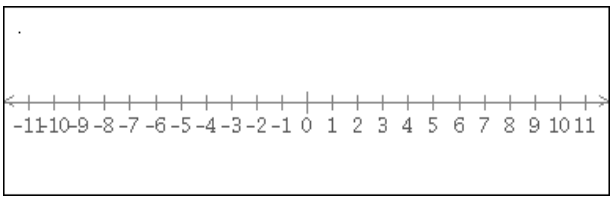
ALEKS® 101 Mock Final #3

Beginning and Intermediate Algebra Combined / MATH 101 - Fall 2014 – 504 (Prof. Miller)

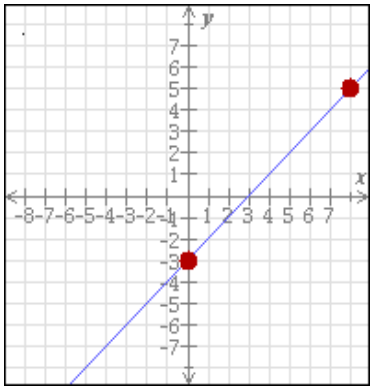
Student Name/ID:

1. Graph the inequality below on the number line.

$b < -8$



2. Write an equation of the line below.



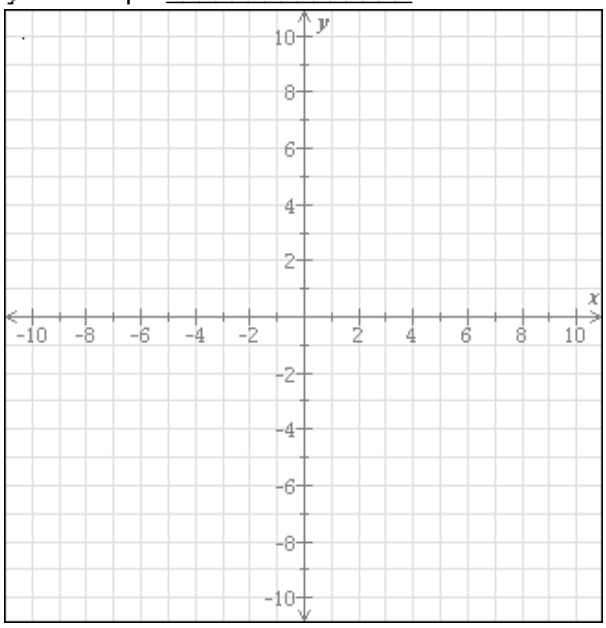
3. The equation of a line is given below.

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

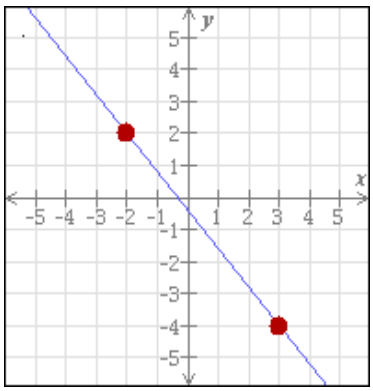
Find the slope and the y-intercept.
Then use them to graph the line.

slope: _____

y-intercept: _____



4. Find the slope of the line graphed below.



5. Find the x-intercept and y-intercept of the line.

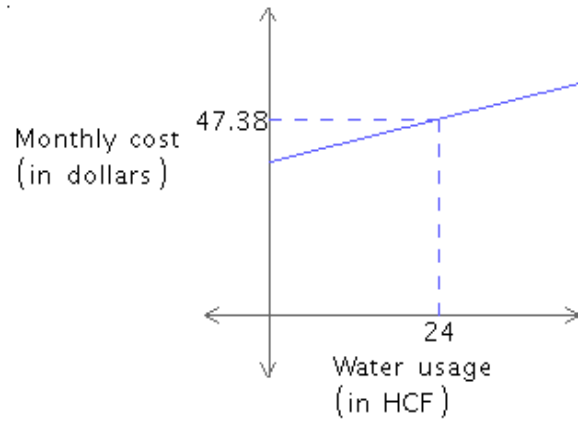
$$3x-6y=-10$$

x-intercept: _____

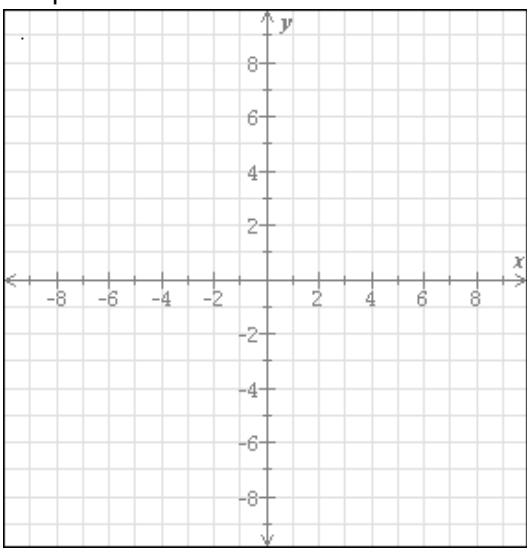
y-intercept: _____

6. Suppose that a household's monthly water bill (in dollars) is a linear function of the amount of water the household uses (in hundreds of cubic feet, HCF). When graphed, the function gives a line with a slope of 1.65 See the figure below.

If the monthly cost for 24 HCF is $\$47.38$ what is the monthly cost for 27 HCF?



7. Graph the line $x = -1$



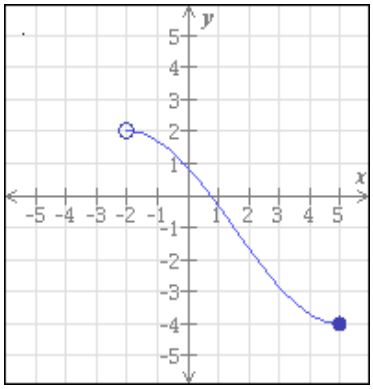
8. Use substitution to solve the system.

$$y = 3x - 5$$
$$2x - 5y = 12$$

$x =$ ☐

$y =$ ☐

9. The entire graph of the function h is shown in the figure below.
Write the domain and range of h using interval notation.



10. The sets H and D are given below.

$$H = \{ -1, 0, 4, 5, 8 \}$$
$$D = \{ -2, -1, 4, 8 \}$$

Find the union of H and D
Find the intersection of H and D
Write your answers using set notation.

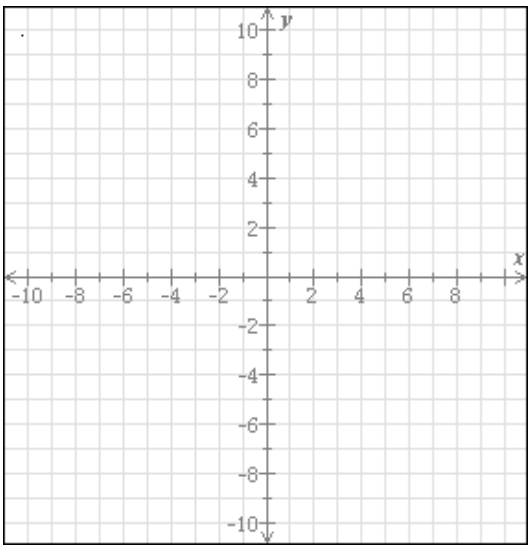
11. Amanda purchased a prepaid phone card for $\$15$ Long distance calls cost 6 cents a minute using this card. Amanda used her card only once to make a long distance call. If the remaining credit on her card is $\$13.92$ how many minutes did her call last?

12. Solve the following proportion for v

$$\frac{11}{3} = \frac{v}{10}$$

Round your answer to the nearest tenth.

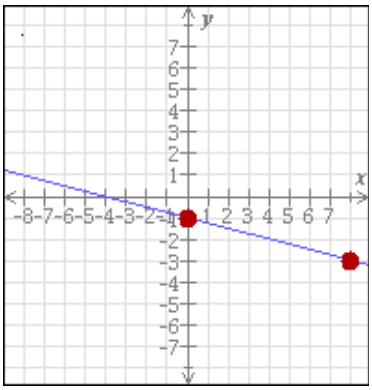
13. Graph the line whose x-intercept is 4 and whose y-intercept is -3



14. Round 4.067 to the nearest hundredth.

15. Jose bought a desktop computer and a laptop computer. Before finance charges, the laptop cost $\$450$ less than the desktop. He paid for the computers using two different financing plans. For the desktop the interest rate was 6.5% per year, and for the laptop it was 9% per year. The total finance charges for one year were $\$409$ How much did each computer cost before finance charges?

16. Write an equation of the line below.



17. A wire is first bent into the shape of a rectangle with width 5 cm and length 10 cm Then the wire is unbent and reshaped into a triangle. If each side of the triangle has equal length, what is this length?

18. Solve for u

$$171 = 92 - u$$

19. Simplify the following expression.

$$5x^2 - 7 - 10x^2 + 8 + 4x$$

20. Consider the line $-5x - 7y = 4$

What is the slope of a line perpendicular to this line?

What is the slope of a line parallel to this line?

21. Find the value of $7w - 5$ given that $-3w + 7 = 4$

Simplify your answer as much as possible.

22. Solve the following system of equations.

$$-3x - 4y = 11$$
$$-5x - 3y = 0$$

23. A movie club surveyed 250 high school students. The students were asked how often they go to the movies and whether they prefer action movies or dramas. Their responses are summarized in the following table.

	Twice a month or less	**Three times a month or more**
Action	78	32
Drama	102	38

(a) What percentage of the students go to the movies twice a month or less?

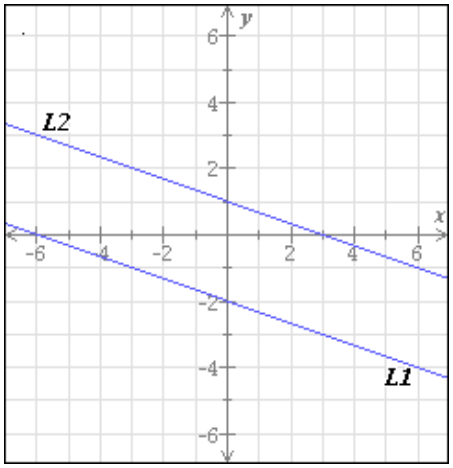
(b) What percentage of the students prefer dramas ?

24.

For each system of linear equations shown below, classify the system as "consistent dependent," "consistent independent," or "inconsistent." Then, answer the question about its solutions.

L1: $y=\frac{-1}{3}x-2$

L2: $y=\frac{-1}{3}x+1$



This system of equations is:

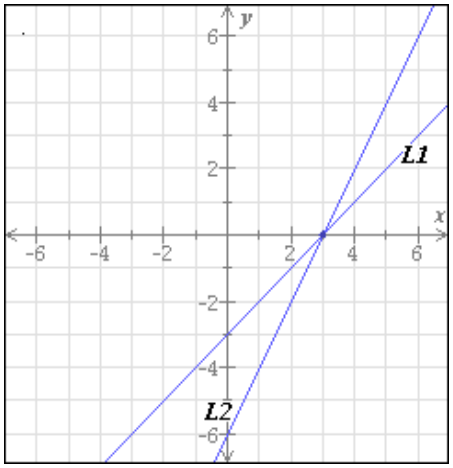
- consistent dependent - consistent independent - inconsistent

This means the system has:

- a unique solution:
Solution: (,)
- no solution
- infinitely many solutions

L1: $y=x-3$

L2: $y=2x-6$



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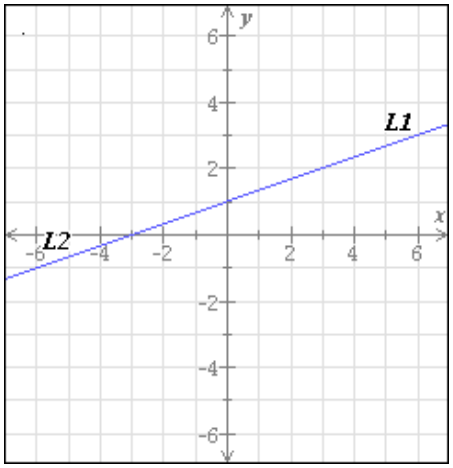
L1: $y=\frac{1}{3}x+1$

L2: $-x+3y=3$



This system of equations is:

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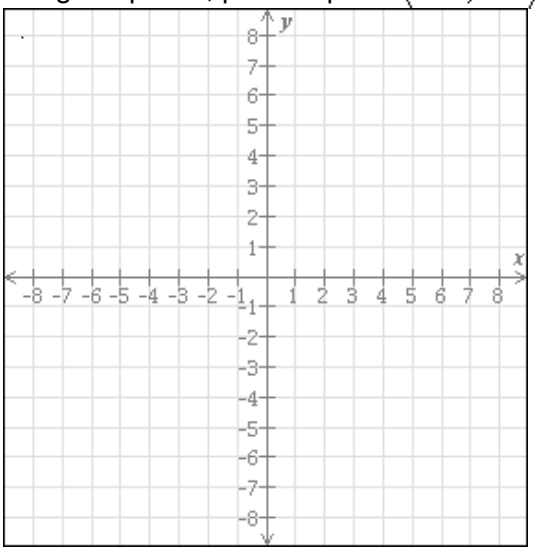
25. Use the distributive property to remove the parentheses.

$$-4\left(4y-2u-3\right)$$

26. Find an ordered pair (x, y) that is a solution to the equation.

$$5x - y = 5$$

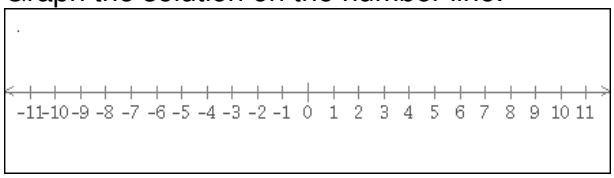
27. Using the pencil, plot the point $(-5, -3)$



28. Solve the compound inequality.

$$7 < 2x + 5 \leq 17$$

Graph the solution on the number line.



29. Add.

$$\frac{3}{4}+\frac{3}{10}$$

Write your answer as a fraction in simplest form.

30. Lashonda is going to rent a truck for one day. There are two companies she can choose from, and they have the following prices.

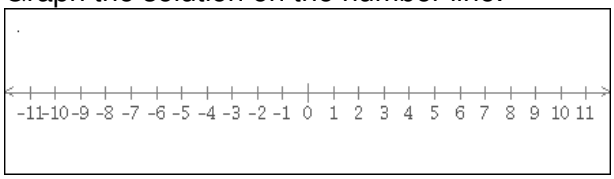
Company A charges $\$79$ and allows unlimited mileage.
Company B has an initial fee of $\$65$ and charges an additional $\$0.70$ for every mile driven.

For what mileages will Company A charge less than Company B?
Use m for the number of miles driven, and solve your inequality for m

31. Solve the compound inequality.

$$-5 < 2x-3 \leq 3$$

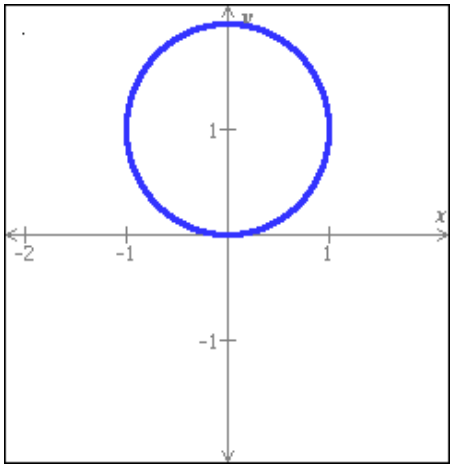
Graph the solution on the number line.



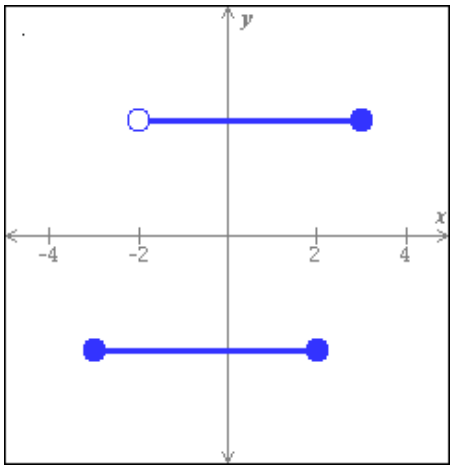
32. A Web music store offers two versions of a popular song. The size of the standard version is 2.2 megabytes (MB). The size of the high-quality version is 4.8 MB. Yesterday, there were 1050 downloads of the song, for a total download size of 4000 MB. How many downloads of the high-quality version were there?

33. Find the slope of the line passing through the points $(-3,3)$ and $(5,9)$

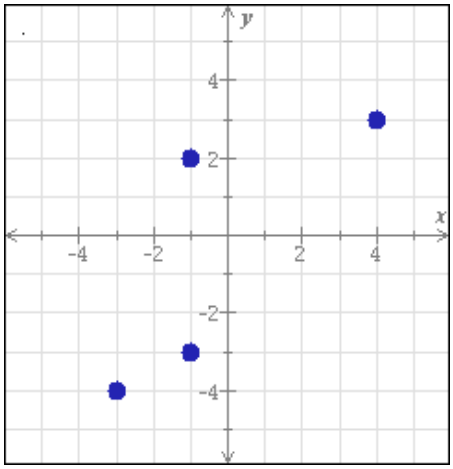
34. For each graph below, state whether it represents a function.



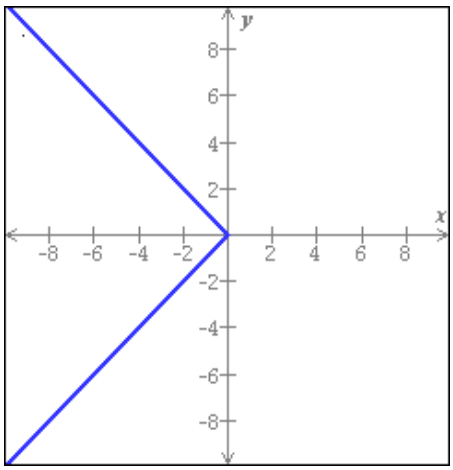
Function?:
Yes No



Function?:
Yes No



Function?:
Yes No



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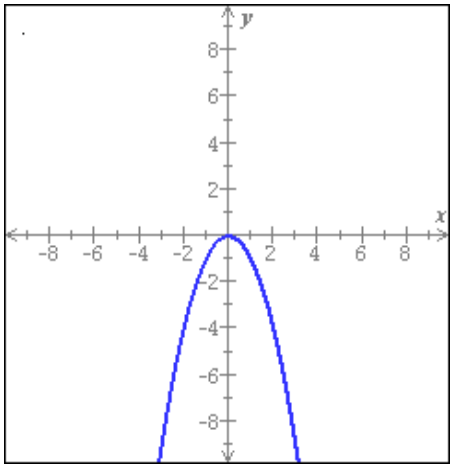

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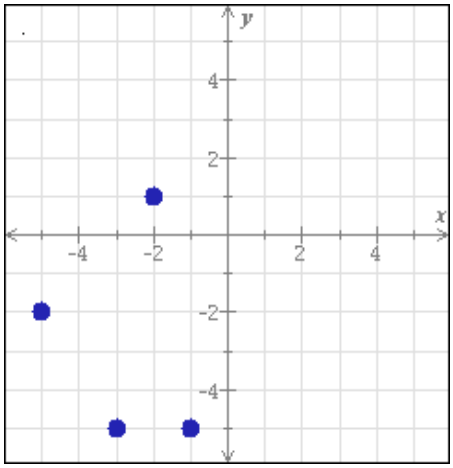
Yes No



Function?:
Yes No

35. Use substitution to solve the system.

$$y = 3x - 9$$
$$2x + 5y = 23$$

$x =$ ☐
$y =$ ☐

36. Each of 6 students reported the number of movies they saw in the past year. Here is what they reported.

$$13, 4, 15, 8, 14, 11$$

Find the mean number of movies that the students saw.
If necessary, round your answer to the nearest tenth.

37. Use the distributive property to remove the parentheses.

$$-4(6u - 4w - 5)$$

38. Find the value of $8y + 5$ given that $-3y - 7 = 8$

Simplify your answer as much as possible.

39. Solve for v

$$-2v = 14$$

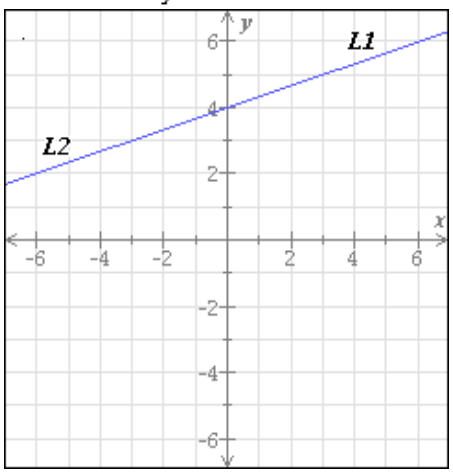
Simplify your answer as much as possible.

40.

For each system of linear equations shown below, classify the system as "consistent dependent," "consistent independent," or "inconsistent." Then, answer the question about its solutions.

L1: $y=\frac{1}{3}x+4$

L2: $-x+3y=12$



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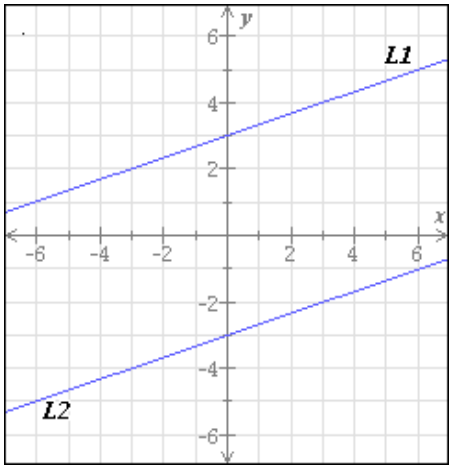

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L1: $y = x + 3$
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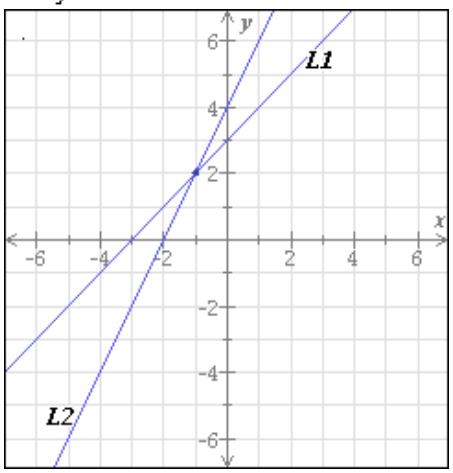

This system of equations is:

- consistent dependent - consistent independent - inconsistent

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Solution: (,)
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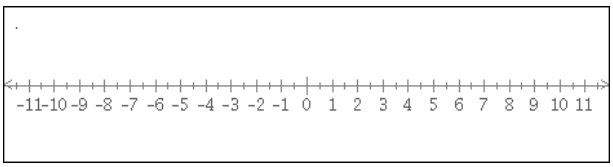
- infinitely many solutions

41. Graph the solution to the inequality on the number line.

$|u - 2| \geq 7$



42. Solve for x

$$|x| - 16 = -8$$

43. Solve the following proportion for x

$$\frac{5}{17} = \frac{x}{7}$$

Round your answer to the nearest tenth.

44. What number is equal to $\sqrt{9}$?

45. A theater group made appearances in two cities. The hotel charge before tax in the second city was $\$1500$ higher than in the first. The tax in the first city was 3% and the tax in the second city was 9.5% The total hotel tax paid for the two cities was $\$517.50$ How much was the hotel charge in each city before tax?

46. Solve for y

$$66 = 3y$$

Simplify your answer as much as possible.

47. What is 20% of 76?

48. Evaluate.

$$6+3\cdot 4^2$$

49. Evaluate.

$$(-8)^2 = \square$$
$$(-4)^3 = \square$$

50. Solve for w

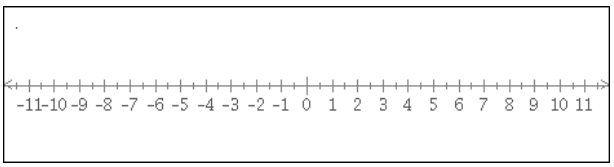
$$|w|+7=15$$

51. Find an ordered pair (x,y) that is a solution to the equation.

$$4x+y=3$$

52. Graph the solution to the inequality on the number line.

$$|u+6| \leq 3$$



53. Solve the inequality for v

$$2-\frac{9}{2}v > \frac{7}{2}-\frac{5}{6}v$$

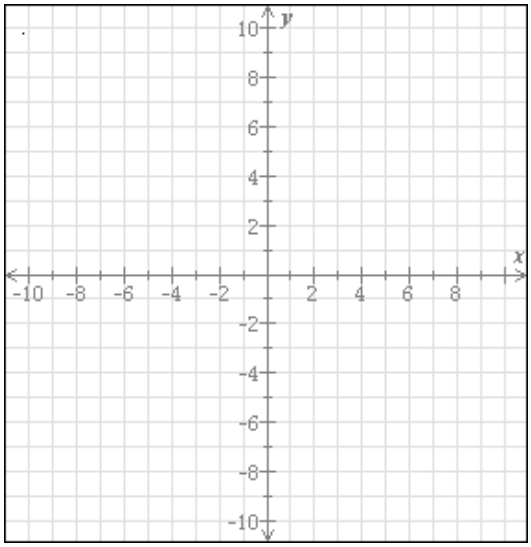
Simplify your answer as much as possible.

54. Solve for w

$$|w|+12=17$$

55. Graph the line.

$$y=-\frac{1}{4}x+6$$

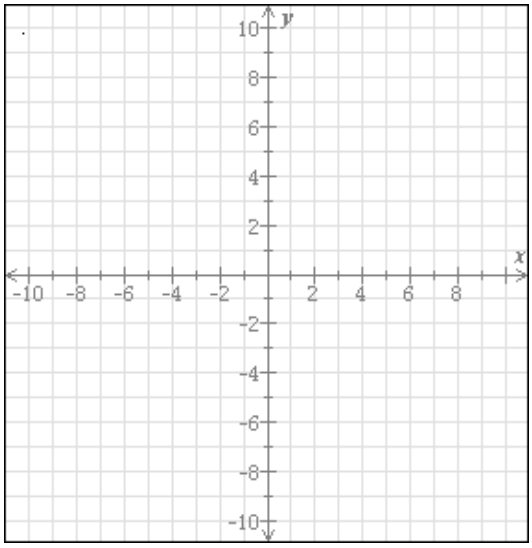


56. Evaluate the following.

$-25 \div 5 = \square$

$-7 \times (-4) = \square$

57. Graph the line with slope -1 passing through the point $(3, -2)$

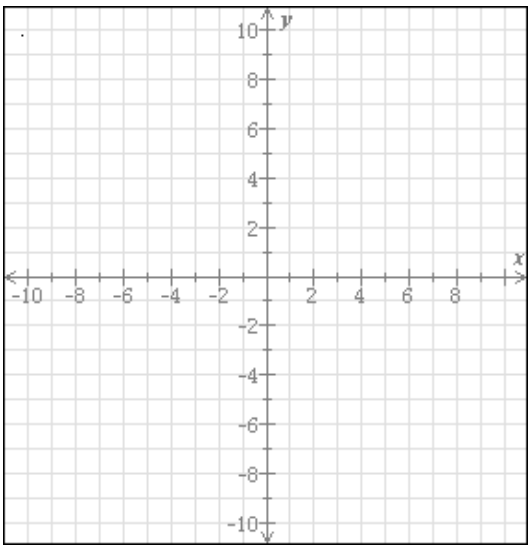


58. Translate this sentence into an equation.

77 is the product of Greg's savings and 7

Use the variable g to represent Greg's savings.

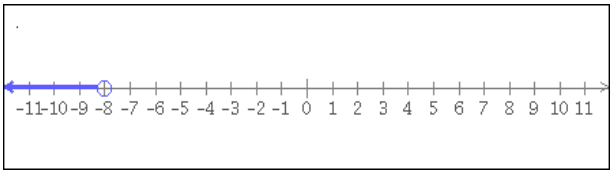
59. Graph the line whose y-intercept is 8 and whose x-intercept is -5



60. Bill rented a truck for one day. There was a base fee of $\$18.95$ and there was an additional charge of 75 cents for each mile driven. Bill had to pay $\$128.45$ when he returned the truck. For how many miles did he drive the truck?

101 Mock Final #3 Answers for class Beginning and Intermediate Algebra Combined / MATH 101 - Fall 2014 – 504

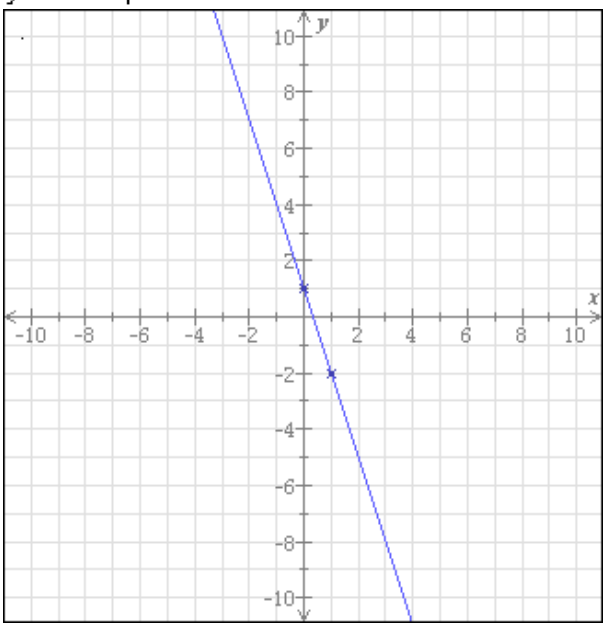
1.



2. $y = x - 3$

3. slope: -3

y-intercept: 1



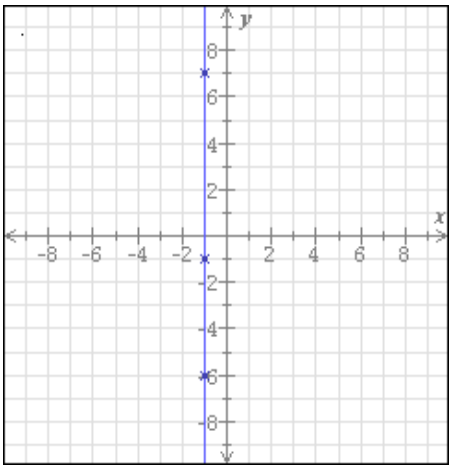
4. $-\frac{6}{5}$

5. x-intercept: $-\frac{10}{3}$

y-intercept: $\frac{5}{3}$

6. $52.33

7.



8. $x = 1$

$y = -2$

9. domain $= (-2, 5]$

range $= [-4, 2)$

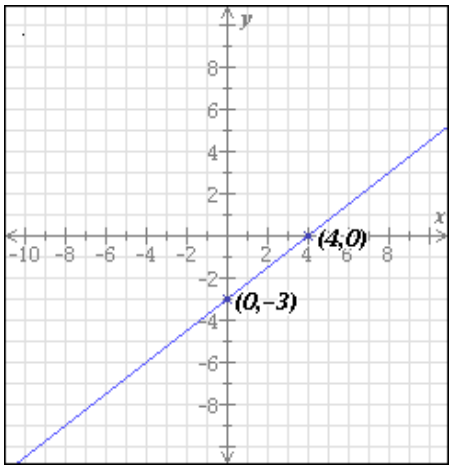
10. $H \cup D = \{-2, -1, 0, 4, 5, 8\}$

$H \cap D = \{-1, 4, 8\}$

11. 18 minutes

12. $v = 36.7$

13.



14. 4.07

15. Desktop: \$2900

Laptop: \$2450

16. $y = -\frac{1}{4}x - 1$

17. 10 cm

18. $u = -79$

19. $-5x^2+4x+1$

20. Slope of a perpendicular line: $\frac{7}{5}$

Slope of a parallel line: $-\frac{5}{7}$

21. $7w-5=2$

22. $x = 3$

$y = -5$

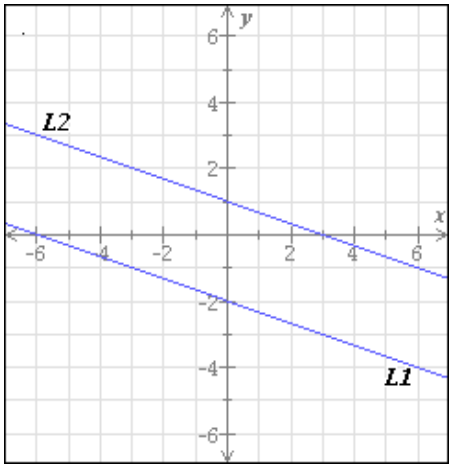
23. (a) 72%

(b) 56%

24.

L1: $y=\frac{-1}{3}x-2$

L2: $y=\frac{-1}{3}x+1$



This system of equations is:

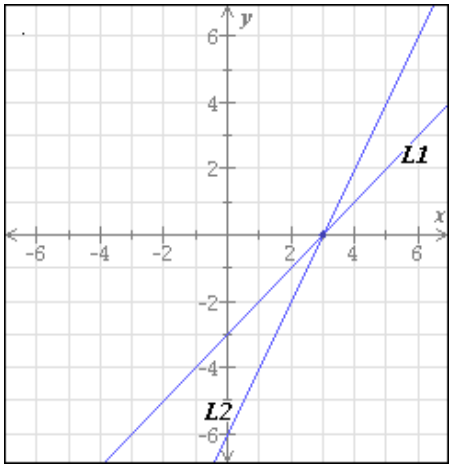
- inconsistent

This means the system has:

- no solution

L1: $y=x-3$

L2: $y=2x-6$



This system of equations is:

- consistent independent

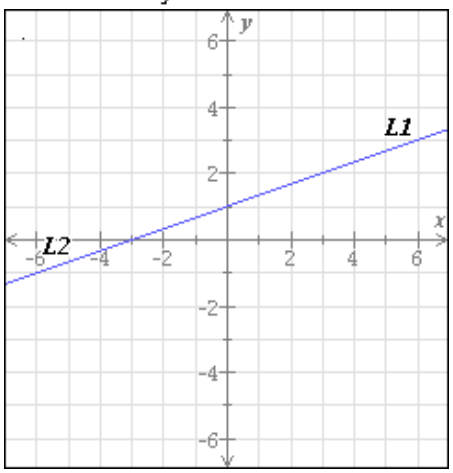
This means the system has:

- a unique solution:

Solution: $(3, 0)$

L1: $y=\frac{1}{3}x+1$

L2: $-x+3y=3$



This system of equations is:

- consistent dependent

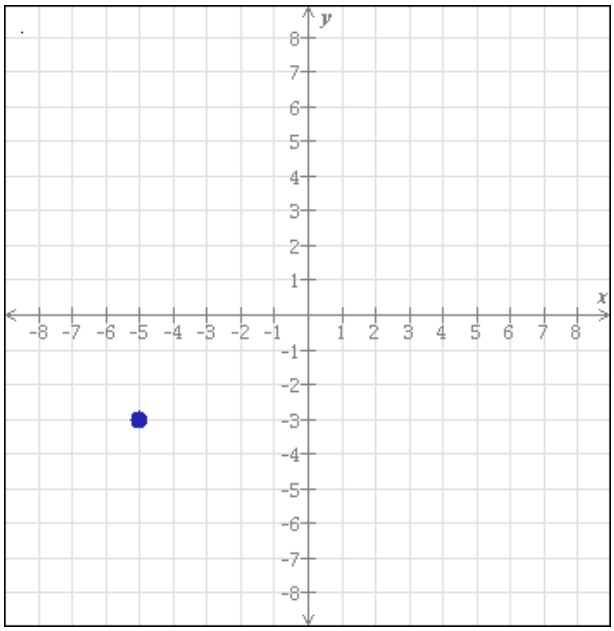
This means the system has:

- infinitely many solutions

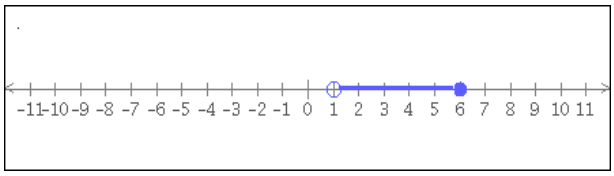
25. $-16y+8u+12$

26. One possible answer is $(x,y)=(0,-5)$

27.



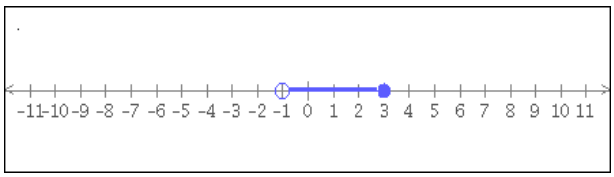
28.



29. $\frac{21}{20}$ or $1\frac{1}{20}$

30. $m > 20$

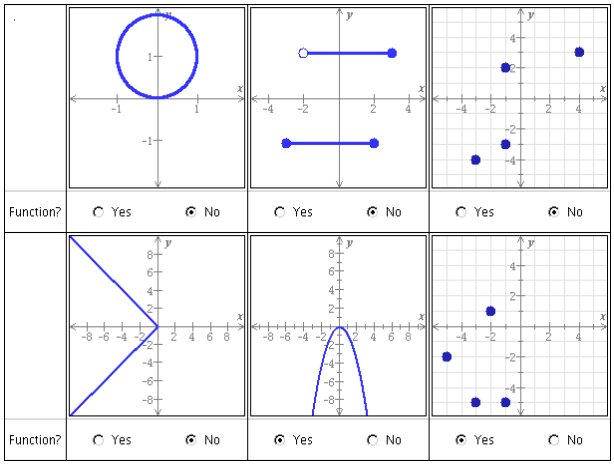
31.



32. 650 downloads

33. $\frac{3}{4}$

34.



35. $x = 4$

$y = 3$

36. 10.8 movies

37. $-24u + 16w + 20$

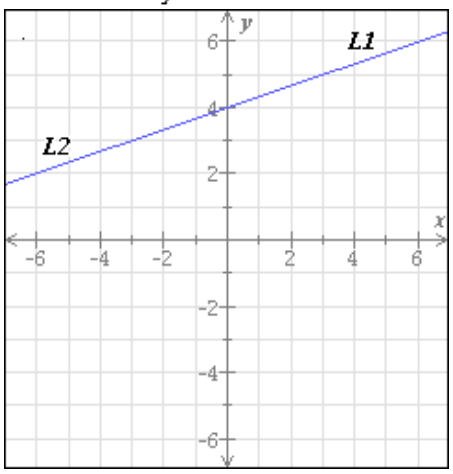
38. $8y + 5 = -35$

39. $v = -7$

40.

L1: $y=\frac{1}{3}x+4$

L2: $-x+3y=12$



This system of equations is:

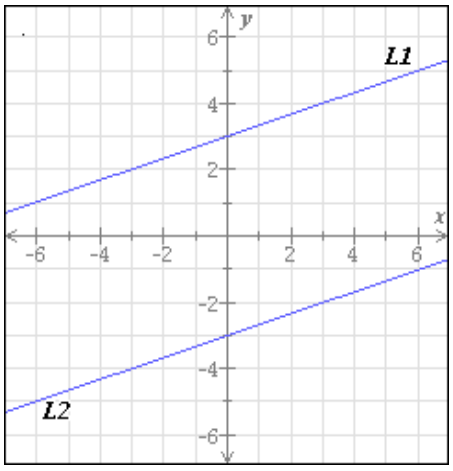
- consistent dependent

This means the system has:

- infinitely many solutions

L1: $y=\frac{1}{3}x+3$

L2: $y=\frac{1}{3}x-3$



This system of equations is:

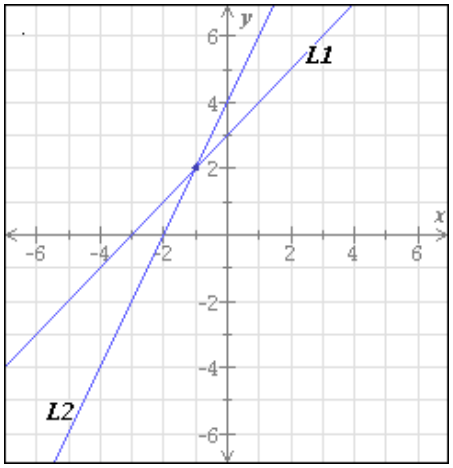
- inconsistent

This means the system has:

- no solution

L1: $y = x + 3$

L2: $y = 2x + 4$



This system of equations is:

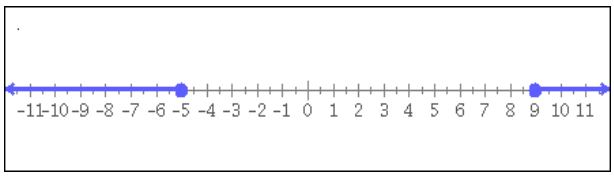
- consistent independent

This means the system has:

- a unique solution:

Solution: $(-1, 2)$

41.



42. $x = 8, -8$

43. $x = 2.1$

44. 3

45. First city: $3000

Second city: $4500

46. $y = 22$

47. 15.2

48. 54

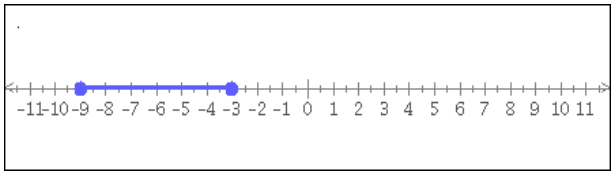
49. $(-8)^2 = 64$

$(-4)^3 = -64$

50. $w = 8, -8$

51. One possible answer is $(x, y) = (0, 3)$

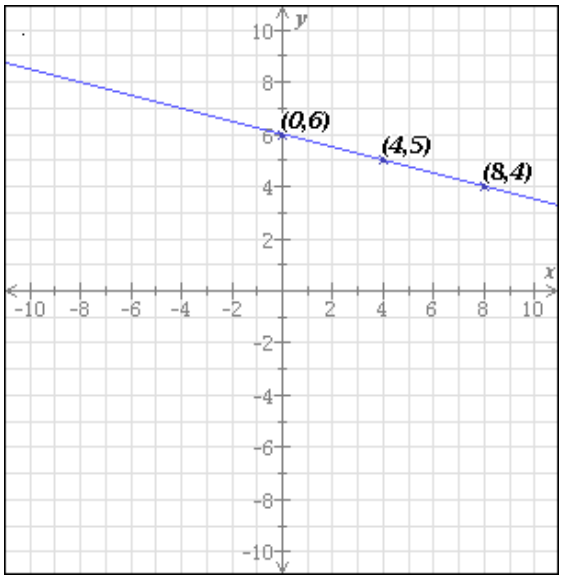
52.



53. $v < -\frac{9}{22}$

54. $w = 5, -5$

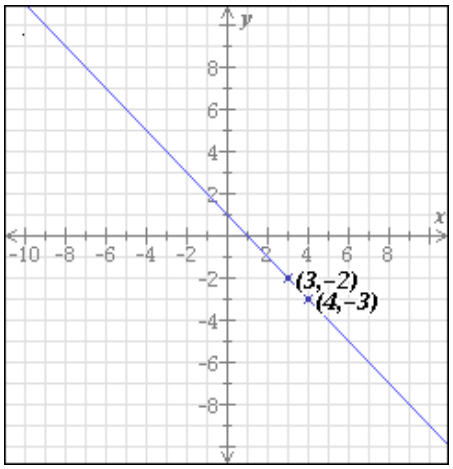
55.



56. $-25 \div 5 = -5$

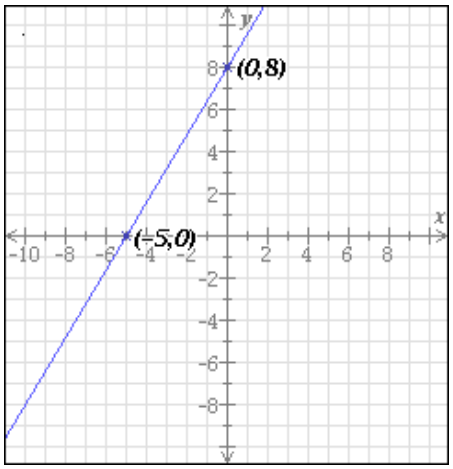
$-7 \times (-4) = 28$

57.



58. $77 = 7g$

59.



60. 146 miles