

**Directions:** Show all work for each problem. Circle problems you would like explained before you take the final exam. Use your notes and the book to help refresh your memory on past concepts.

C

What is the solution of the equation?

1.  $x - 3 = 2$   
 a. 6  
 b.  $\frac{2}{3}$   
 c. 5  
 d. -1

What is the solution of the equation?

2.  $9 = -d + 17$        $-d + 17 = 9$        $-d = -8$   
     $-17 -17$        $d = 8$
3.  $\frac{2}{3}x - 9 = -6$        $\frac{2}{3}x = 3$        $\frac{3}{2} \cdot \frac{2}{3}x = 3 \cdot \frac{3}{2}$        $x = \frac{9}{2} = 4\frac{1}{2}$

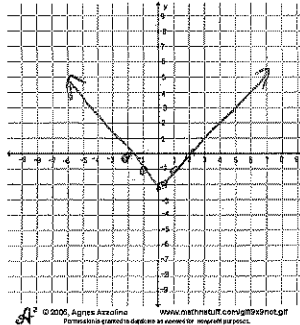
What is the solution of the proportion?

4.  $\frac{x+7}{11} = \frac{9}{3}$        $3(x+7) = (9)(11)$        $3x = 78$        $x = 26$   
     $3x + 21 = 99$        $\frac{3x}{3} = \frac{78}{3}$

Use an input/output (T-chart) to generate solutions to this function. Then graph the function.

5.  $y = |x| - 2$

x	y
-2	0
-1	-1
0	-2
1	-1
2	0



What is the slope of the line that passes through the pair of points? (Use slope formula)

6. (2, 5), (10, -1)       $m = \frac{-1 - 5}{10 - 2} = \frac{-6}{8} = \frac{-3}{4}$

Write an equation of a line with the given slope and y-intercept.

7.  $m = -2, b = -5$        $y = -2x - 5$

What are the slope and y-intercept of the graph of the given equation? (Get into  $y = mx + b$  first)

8.  $4x + y = 2$        $m = -4$        $b = 2$        $y = -4x + 2$

Find the x- and y-intercept of the line. (Plug in zero for the opposite variable)

9.  $-3x + 9y = 63$       x-int -21      y-int 7

Write an equation for the line that is parallel to the given line and passes through the given point.

10.  $y = 4x - 8$ ;  $(3, 2)$       Slope of parallel line 4  ~~$y = 4x - 8$~~

Write equation in point-slope form:

$y - y_1 = m(x - x_1)$        $y - 2 = 4(x - 3)$

Write equation in slope-intercept form:

$y - 2 = 4x - 12$   
 $y = 4x - 10$

What is the solution of the system? Use substitution.

11.  $y = 4x + 6$        $2x = 4x + 6$        $-2x = 6$       11.  $(-3, -6)$   
 $y = 2x$        $-4x - 4x$        $x = -3$

12.  $3x + 2y = 7$        $3x + 2(-3x + 11) = 7$        $y = -3(5) + 11$       12.  $(5, -4)$   
 $y = -3x + 11$        $3x - 6x + 22 = 7$        $y = -15 + 11$   
 $-3x = -15$        $x = 5$        $y = -4$

What is the solution of the system? Use elimination.

13.  $2x + 2y = 8$        $2x + 2y = 8$        $y = 1$        $x + 4(1) = 7$       13.  $(3, 1)$   
 $x + 4y = 7$        $\xrightarrow{\times 2} 2x + 8y = 14$        $x = 3$   
 $-6y = -6$

Which ordered pair is a solution of the inequality?

14.  $y \geq 4x - 5$        $1 \geq 4(1) - 5$        $1 \geq -1$   
A.  $(3, 4)$       B.  $(2, 1)$       C.  $(3, 0)$       D.  $(1, 1)$

What is the solution of the equation?

15.  $3(y + 5) - 2 = 34$        $3y + 15 - 2 = 34$        $3y = 21$        $y = 7$   
 $3y + 13 = 34$

What is the solution of the equation?

16.  $-6y + 14 + 4y = 32$        $-2y + 14 = 32$        $y = -9$   
 $-2y = 18$

What is the solution of the equation?

17.  $-(6x - 7) = -5(2x - 7)$        $-6x + 7 = -10x + 35$        $x = 7$   
 $4x = 28$

What word phrase can you use to represent the algebraic expression?

18.  $8x + 5$       Ex: "The sum of eight times a number and 5."  
"The product of 8 and x plus 5"

Which number is a solution of the inequality?

D 19.  $3 \leq 7x - 9$        $12 \leq 7x$        $\frac{7x}{7} \geq \frac{12}{7}$        $x \geq \frac{12}{7}$   
a.  $-\frac{8}{7}$       b.  $\frac{1}{8}$       c. 1      d.  $\frac{12}{7}$

What inequality represents the verbal expression?

D 20. 8 less than a number  $n$  is less than 15       $< 15$   
a.  $15 < 8 - n$       c.  $8 - n < 15$   
b.  $15 - 8 < n$       d.  $n - 8 < 15$


21. Suppose you had  $d$  dollars in your bank account. You spent \$10 but have at least \$40 left. How much money did you have initially? Write and solve an inequality that represents this situation.

$$d - 10 \geq 40 \quad d \geq 50$$

What are the solutions of the inequality? Graph the solutions on a number line.

22.  $x - 2 \leq -5$        $x \leq -3$       

What are the solutions of the inequality? Graph the solutions on a number line.


23.  $-4q < -16$        $q > 4$       

What are the solutions of the inequality?

24.  $-3(5x + 3) \geq -15x - 10$        $-15x - 9 \geq -15x - 10$        $-9 \geq -10$  True

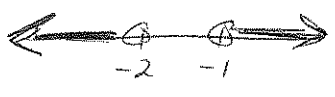
a.  $x \geq 1$       c. all real numbers  
b.  $x \leq 13$       d. no solution

What are the solutions of the compound inequality? Graph the solutions on a number line.

25.  $-12 \leq 2x - 4 < 2$        $-8 \leq 2x < 6$       

$+4 \quad +4 \quad +4$        $\boxed{-4 \leq x < 3}$

What are the solutions of the compound inequality? Graph the solutions on a number line.

26.  $3x - 10 < -16$  or  $6x + 1 > -5$        $3x < -6$        $6x > -6$       

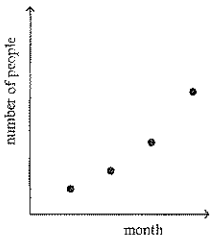
$+10 \quad +10$        $x < -2$  or  $x > -1$

27. A new comedian is building a fan base. The table shows the number of people who attended his shows in the first, second, third and fourth month of his career. Which graph could represent the data shown in the table?

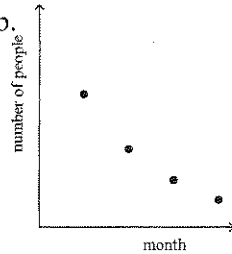
Month	Total Number of People
1	170
2	289
3	491
4	835

+119  
+202  
+344

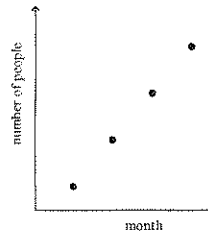
a.



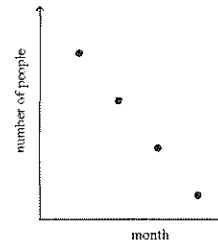
b.



c.



d.



The table shows the relationship between the number of sports teams a person belongs to and the amount of free time the person has per week.

Number of Sports Teams	Free Time (hours)
0	43
1	40
2	37
3	34

constant rate of change

} -3  
} -3  
} -3

A 28. Is the above relationship a linear function?

a. yes

b. no

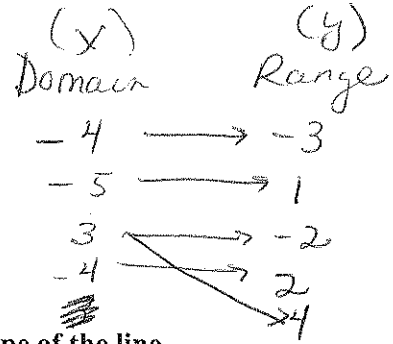
29. Evaluate  $u + xy$ , for  $u = 7$ ,  $x = 8$ , and  $y = 3$ .

$$7 + (8)(3) = 7 + 24 = 31$$

30. Use a mapping diagram to determine if the relation is a function.

$\{(-4, -3), (-5, 1), (3, -2), (-4, 2), (3, 4)\}$

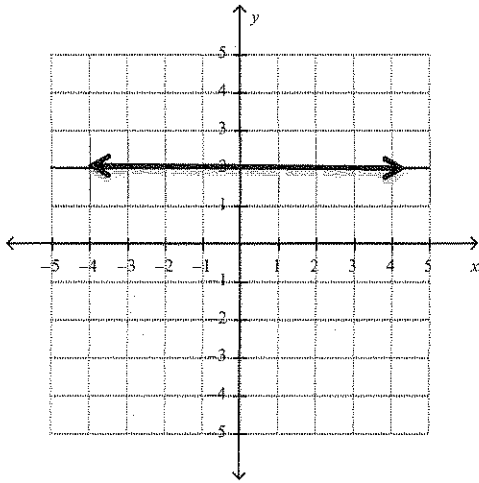
not a function  
one x is mapped to 2 y values



What is the slope of the line?

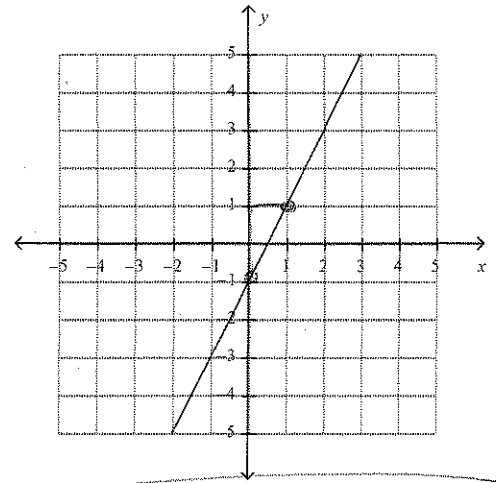
Find the slope of the line.

31.



$m = 0$

32.



$m = \frac{2}{1} = 2$

What is the simplified form of each expression?

33.  $\frac{3}{4}(-8m + 20)$

$-6m + 15$

34.  $(-3 - 9c)(-7)$

$21 + 63c$

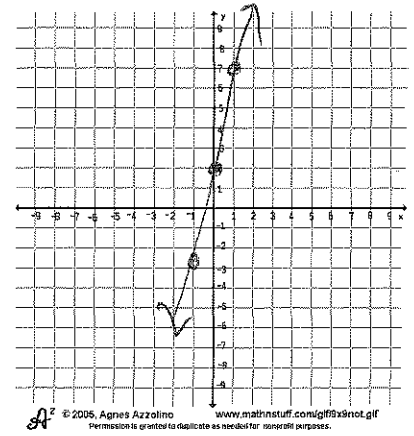
What is the solution of each equation? Use mental math.

35.  $\frac{x}{2} = 5?$

$x = 10$

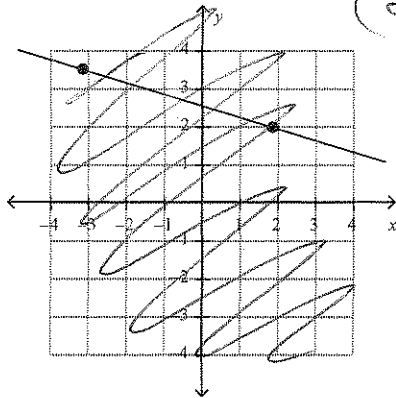
Graph the equation.

36.  $y = 5x + 2$   $\longrightarrow$



Write the slope-intercept form of the equation for the line.

37.



(See new graph)

$$m = -\frac{1}{4}$$

$$y\text{-int} = 7$$

$$y = -\frac{1}{4}x + 7$$

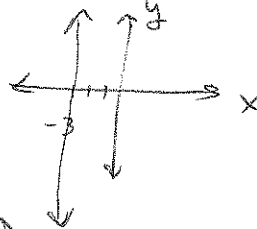
Write an equation in point-slope form for the line through the given point with the given slope.

38.  $(3, 6); m = -\frac{5}{3}$

$$y - 6 = -\frac{5}{3}(x - 3)$$

What is the graph of the equation?

39.  $x = -3$



What is the simplified form of each expression?

40.  $5(13 - 7)^2 + 2$

$$5(6)^2 \div 2$$

$$5(36) \div 2 = 90$$

41. The video store rents DVDs for \$4.50 each and video games for \$4.00 each. Write an equation in standard form for the number of DVDs  $d$  and video games  $g$  that a customer could rent with \$12.

$$4.5d + 4g = 12$$

42. Write  $y = \frac{1}{3}x + 2$  in standard form using integers.

$$3y = x + 6$$

$$-x + 3y = 6$$

What is an algebraic expression for the word phrase?

43. 4 times the sum of  $s$  and  $c$

$$4(s + c)$$

$$\text{or } x - 3y = -6$$

Write the equation of a line that is perpendicular to the given line and that passes through the given point.

44.  $y - 3 = -\frac{3}{7}(x - 1); (1, 3)$

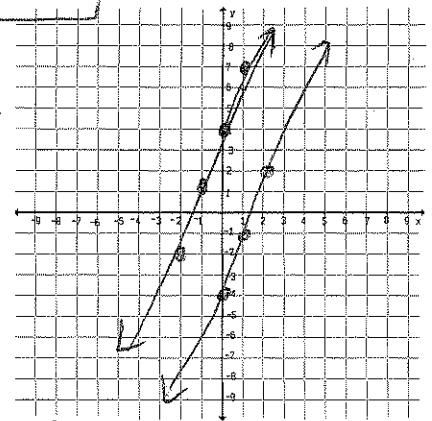
$$\perp m = \frac{7}{3}$$

$$y - 3 = \frac{7}{3}(x - 1)$$

What is the solution of the system? Use a graph.  $\longrightarrow$

45.  $y = 3x - 4$   
 $y = 3x + 4$

Parallel lines  
(no solutions)



What is the solution of the system? Use elimination.

$$\begin{array}{r} 46. \quad 3x - 4y = 9 \\ + \quad -3x + 2y = 9 \\ \hline -2y = 18 \end{array}$$

$$y = -9$$

$$\begin{array}{r} -3x + 2(-9) = 9 \\ -3x - 18 = 9 \\ -3x = 27 \\ x = -9 \end{array}$$

$$46. \quad (-9, -9)$$

What is the solution of the equation?

$$47. \quad \frac{b+5}{3} = 3$$

$$\begin{array}{r} b+5 = 9 \\ \hline b = 4 \end{array}$$

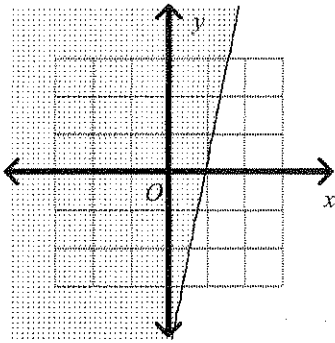
48. John and 2 friends are going out for pizza for lunch. They split one pizza and 3 large drinks. The pizza cost \$11.00. They spend a total of \$15.95. Find the cost of one large drink.

$$\begin{array}{r} \text{Equation: } 11.00 + 3d = 15.95 \\ \hline 3d = 4.95 \end{array}$$

$$\text{Drink: } \$ 1.65$$

Which inequality represents the graph?

49.



$$\begin{array}{r} m = 5 \\ b = -5 \end{array}$$

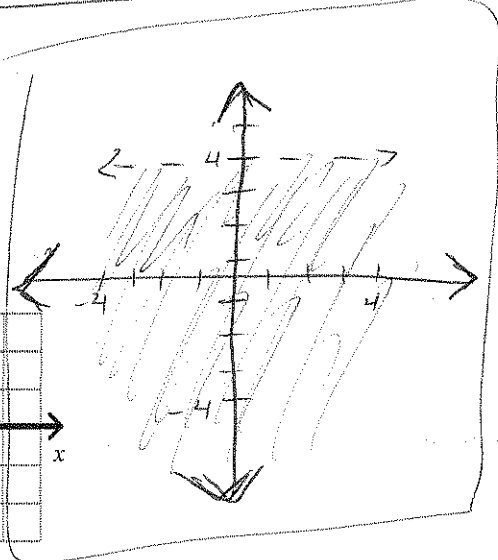
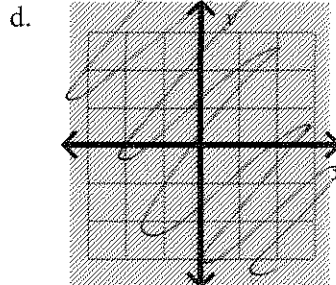
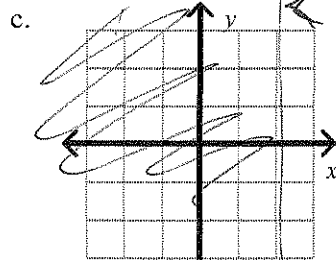
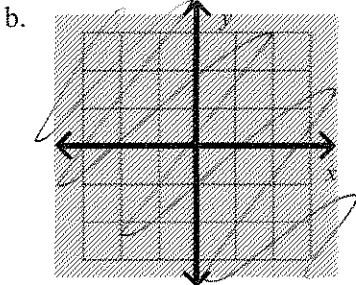
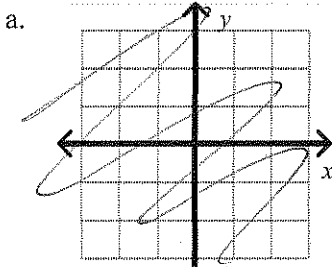
equation

$$y = 5x - 5$$

$$y \geq 5x - 5$$

What is the graph of the inequality in the coordinate plane?

50.  $y < 4$



51. Evaluate  $\frac{2z}{x} + xy^4$ , for  $u = 6$ ,  $x = 5$ ,  $y = 10$ , and  $z = 6$ .

$$\frac{6}{5} + 5(10)^4 = 1 + 5(10000) = 50001$$

52. The school cafeteria sells two kinds of wraps: vegetarian and chicken. The vegetarian wrap costs \$1.00 and the chicken wrap costs \$3.20. Today they made \$160.20 from the 70 wraps sold. How many of the wraps sold were vegetarian?

$x = \#$  of vegetarian wraps       $y = \#$  of chicken wraps

$$x + y = 70$$

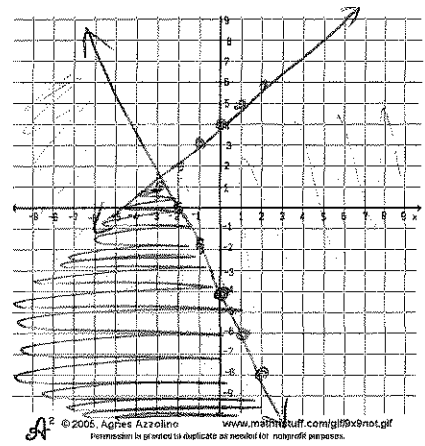
$$\begin{array}{r} 1x + 3.20y = 160.20 \\ - x + y = 70.00 \\ \hline 2.20y = 90.20 \end{array}$$

chicken  $y = 41$   
vegetarian  $x = 29$

What is the graph of the system?  $\longrightarrow$

53.  $y \leq x + 4$   
 $2x + y \leq -4$

$y \leq -2x - 4$



54. Evaluate  $f(x) = -x - 6$  for  $x = -8$

$f(-8) = -(-8) - 6$

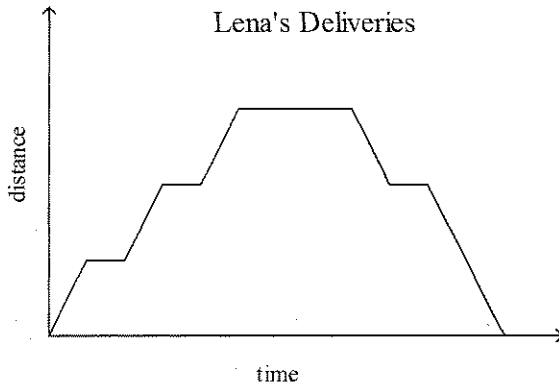
$f(-8) = 8 - 6$

$f(x) = 2$

$f(-8) = 2$

What are the variables in each graph? Describe how the variables are related at various points on the graph.

55. Lena makes home deliveries of groceries for a supermarket. Her only stops after she leaves the supermarket are at traffic lights and the homes where she makes the deliveries. The graph shows her distance from the store on her first trip for the day. What are the variables? Describe how the variables are related at various points on the graph.



The variables are distance and time. As Lena leaves the Supermarket her distance increases as time progresses. When she stops, her distance is constant and her time progresses. As she makes her way back to the store her distance decreases as time progresses.