ALEKS® 101 Mock Final #4

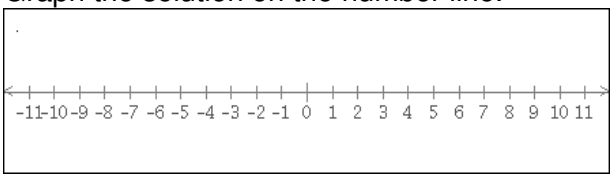
Beginning and Intermediate Algebra Combined / MATH 101 - Fall 2014 – 504 (Prof. Miller)

Student Name/ID:

1. Solve the compound inequality.

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

Graph the solution on the number line.



2. The sets D and M are given below.

$$D = \{ 2, 3, 4, 6, 7 \}$$
$$M = \{ -2, -1, 2, 3, 4, 7 \}$$

Find the union of D and M

Find the intersection of D and M

Write your answers using set notation.

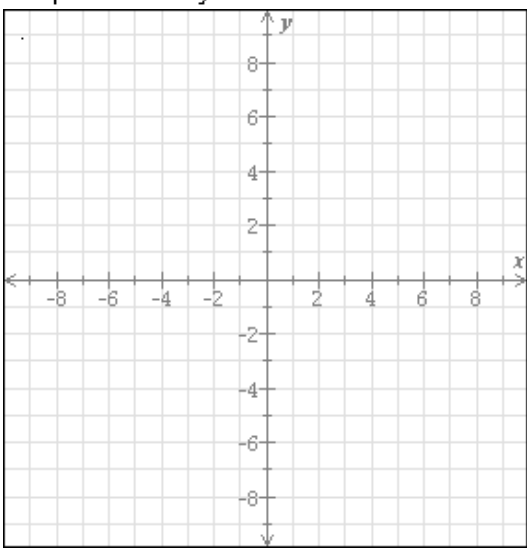
3. Use substitution to solve the system.

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

$x =$ ☐

$y =$ ☐

4. Graph the line $y = -1$



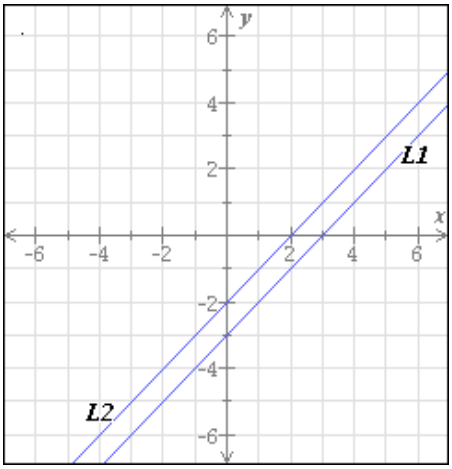
5. What number is equal to $\sqrt{9}$?

6.

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: $y = x - 3$

L2: $y = x - 2$



This system of equations is:

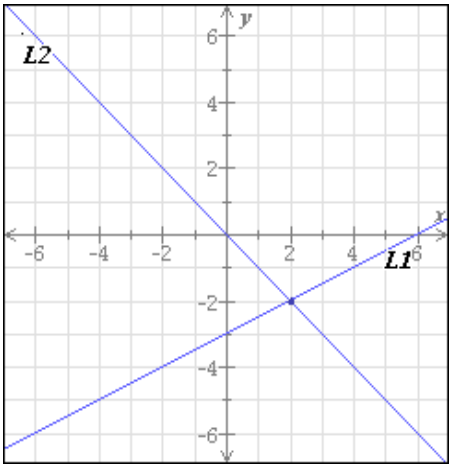
- consistent dependent - consistent independent - inconsistent

This means the system has:

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

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

L2: $y = -x$



This system of equations is:

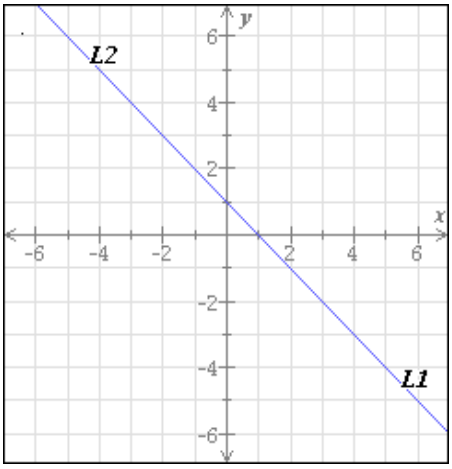
- consistent dependent - consistent independent - inconsistent

This means the system has:

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

L1: $y=-x+1$

L2: $x+y=1$



This system of equations is:

- consistent dependent
- consistent independent
- inconsistent

This means the system has:

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

7. Translate this sentence into an equation.

The product of Gail's score and 4 *is* 76

Use the variable g to represent Gail's score.

8. Consider the line $-4x - 7y = -7$

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

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

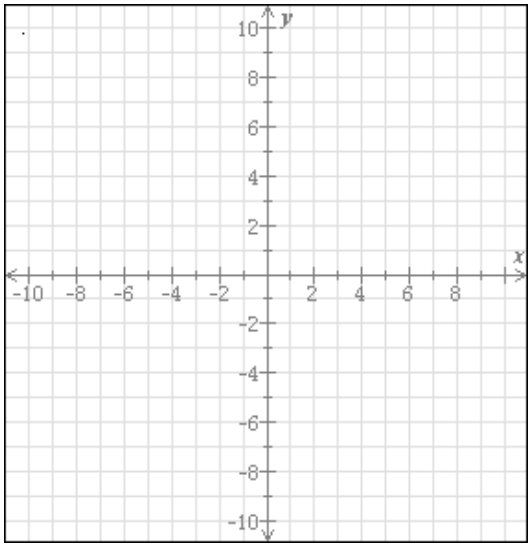
9. Find the value of $8y + 5$ given that $-3y - 7 = 8$

Simplify your answer as much as possible.

10. A wire is first bent into the shape of a rectangle with width 7in and length 8in Then the wire is unbent and reshaped into a triangle. If each side of the triangle has equal length, what is this length?

11. Graph the line.

$$y = -\frac{3}{4}x + 3$$



12. Use the distributive property to remove the parentheses.

$$-4\left(-6y+2v-3\right)$$

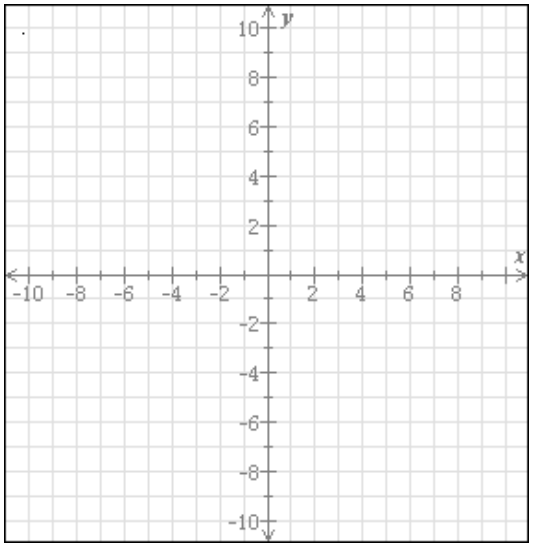
13. Round 0.859 to the nearest tenth.

14. Evaluate.

$$\left(-5\right)^3 = \square$$
$$\left(-8\right)^2 = \square$$

15. Ashley purchased a prepaid phone card for $\$30$ Long distance calls cost 21 cents a minute using this card. Ashley used her card only once to make a long distance call. If the remaining credit on her card is $\$24.54$ how many minutes did her call last?

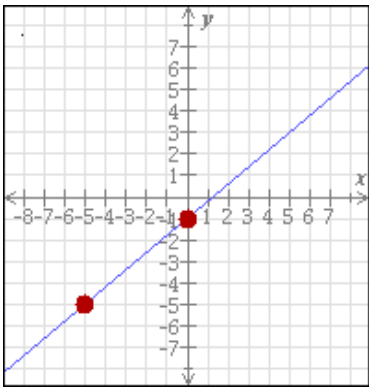
16. Graph the line with slope -1 passing through the point $\left(2,4\right)$



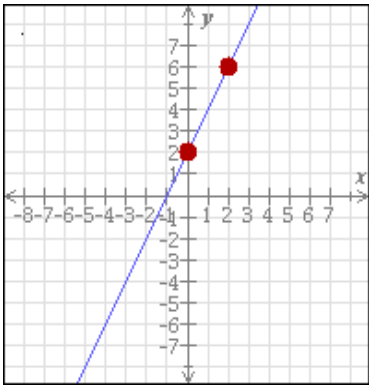
17. Solve for v

$$160 = 81 - v$$

18. Write an equation of the line below.



19. Write an equation of the line below.



20. 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 comedies. Their responses are summarized in the following table.

	Twice a month or less	Three times a month or more
Action	78	37
Comedy	92	43

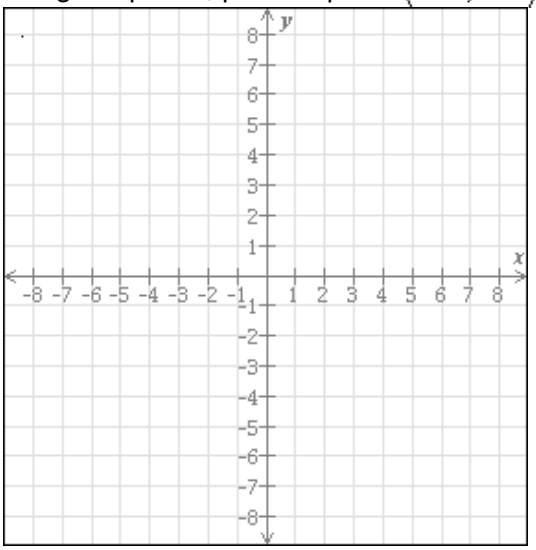
(a) What percentage of the students prefer comedies ?

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

21. Use the distributive property to remove the parentheses.

$$-6\left(-4x+v-2\right)$$

22. Using the pencil, plot the point $\left(-5,-6\right)$



23. Use substitution to solve the system.

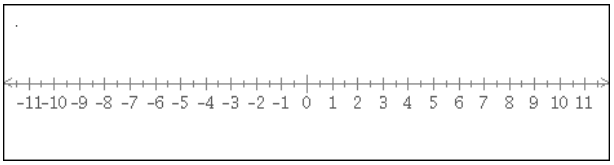
$$4x+5y = -10$$
$$y = 3x+17$$

$x =$ ☐

$y =$ ☐

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

$$|v-2| \geq 7$$



25. Solve the inequality for y

$$-\frac{5}{4}y-1 > \frac{7}{6}y+\frac{3}{4}$$

Simplify your answer as much as possible.

26. Solve for w

$$|w|+7 = 15$$

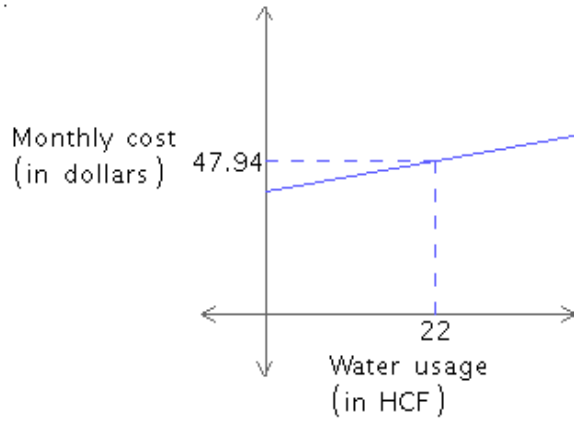
27. Solve for v

$$-10v = -30$$

Simplify your answer as much as possible.

28. 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 1.55 See the figure below.

If the monthly cost for 22 HCF is $\$47.94$ what is the monthly cost for 18 HCF?



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

$$6x - 7y = -9$$

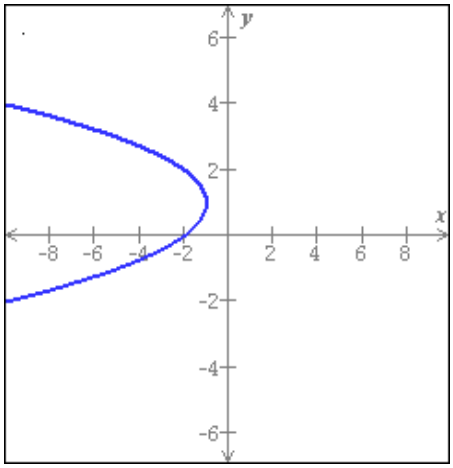
x-intercept: _____

y-intercept: _____

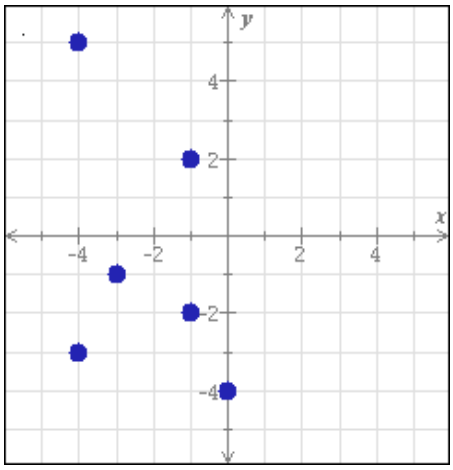
30. Solve for w

$$|w| + 12 = 17$$

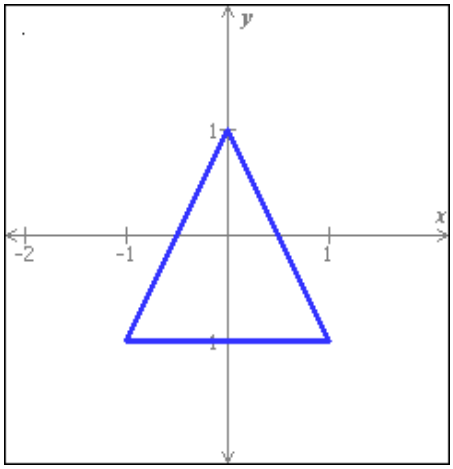
31. For each graph below, state whether it represents a function.



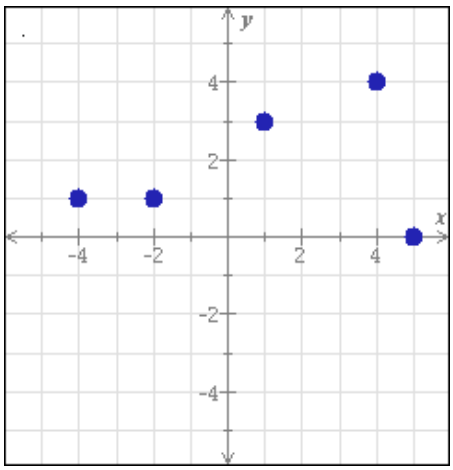
Function?:
Yes No



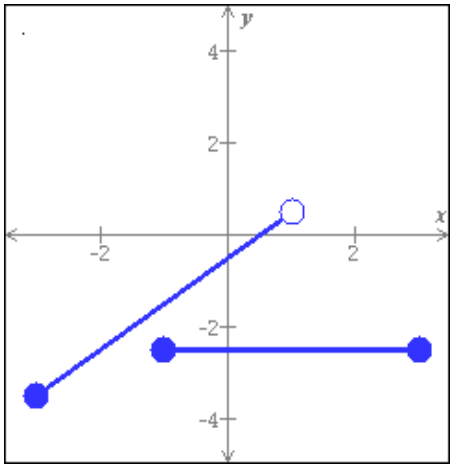
Function?:
Yes No



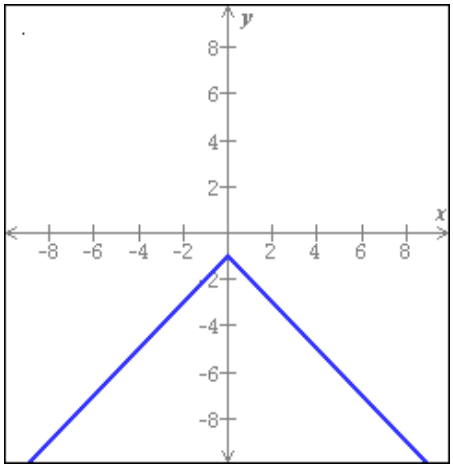
Function?:
Yes No



Function?:
Yes No



Function?:
Yes No



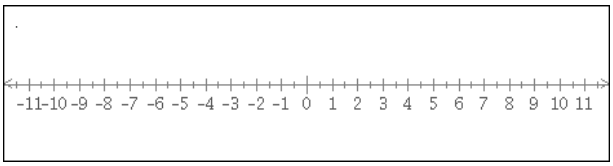
Function?:
Yes No

32. Find the value of $4w+8$ given that $-7w+2=9$

Simplify your answer as much as possible.

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

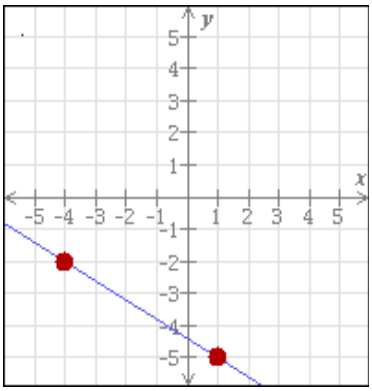
$$|u+6| \leq 3$$



34. Solve for u

$$|u| - 16 = -8$$

35. Find the slope of the line graphed below.

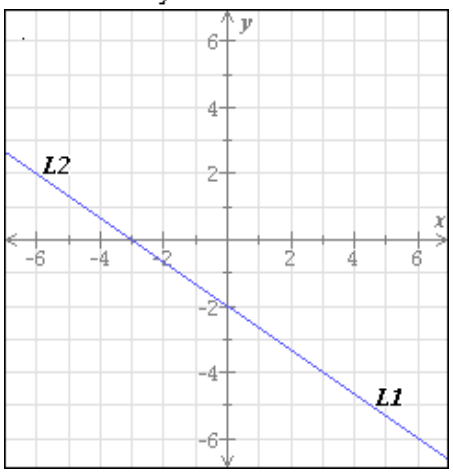


36.

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

L2: $2x+3y=-6$



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This means the system has:

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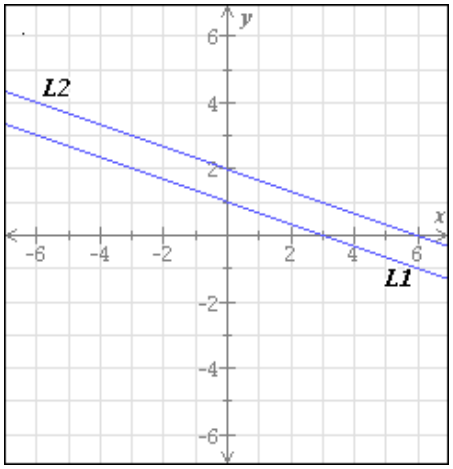
Solution: (,)
- no solution
- infinitely many solutions

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

L2: $y=\frac{-1}{3}x+2$



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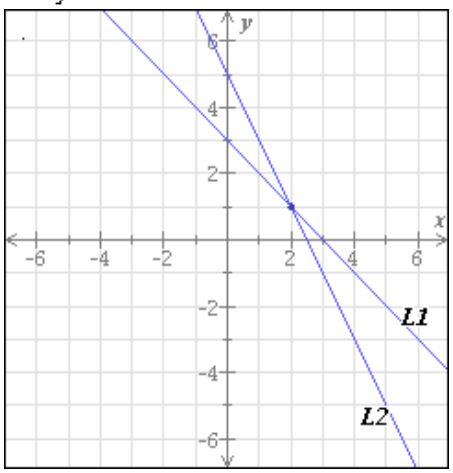
L1: $y=-x+3$
L2: $y=-2x+5$



This system of equations is:

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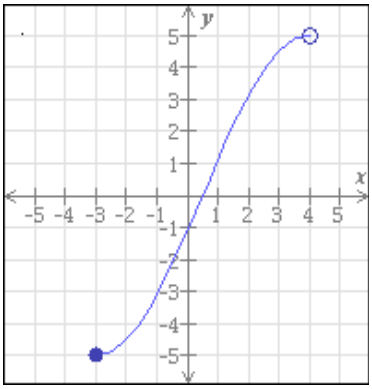
37. The entire graph of the function h is shown in the figure below.

Write the domain and range of h using interval notation.



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

Company A charges $\$100$ and allows unlimited mileage.

Company B has an initial fee of $\$55$ and charges an additional $\$0.60$ 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

39. Solve the following proportion for x

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

Round your answer to the nearest tenth.

40. Find the slope of the line passing through the points $(-4, -3)$ and $(8, -9)$

41. A Web music store offers two versions of a popular song. The size of the standard version is 2.7 megabytes (MB). The size of the high-quality version is 4.2 MB. Yesterday, the high-quality version was downloaded three times as often as the standard version. The total size downloaded for the two versions was 4437 MB. How many downloads of the standard version were there?

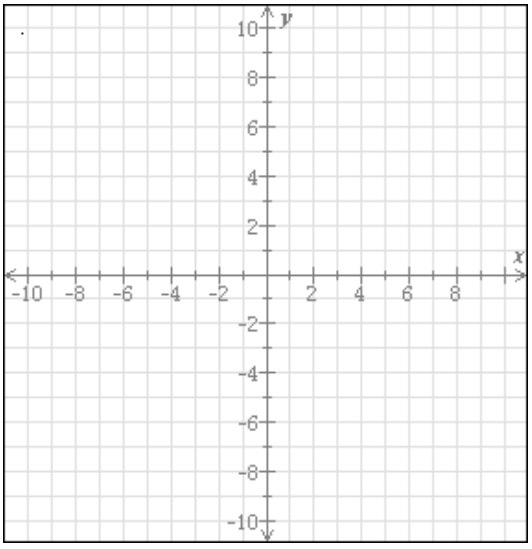
42. Solve the following system of equations.

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

43. Simplify the following expression.

$$-5x^2+4+13x^2-15-3x$$

44. Graph the line whose x-intercept is 3 and whose y-intercept is 7



45. Each of 7 students reported the number of movies they saw in the past year. Here is what they reported.

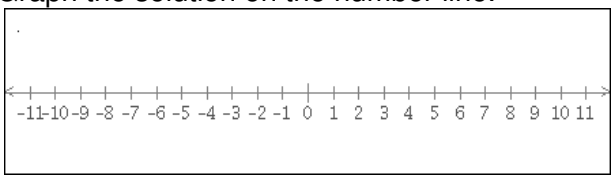
20, 7, 19, 8, 7, 8, 16

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

46. Solve the compound inequality.

$4x+2 \geq -10$ and $3x-4 < 8$

Graph the solution on the number line.



47. Evaluate.

$9+27 \div 3^2$

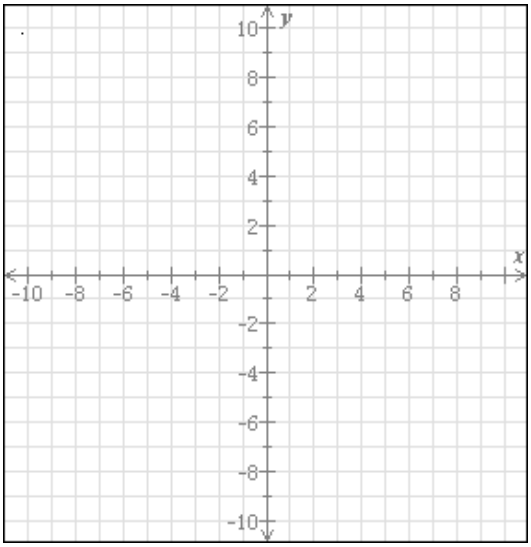
48. Hong rented a truck for one day. There was a base fee of $\$16.99$ and there was an additional charge of 94 cents for each mile driven. Hong had to pay $\$267.97$ when he returned the truck. For how many miles did he drive the truck?

49. Ashley bought a desktop computer and a laptop computer. Before finance charges, the laptop cost $\$300$ less than the desktop. She paid for the computers using two different financing plans. For the desktop the interest rate was 7% per year, and for the laptop it was 6% per year. The total finance charges for one year were $\$398$ How much did each computer cost before finance charges?

50. Last year, Kira had $\$10{,}000$ to invest. She invested some of it in an account that paid 7% simple interest per year, and she invested the rest in an account that paid 9% simple interest per year. After one year, she received a total of $\$740$ in interest. How much did she invest in each account?

51. What is 20% of 74?

52. Graph the line whose y-intercept is 9 and whose x-intercept is -5



53. Add.

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

Write your answer as a fraction in simplest form.

54. Solve the following proportion for x

$$\frac{x}{12} = \frac{5}{17}$$

Round your answer to the nearest tenth.

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

$$3x - y = 3$$

56. Evaluate the following.

$$35 \div (-7) = \square$$

$$-7 \times (-8) = \square$$

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

$$x - 6y = 6$$

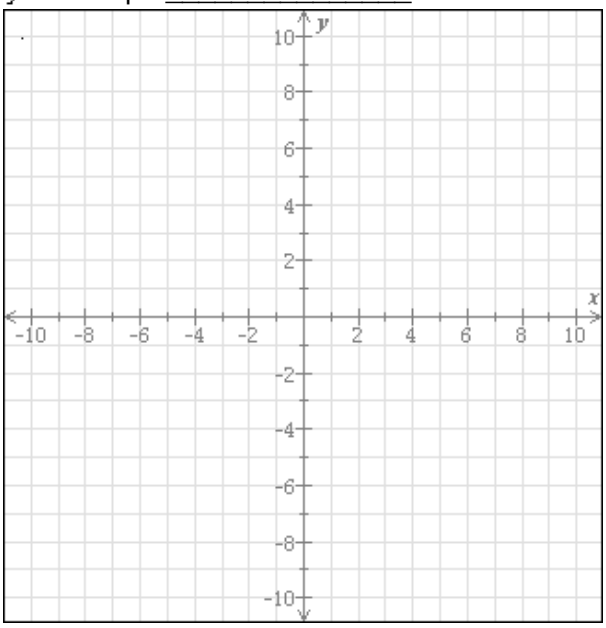
58. The equation of a line is given below.

$$-4x - 2y = 8$$

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

slope: _____

y-intercept: _____



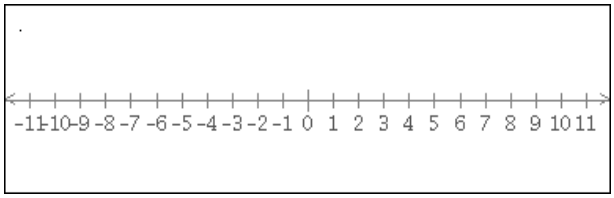
59. Solve for w

$$68 = 4w$$

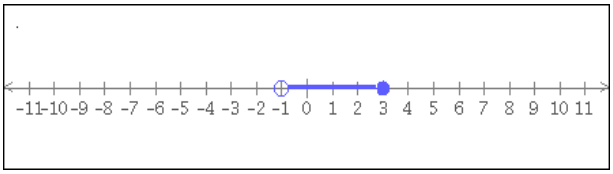
Simplify your answer as much as possible.

60. Graph the inequality below on the number line.

$$y < -10$$

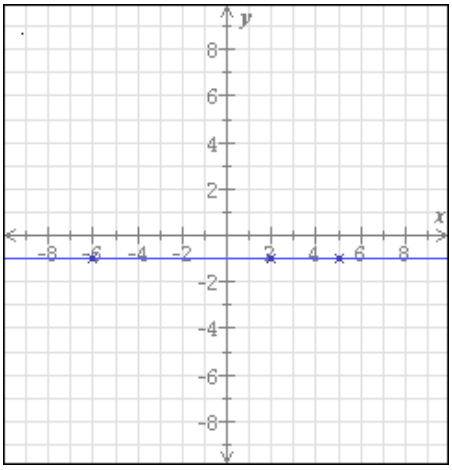


101 Mock Final #4 Answers for class Beginning and Intermediate Algebra Combined / MATH 101 - Fall 2014 – 504

1. 

2. $D \cup M = \{ -2, -1, 2, 3, 4, 6, 7 \}$
$D \cap M = \{ 2, 3, 4, 7 \}$

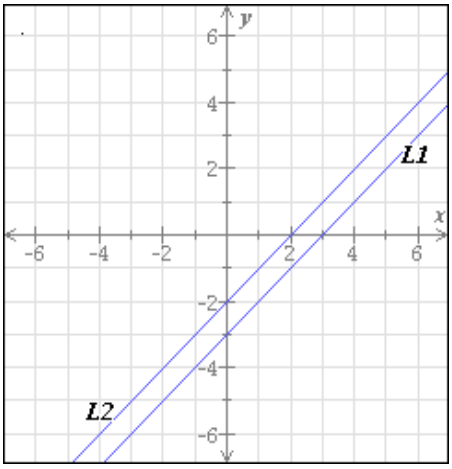
3. $x = 4$
$y = 3$

4. 

5. 3

6. L1: $y = x - 3$

L2: $y = x - 2$



This system of equations is:

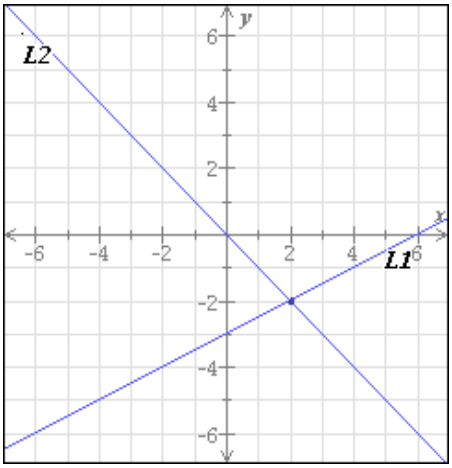
- inconsistent

This means the system has:

- no solution

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

L2: $y = -x$



This system of equations is:

- consistent independent

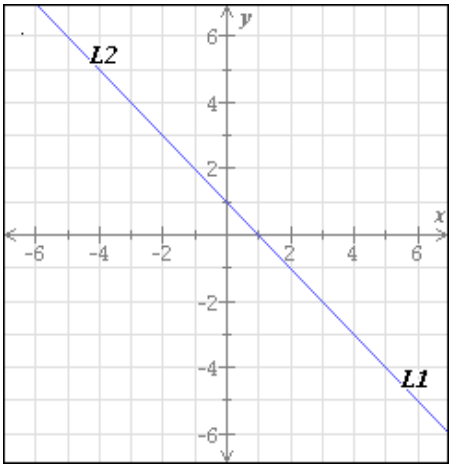
This means the system has:

- a unique solution:

Solution: $(2, -2)$

L1: $y=-x+1$

L2: $x+y=1$



This system of equations is:

- consistent dependent

This means the system has:

- infinitely many solutions

7. $4g=76$

8.

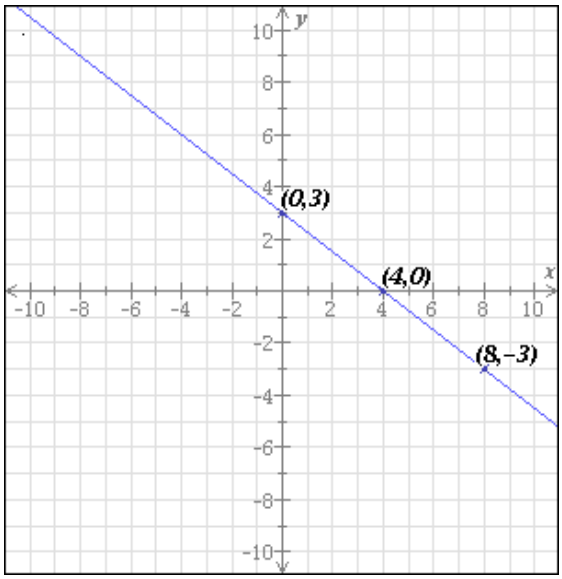
Slope of a parallel line: $-\frac{4}{7}$

Slope of a perpendicular line: $\frac{7}{4}$

9. $8y+5=-35$

10. 10in

11.



12. $24y-8v+12$

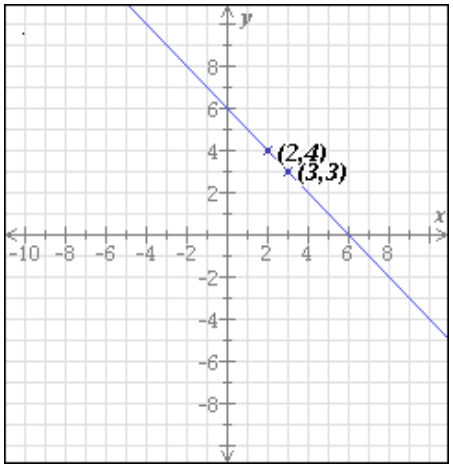
13. 0.9

14. $(-5)^3 = -125$

$(-8)^2 = 64$

15. 26 minutes

16.



17. $v=-79$

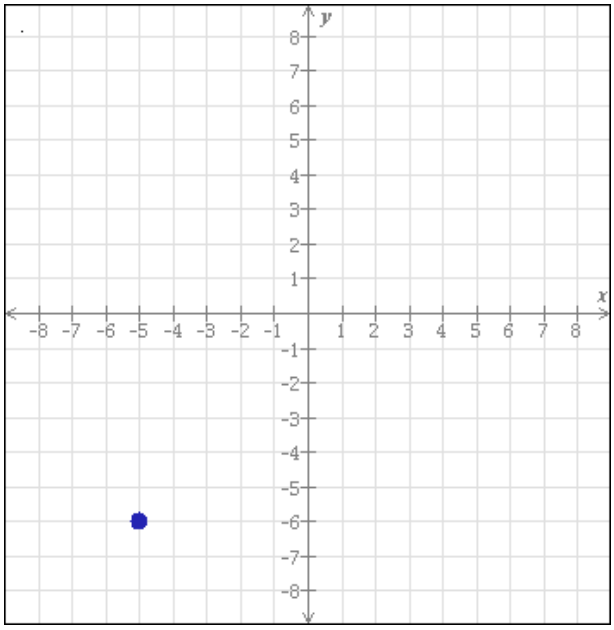
18. $y=\frac{4}{5}x-1$

19. $y=2x+2$

20. (a) 54%

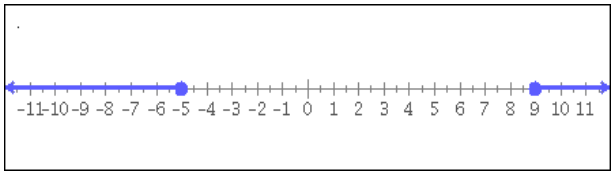
(b) 68%

21. $24x - 6y + 12$

22. 

23. $x = -5$

$y = 2$

24. 

25. $y < -\frac{21}{29}$

26. $w = 8, -8$

27. $v = 3$

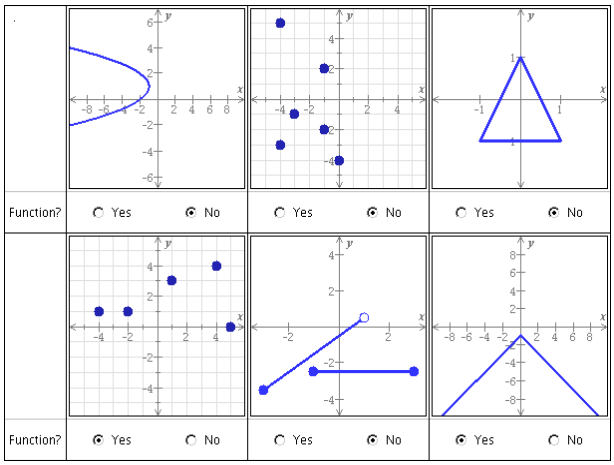
28. $41.74

29. x-intercept: $-\frac{3}{2}$

y-intercept: $\frac{9}{7}$

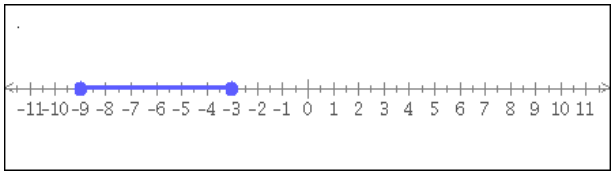
30. $w = 5, -5$

31.



32. $4w+8=4$

33.



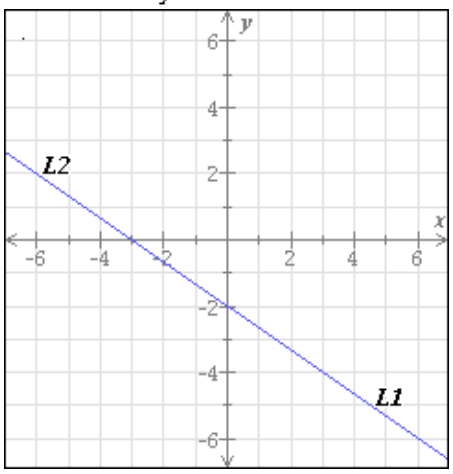
34. $u=8,-8$

35. $-\frac{3}{5}$

36.

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

L2: $2x+3y=-6$



This system of equations is:

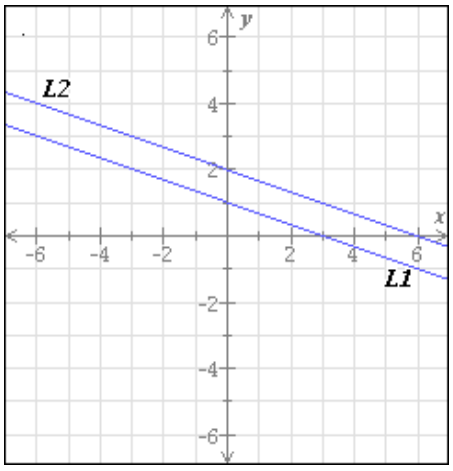
- consistent dependent

This means the system has:

- infinitely many solutions

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

L2: $y=\frac{-1}{3}x+2$



This system of equations is:

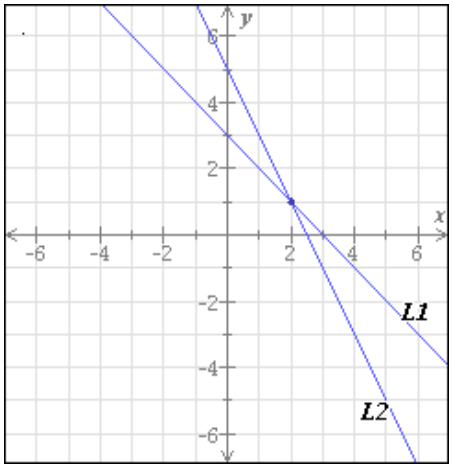
- inconsistent

This means the system has:

- no solution

L1: $y=-x+3$

L2: $y=-2x+5$



This system of equations is:

- consistent independent

This means the system has:

- a unique solution:

Solution: $(2, 1)$

37. domain $= [-3, 4)$

range $= [-5, 5)$

38. $m > 75$

39. $x=2.1$

40. $-\frac{1}{2}$

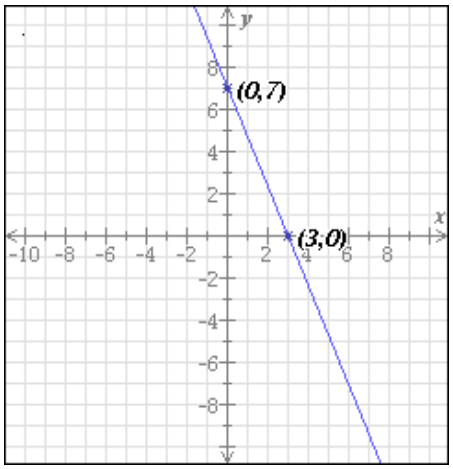
41. 290 downloads

42. $x = 3$

$y = -5$

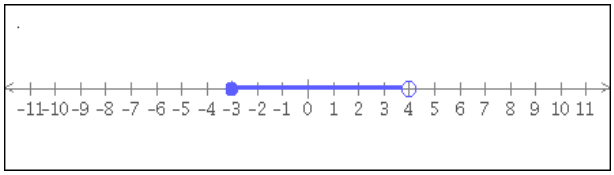
43. $8x^2-3x-11$

44.



45. 12.1 movies

46.



47. 12

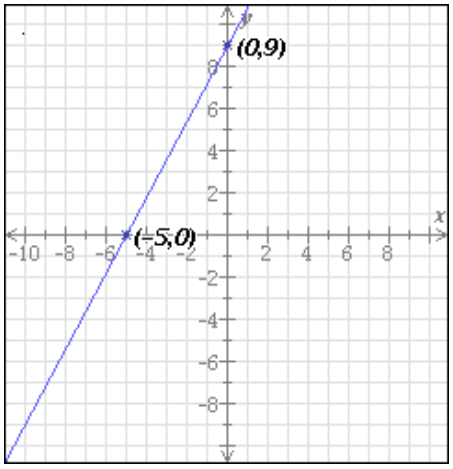
48. 267 miles

49. Desktop: $3200
Laptop: $2900

50. First account: $8000
Second account: $2000

51. 14.8

52.



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

54. $x = 3.5$

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

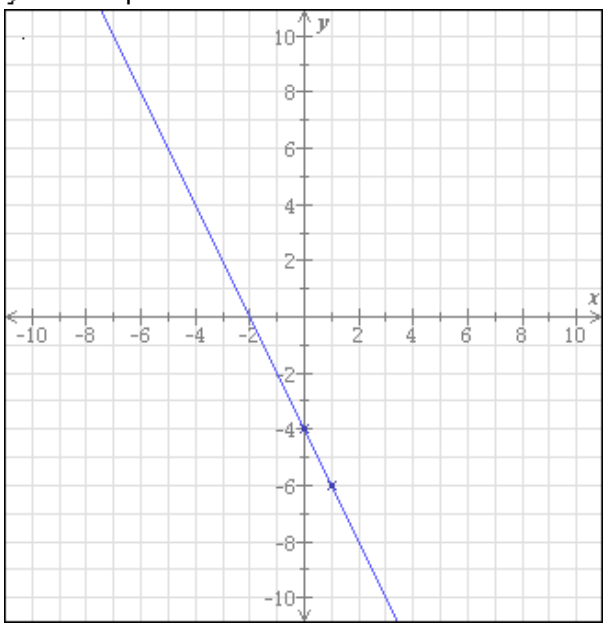
56. $35 \div (-7) = -5$

$-7 \times (-8) = 56$

57. One possible answer is $(x, y) = (6, 0)$

58. slope: -2

y-intercept: -4



59. $w = 17$

60.