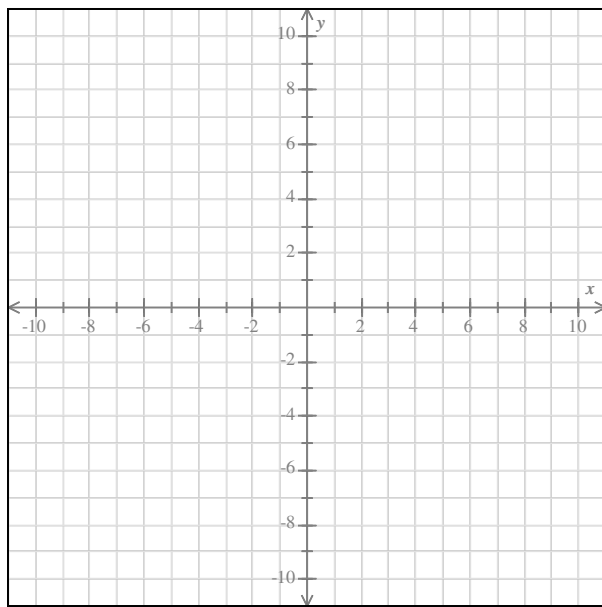
$$\begin{cases} -14x + 2y = -8 \\ y = 7x - 4 \end{cases}$$

(x, y)	Is it a solution?	
	Yes	No
$(0, 4)$	<input type="radio"/>	<input type="radio"/>
$(-1, -11)$	<input type="radio"/>	<input type="radio"/>
$(-2, 5)$	<input type="radio"/>	<input type="radio"/>
$(3, 17)$	<input type="radio"/>	<input type="radio"/>

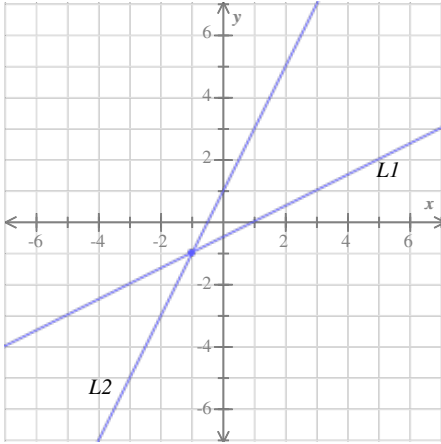
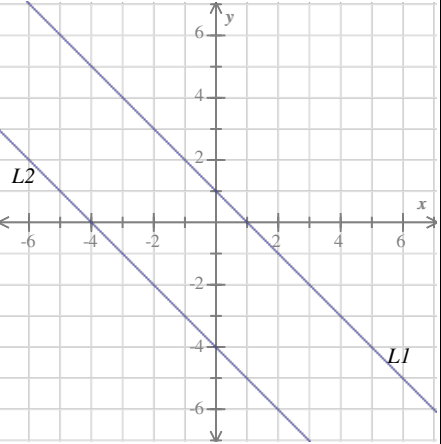
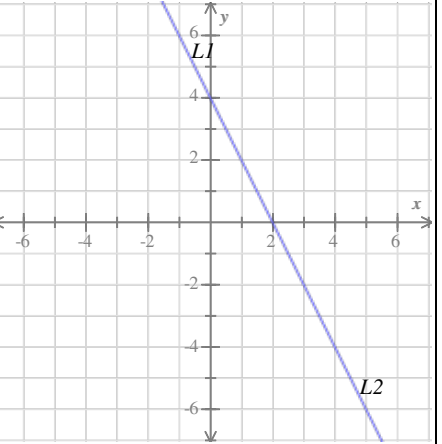
18. Graph the system below and write its solution.

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

Note that you can also answer "No solution" or "Infinitely many" solutions.



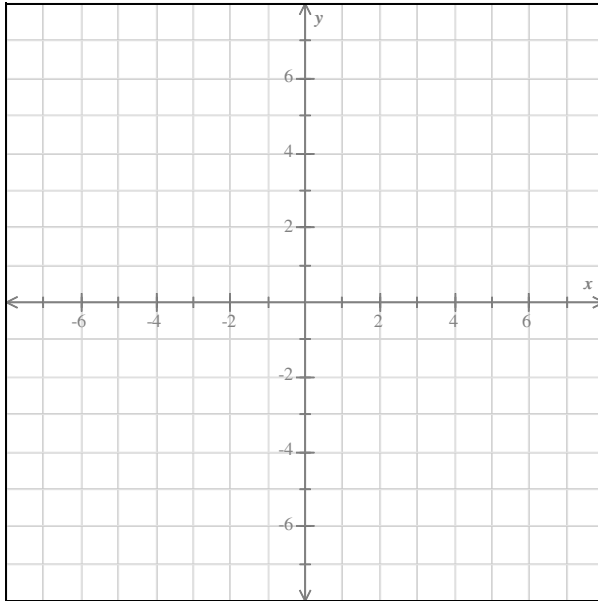
19. Three systems of linear equations are shown.
 For each system, choose the best description of its solution.
 If the system has exactly one solution, give its solution.

<p>Line 1 : $y = \frac{1}{2}x - \frac{1}{2}$</p> <p>Line 2 : $y = 2x + 1$</p> 	<p>Line 1 : $y = -x + 1$</p> <p>Line 2 : $y = -x - 4$</p> 	<p>Line 1 : $y = -2x + 4$</p> <p>Line 2 : $2x + y = 4$</p> 
<p><input type="radio"/> The system has exactly one solution. Solution: (__, __)</p> <p><input type="radio"/> The system has infinitely many solutions.</p> <p><input type="radio"/> The system has no solution.</p>	<p><input type="radio"/> The system has exactly one solution. Solution: (__, __)</p> <p><input type="radio"/> The system has infinitely many solutions.</p> <p><input type="radio"/> The system has no solution.</p>	<p><input type="radio"/> The system has exactly one solution. Solution: (__, __)</p> <p><input type="radio"/> The system has infinitely many solutions.</p> <p><input type="radio"/> The system has no solution.</p>

20. Here is a system of equations.

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

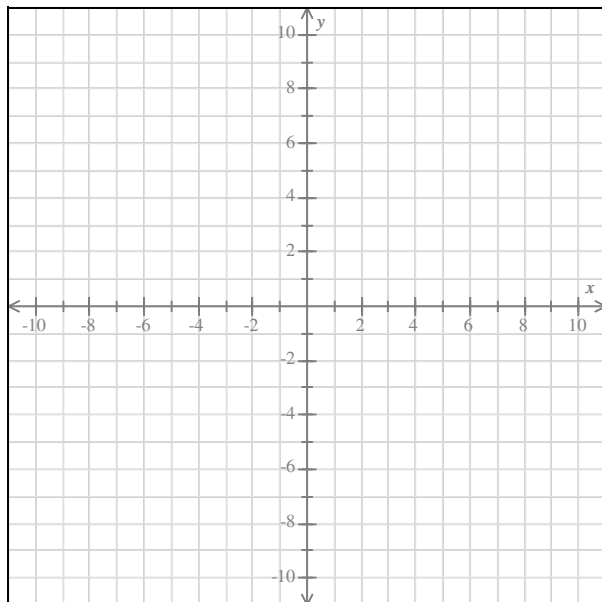
Graph the system. Then write its solution. Note that you can also answer "No solution" or "Infinitely many" solutions.



21. Graph the system below and write its solution.

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

Note that you can also answer "No solution" or "Infinitely many" solutions.



22. Solve for y .

$$\begin{aligned} x + y &= 7 \\ x &= 5 \end{aligned}$$

Simplify your answer as much as possible.

23. Solve the system of equations.

$$\begin{aligned} y &= 6x - 8 \\ y &= 4x + 6 \end{aligned}$$

24. Use substitution to solve the system.

$$2x + 3y = 21$$

$$y = 3x - 4$$

$$x = \square$$

$$y = \square$$

25. Two systems of equations are given below.

For each system, choose the best description of its solution.

If applicable, give the solution.

$y = 8x$ $y = 2x$	<p><input type="radio"/> The system has no solution.</p> <p><input type="radio"/> The system has a unique solution: $(x, y) = (\underline{\quad}, \underline{\quad})$</p> <p><input type="radio"/> The system has infinitely many solutions.</p>
$-x - 3y = 1$ $x + 3y = -1$	<p><input type="radio"/> The system has no solution.</p> <p><input type="radio"/> The system has a unique solution: $(x, y) = (\underline{\quad}, \underline{\quad})$</p> <p><input type="radio"/> The system has infinitely many solutions.</p>

26. One month Alan rented 12 movies and 2 video games for a total of \$29. The next month he rented 3 movies and 5 video games for a total of \$32. Find the rental cost for each movie and each video game.

27. Maria will rent a car for the weekend. She can choose one of two plans. The first plan has an initial fee of \$53 and costs an additional \$0.08 per mile driven. The second plan has an initial fee of \$48 and costs an additional \$0.10 per mile driven.

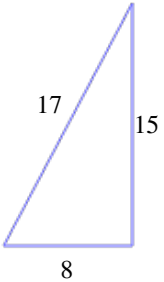
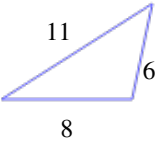
For what amount of driving do the two plans cost the same?
_____ miles
What is the cost when the two plans cost the same?
\$ _____

28. Two mechanics worked on a car. The first mechanic worked for 20 hours, and the second mechanic worked for 5 hours. Together they charged a total of \$2775 . What was the rate charged per hour by each mechanic if the sum of the two rates was \$210 per hour?

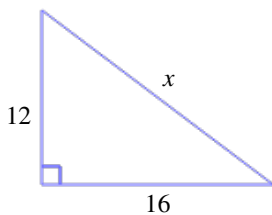
First mechanic:
Second mechanic:

29. Below are two triangles with their side lengths shown.

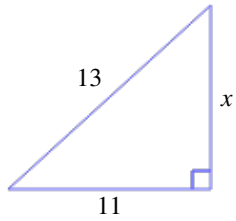
Answer the questions about each triangle.

 <p>Compute the sum of the squares of the shorter lengths.</p> $8^2 + 15^2 = \underline{\hspace{2cm}}$ <p>Compute the square of the longest length.</p> $17^2 = \underline{\hspace{2cm}}$ <p>What kind of triangle is it?</p> <p><input type="radio"/> Acute triangle</p> <p><input type="radio"/> Right triangle</p> <p><input type="radio"/> Obtuse triangle</p>	 <p>Compute the sum of the squares of the shorter lengths.</p> $6^2 + 8^2 = \underline{\hspace{2cm}}$ <p>Compute the square of the longest length.</p> $11^2 = \underline{\hspace{2cm}}$ <p>What kind of triangle is it?</p> <p><input type="radio"/> Acute triangle</p> <p><input type="radio"/> Right triangle</p> <p><input type="radio"/> Obtuse triangle</p>
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30. For the following right triangle, find the side length x .



31. For the following right triangle, find the side length x . Round your answer to the nearest hundredth.

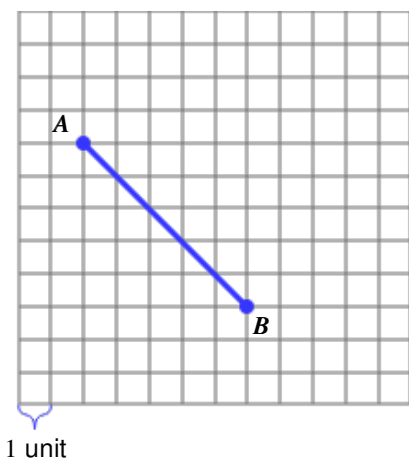


32. Determine whether a triangle with the given side lengths is a right triangle.

Side lengths	Right triangle	Not a right triangle	Not enough information
12, 15, 20	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6, 8, 10	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16, 30, 34	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10, 12, 16	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

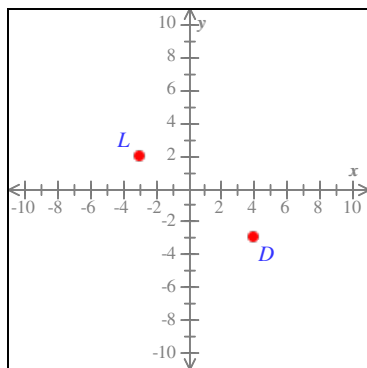
33. Find the distance between the points A and B given below.
(That is, find the length of the segment connecting A and B .)

Round your answer to the nearest hundredth.



34. Calculate the distance between the points $L = (-3, 2)$ and $D = (4, -3)$ in the coordinate plane.

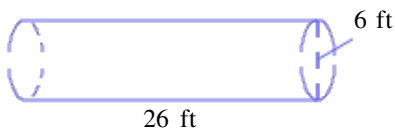
Give an exact answer (not a decimal approximation).



35. The diameter of a cylindrical construction pipe is 6 ft. If the pipe is 26 ft long, what is its volume?

Use the value 3.14 for π , and round your answer to the nearest whole number.

Be sure to include the correct unit in your answer.



36. A company rents water tanks shaped like cylinders. Each tank has a diameter of 8 feet and a height of 2 feet. The cost is \$5 per cubic foot. How much does it cost to rent one water tank?

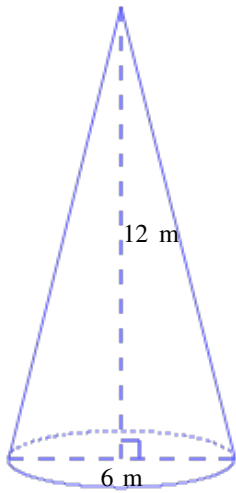
Use 3.14 for π , and do not round your answer.

37. An oil tank has to be drained for maintenance. The tank is shaped like a cylinder that is 4.5 ft long with a diameter of 2.4 ft. Suppose oil is drained at a rate of 1.7 ft^3 per minute. If the tank starts completely full, how many minutes will it take to empty the tank?

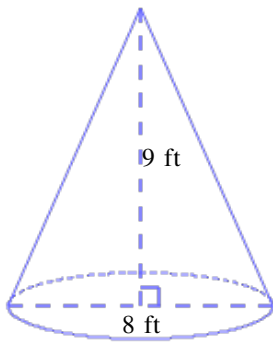
Use the value 3.14 for π , and round your answer to the nearest minute. Do not round any intermediate computations.

38. Find the volume of a cone with a base diameter of 6 m and a height of 12 m.

Use the value 3.14 for π , and do not do any rounding.
Be sure to include the correct unit in your answer.



39. Find the volume of a cone with a base diameter of 8 ft and a height of 9 ft. Write the exact volume in terms of π , and be sure to include the correct unit in your answer.

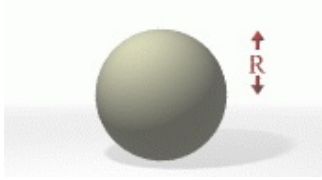


40. A company uses paper cups shaped like cones for its water cooler. Each cup has a height of 12 cm, and the base has a diameter of 11 cm. The cooler has $18,997 \text{ cm}^3$ of water in it. How many cups can be filled from the cooler?

Use 3.14 for π , and do not round your answer.

41. The radius, R , of a sphere is 8.8 mm. Calculate the sphere's volume, V .

Use the value 3.14 for π , and round your answer to the nearest tenth. (Do not round any intermediate computations.)



42. Juan's company makes solid balls out of scrap metal for various industrial uses. For one project, he must make steel balls that have a radius of 3 in. If steel costs \$0.25 per in^3 , how much will the steel cost to make one ball?

Use 3.14 for π , and do not round your answer.

Semester 2 Exam (Practice) #1 Answers for class (T) PERIOD 3 - MATH 8

1.

Equation	Is the equation linear?	
	Yes	No
$y = x^3$	<input type="radio"/>	<input checked="" type="radio"/>
$y = x^2 - 8$	<input type="radio"/>	<input checked="" type="radio"/>
$y = -9x$	<input checked="" type="radio"/>	<input type="radio"/>
$y = -x + 3$	<input checked="" type="radio"/>	<input type="radio"/>

2. $\frac{3}{5}$

3. -2

4.

Find the slope of the line passing through the points $(-4, 7)$ and $(-4, -2)$.
slope: Undefined
Find the slope of the line passing through the points $(-7, -5)$ and $(2, -5)$.
slope: 0

5. $y = \frac{2}{5}x - 5$

6. $y = -\frac{5}{4}x + 4$

7. $y = -\frac{2}{5}x$

8. $y = \frac{4}{3}x + \frac{2}{3}$

9.

(a) What is the amount of water in the tank at 0 minutes?

80 liters

(b) Choose the statement that best describes how the time and amount of water are related. Then fill in the blank.

- As time increases, the amount of water in the tank decreases.

At what rate is the amount of water decreasing?

_____ liters per minute

- As time increases, the amount of water in the tank increases.

At what rate is the amount of water increasing?

240 liters per minute

10. What is the change in Ivanna's total pay for each copy of *Math is Fun* she sells?

\$70

What is Ivanna's total pay if she doesn't sell any copies of *Math is Fun*?

\$1600

11.

(a) Choose the statement that best describes how the time and amount of money in the account are related. Then give the value requested.

- As time increases, the amount of money in the account decreases.

At what rate is the amount of money in the account decreasing?

_____ dollars per month

- As time increases, the amount of money in the account increases.

At what rate is the amount of money in the account increasing?

65 dollars per month

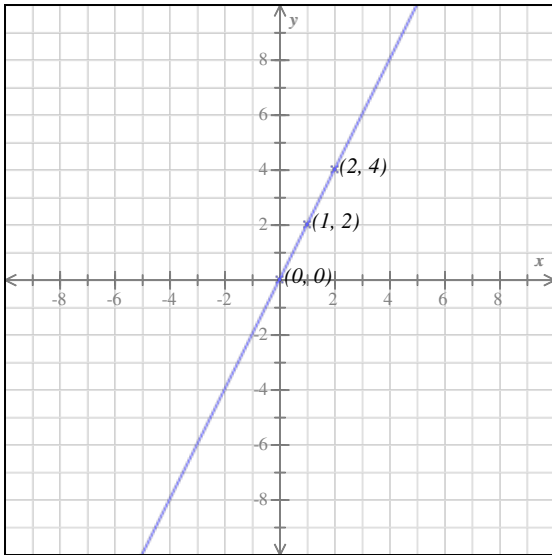
(b) How much money was already in the account when Ashley started depositing money?

86 dollars

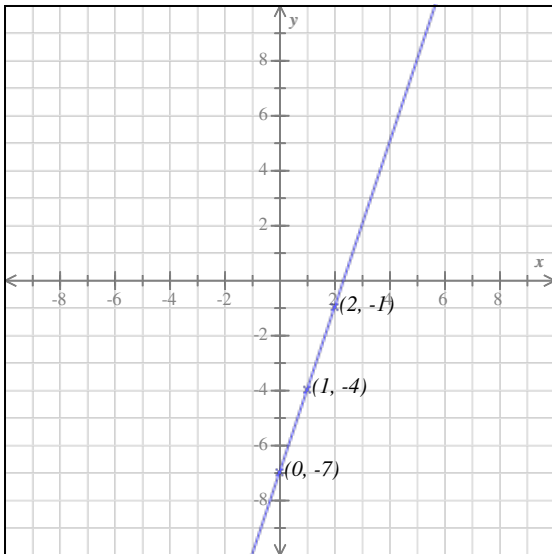
12.

x	y
-1	12
0	2
1	-8
5	-48

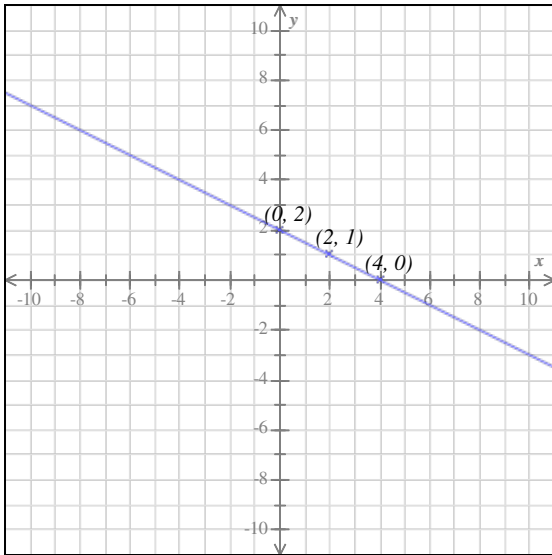
13.



14.



15.



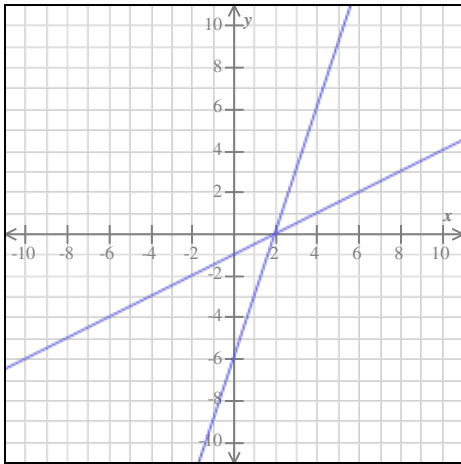
16.

x	$f(x)$
-3	-4
-1	2
1	8
3	14
4	17

17.

(x, y)	Is it a solution?	
	Yes	No
$(0, 4)$	<input type="radio"/>	<input checked="" type="radio"/>
$(-1, -11)$	<input checked="" type="radio"/>	<input type="radio"/>
$(-2, 5)$	<input type="radio"/>	<input checked="" type="radio"/>
$(3, 17)$	<input checked="" type="radio"/>	<input type="radio"/>

18.

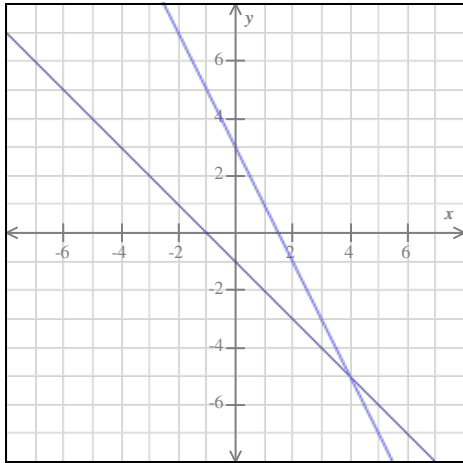


Solution: (2, 0)

19.

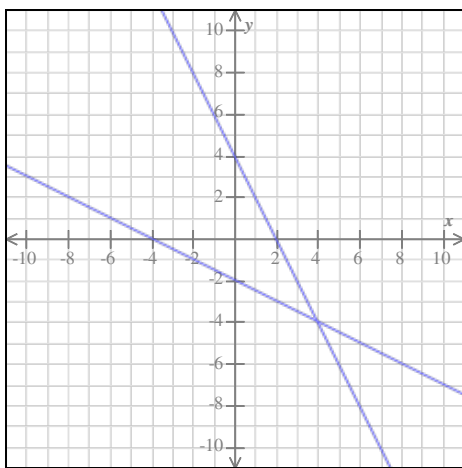
<p>Line 1: $y = \frac{1}{2}x - \frac{1}{2}$</p> <p>Line 2: $y = 2x + 1$</p>	<p>Line 1: $y = -x + 1$</p> <p>Line 2: $y = -x - 4$</p>	<p>Line 1: $y = -2x + 4$</p> <p>Line 2: $2x + y = 4$</p>
<p><input checked="" type="radio"/> The system has exactly one solution. Solution: $(-1, -1)$</p> <p><input type="radio"/> The system has infinitely many solutions.</p> <p><input type="radio"/> The system has no solution.</p>	<p><input type="radio"/> The system has exactly one solution. Solution: (\quad, \quad)</p> <p><input type="radio"/> The system has infinitely many solutions.</p> <p><input checked="" type="radio"/> The system has no solution.</p>	<p><input type="radio"/> The system has exactly one solution. Solution: (\quad, \quad)</p> <p><input checked="" type="radio"/> The system has infinitely many solutions.</p> <p><input type="radio"/> The system has no solution.</p>

20.



Solution: $(4, -5)$

21.



Solution: $(4, -4)$

22. $y = 2$

23. $x = 7$

$y = 34$

24.

$$x = 3$$

$$y = 5$$

25.

$y = 8x$ $y = 2x$	<p><input type="radio"/> The system has no solution.</p> <p><input checked="" type="radio"/> The system has a unique solution:</p> $(x, y) = (0, 0)$ <p><input type="radio"/> The system has infinitely many solutions.</p>
$-x - 3y = 1$ $x + 3y = -1$	<p><input type="radio"/> The system has no solution.</p> <p><input type="radio"/> The system has a unique solution:</p> $(x, y) = (\square, \square)$ <p><input checked="" type="radio"/> The system has infinitely many solutions.</p>

26. Rental cost for each movie: \$1.50

Rental cost for each video game: \$5.50

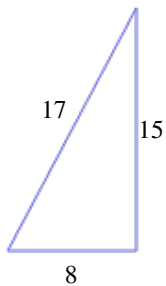
27.

For what amount of driving do the two plans cost the same?
250 miles
What is the cost when the two plans cost the same?
\$73

28. First mechanic: \$115 per hour

Second mechanic: \$95 per hour

29.



Compute the sum of the squares of the shorter lengths.

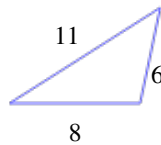
$$8^2 + 15^2 = 289$$

Compute the square of the longest length.

$$17^2 = 289$$

What kind of triangle is it?

- Acute triangle
- Right triangle
- Obtuse triangle



Compute the sum of the squares of the shorter lengths.

$$6^2 + 8^2 = 100$$

Compute the square of the longest length.

$$11^2 = 121$$

What kind of triangle is it?

- Acute triangle
- Right triangle
- Obtuse triangle

30. 20

31. 6.93

32.

Side lengths	Right triangle	Not a right triangle	Not enough information
12, 15, 20	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
6, 8, 10	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
16, 30, 34	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
10, 12, 16	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

33. 7.07 units

34. Distance: $\sqrt{74}$

35. 735 ft³

36. \$502.40

37. 12 minute(s)

38. 113.04 m³

39. 48π ft³

40. 50 cups

41. $V = 2853.1$ mm³

42. \$28.26