

Test 1 Review

Intermediate Algebra / MAT135 SPRING 2014

1. Solve for x .

$$16 + x = y$$

2. Solve for z .

$$A = x + 6 + z$$

3. Solve for W .

$$A = 5W$$

4. Solve for x .

$$w = \frac{1}{6}(x + y - z)$$

5. Solve for y .

$$5 = \frac{x}{y}$$

6. Solve for f .

$$h = \frac{k - g}{f - 7}$$

7. Solve for p .

$$s = \frac{9}{p} + \frac{5}{r}$$

8. The sum of three numbers is 90 . The first number is 6 less than the second . The third number is 4 times the second. What are the numbers?

9. Three consecutive integers have a sum of 75 . Find the integers.

10. Dan has a job transporting soft drinks by truck. His truck is filled with cans that weigh 14 ounces each and bottles that weigh 70 ounces each. There is a combined total of 940 cans and bottles in his truck.

Let x be the number of 14-ounce cans in his truck. Write an expression for the combined total weight (in ounces) of the cans and bottles in his truck.

11. 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?
12. A tortoise is walking in the desert. It walks for 11.2 meters at a speed of 7 meters per minute. For how many minutes does it walk?
13. Two trains leave the station at the same time, one heading east and the other west. The eastbound train travels at 75 miles per hour. The westbound train travels at 85 miles per hour. How long will it take for the two trains to be 224 miles apart?

Do not do any rounding.

hours

14. The perimeter of a rectangular painting is 300 centimeters. If the width of the painting is 64 centimeters, what is its length?
15. The price of an item has dropped to \$69 today. Yesterday it was \$115 . Find the percentage decrease.

16. A chemist mixes 50 milliliters of a solution that is 20% acid with 75 milliliters of a solution that is 45% acid.

Answer the questions below. Do not do any rounding.

(a) How many milliliters of acid are in the resulting mixture?

_____ milliliters

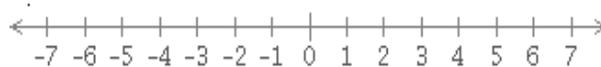
(b) What percentage of the resulting mixture is acid?

_____ %

17. Dale invested his savings in two investment funds. The \$8000 that he invested in Fund A returned a 10% profit. The amount that he invested in Fund B returned a 3% profit. How much did he invest in Fund B, if both funds together returned a 7% profit?

18. Donna deposits \$400 into an account that pays simple interest at a rate of 4% per year. How much interest will she be paid in the first 5 years?

19. Graph the set $\{x \mid -2 \leq x < 3\}$ on the number line.



Then, write the set using interval notation.

20. The sets C and D are defined as follows.

$$C = \{x \mid x > 3\}$$

$$D = \{x \mid x \leq 6\}$$

Write $C \cap D$ and $C \cup D$ using interval notation.

If the set is empty, write \emptyset .

21. Solve the inequality for y .

$$y - \frac{1}{4} \leq -\frac{7}{8}$$

Simplify your answer as much as possible.

22. Solve the inequality for u .

$$12 > -4u$$

Simplify your answer as much as possible.

23. Solve the inequality for x .

$$4x - 3 < -19$$

Simplify your answer as much as possible.

24. Solve the inequality for v .

$$-4v - 25 > 2v + 17$$

Simplify your answer as much as possible.

25. For each inequality, choose the statement that describes its solution.
If applicable, give the solution.

$$4(5 - u) + 4u \leq 23$$

- No solution
- $u \leq$
- $u \geq$
- All real numbers are solutions

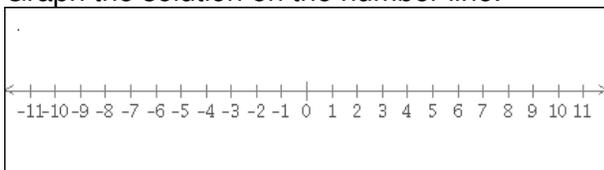
$$-2(v + 7) + 38 > 4(2 - v)$$

- No solution
- $v <$
- $v >$
- All real numbers are solutions

26. Solve the compound inequality.

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

Graph the solution on the number line.



27. Solve the compound inequality.

$$3x + 2 < 5 \quad \text{or} \quad 2x - 3 < 7$$

Write the solution in interval notation.

If there is no solution, enter \emptyset .

28. 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 .

29. Solve for x .

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

30. Solve for v .

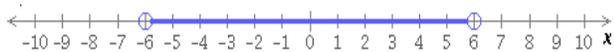
$$2|v - 6| = 18$$

31. Solve for w .

$$|2w + 9| = |2w + 2|$$

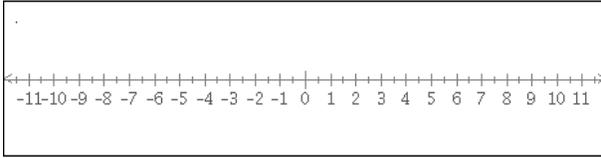
32. Write an absolute value inequality for the graph below.

Use x for your variable.



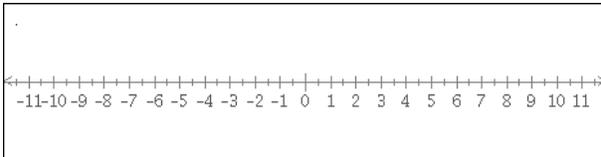
33. Graph the solution to the inequality on the number line.

$$|u - 2| \geq 7$$



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

$$|4v - 8| \leq 4$$



35. Solve.

$$6|v - 1| + 5 \leq 29$$

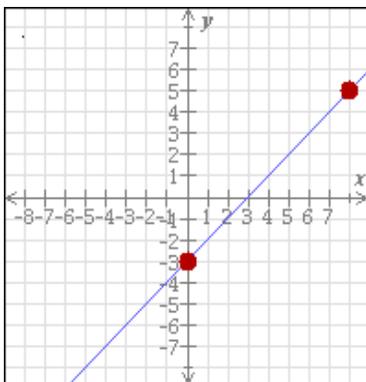
36. A line passes through the point $(-4, -6)$ and has a slope of $\frac{5}{2}$.

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

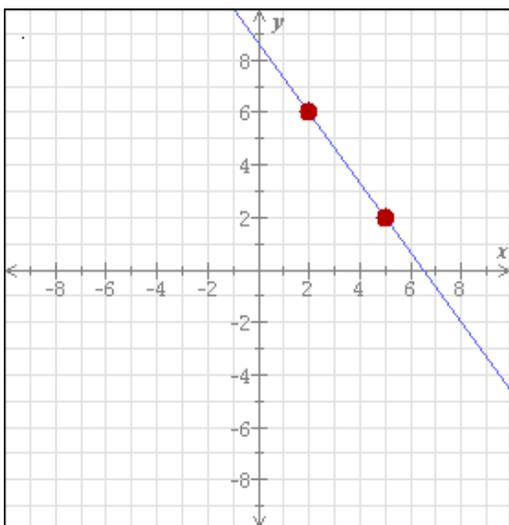
37. A line passes through the point $(-10, 6)$ and has a slope of $-\frac{5}{2}$.

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

38. Write an equation of the line below.



39. Find an equation for the line below.



40. Write equations for the horizontal and vertical lines passing through the point $(-7, 3)$.

horizontal line:

vertical line:

41. 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?

42. The equations of three lines are given below.

Line 1: $10x - 4y = 6$

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

Line 3: $-2y = 5x + 6$

For each pair of lines, determine whether they are parallel, perpendicular, or neither.

43. Consider the line $y = -3x + 8$.

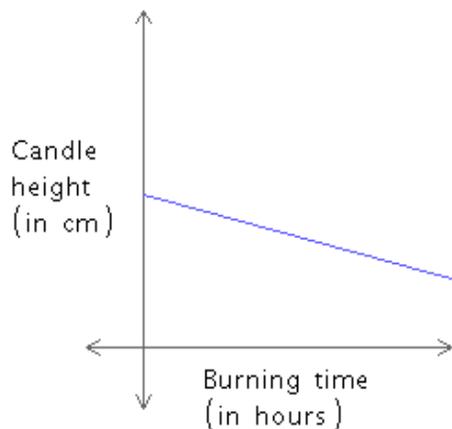
(a) Find the equation of the line that is parallel to this line and passes through the point $(-5, -3)$.

(b) Find the equation of the line that is perpendicular to this line and passes through the point $(-5, -3)$.

44. Eric is a software salesman. His base salary is \$2100 , and he makes an additional \$40 for every copy of *History is Fun* he sells.

Let P represent his total pay (in dollars), and let N represent the number of copies of *History is Fun* he sells. Write an equation relating P to N . Then use this equation to find his total pay if he sells 22 copies of *History is Fun*.

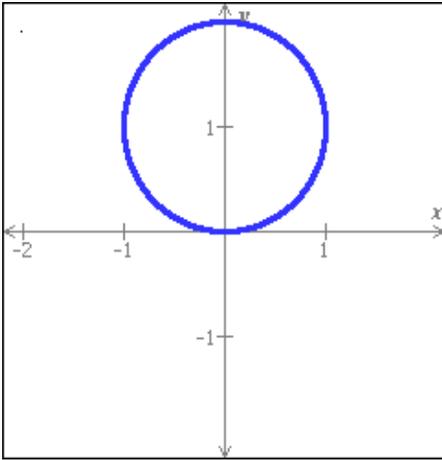
45. Suppose that the height (in centimeters) of a candle is a linear function of the amount of time (in hours) it has been burning. After 6 hours of burning, a candle has a height of 19.2 centimeters. After 23 hours of burning, its height is 14.1 centimeters. What is the height of the candle after 11 hours?



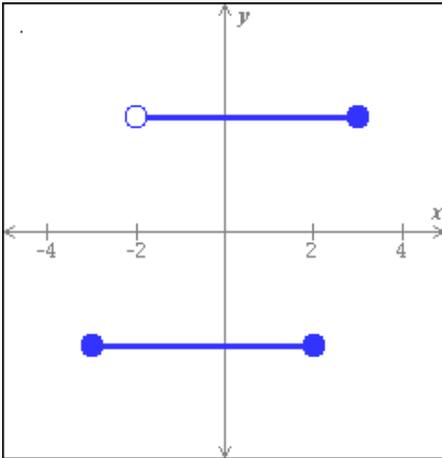
46. For each relation, decide whether or not it is a function.

<p style="text-align: center;">Relation 1</p> <table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: left; border: none;"><i>Domain</i></th> <th style="text-align: right; border: none;"><i>Range</i></th> </tr> </thead> <tbody> <tr> <td style="border: none;">m</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">s</td> <td style="border: none;">pen</td> </tr> <tr> <td style="border: none;">k</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">f</td> <td style="border: none;">paper</td> </tr> <tr> <td style="border: none;">n</td> <td style="border: none;"></td> </tr> </tbody> </table> <p style="border: none;"> <input type="radio"/> Function <input type="radio"/> Not a Function </p>	<i>Domain</i>	<i>Range</i>	m		s	pen	k		f	paper	n		<p style="text-align: center;">Relation 2</p> <table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: left; border: none;"><i>Domain</i></th> <th style="text-align: right; border: none;"><i>Range</i></th> </tr> </thead> <tbody> <tr> <td style="border: none;">d</td> <td style="border: none;">d</td> </tr> <tr> <td style="border: none;">k</td> <td style="border: none;">k</td> </tr> <tr> <td style="border: none;">g</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">t</td> <td style="border: none;">g</td> </tr> </tbody> </table> <p style="border: none;"> <input type="radio"/> Function <input type="radio"/> Not a Function </p>	<i>Domain</i>	<i>Range</i>	d	d	k	k	g		t	g
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<p style="text-align: center;">Relation 3</p> <p style="border: none;">$\{(0,n), (0,t), (0,d), (0,x)\}$</p> <p style="border: none;"> <input type="radio"/> Function <input type="radio"/> Not a Function </p>	<p style="text-align: center;">Relation 4</p> <p style="border: none;">$\{(-3,3), (-2,-3), (-3,2), (-2,2)\}$</p> <p style="border: none;"> <input type="radio"/> Function <input type="radio"/> Not a Function </p>																						

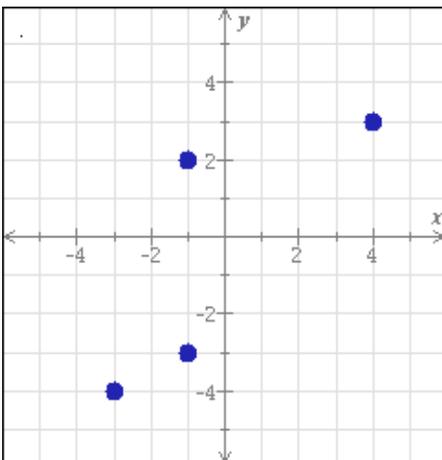
47. For each graph below, state whether it represents a function.



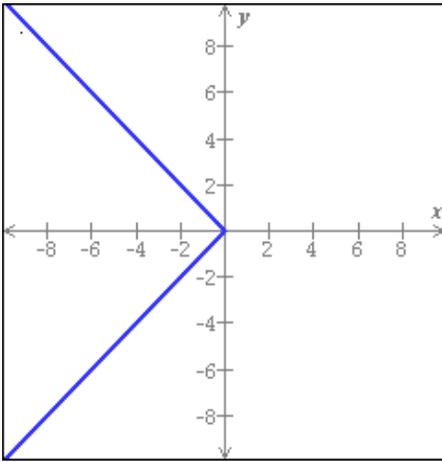
Function?:
Yes No



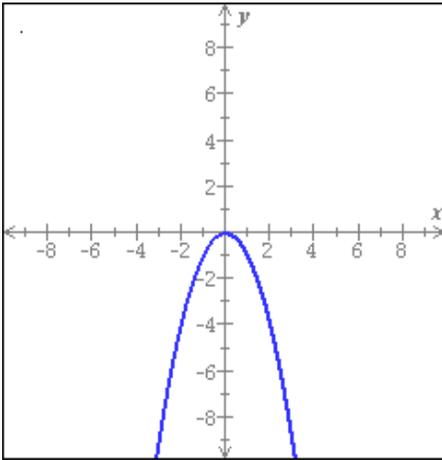
Function?:
Yes No



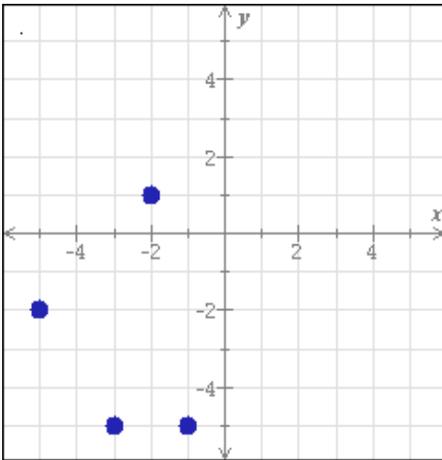
Function?:
Yes No



Function?:
Yes No



Function?:
Yes No



Function?:
Yes No

48. Suppose that the relation H is defined as follows.

$$H = \{ (7, 6), (-2, 4), (7, -9), (0, -2) \}$$

Give the domain and range of H .

Write your answers using set notation.

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

$$f(x) = 4x - 5$$

Complete the function table.

x	$f(x)$
-4	<input type="text"/>
-2	<input type="text"/>
1	<input type="text"/>
2	<input type="text"/>
4	<input type="text"/>

50. The functions f and g are defined as follows.

$$f(x) = 3x^2 - 3x \quad g(x) = -3x + 4$$

Find $f(-3)$ and $g(5)$.

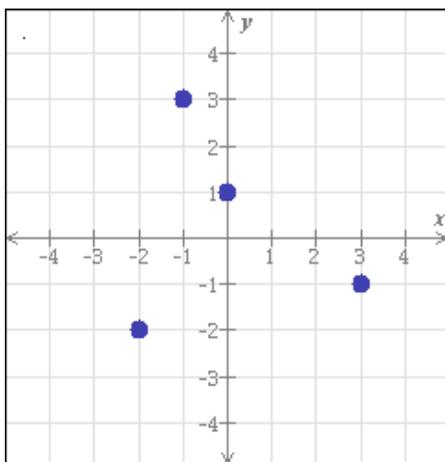
Simplify your answers as much as possible.

51. Felipe purchased a prepaid phone card for \$12.50 . Calls cost 7 cents a minute using this card. The credit, C (in dollars), left on the card after it is used for x minutes of calls is given by the following function.

$$C(x) = 12.50 - 0.07x$$

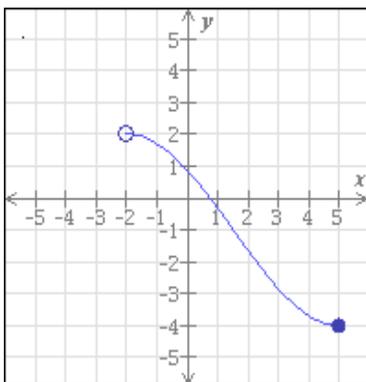
How much credit is left on the card after Felipe uses it for 40 minutes of calls?

52. The graph of the relation H is shown below.



Give the domain and range of H .
Write your answers using set notation.

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



54. Find the domain of the function.

$$g(x) = \sqrt{x-4}$$

Write your answer using interval notation.

55. Find the domain of the function.

$$h(x) = \sqrt{-x+5}$$

Write your answer using interval notation.

56. For each of the following equations, determine whether y is a function of x .

$$y^2 = 9x$$

- Function
- Not a function

$$2x - y = 6$$

- Function
- Not a function

$$x = 8y^2 + 5$$

- Function
- Not a function

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

- Function
- Not a function