

1. Solve: $3|5b + 4| - 6 = 36$

$$\begin{array}{r} +1+1 \\ \hline 3|5b+4|=42 \end{array}$$

$$\begin{array}{r} 3|5b+4|=42 \\ \hline |5b+4|=14 \end{array}$$

$$\begin{array}{r} 5b+4=14 \\ -4 \quad -4 \\ \hline 5b=10 \\ \hline b=2 \end{array} \quad \boxed{b=2}$$

$$\begin{array}{r} 5b+4=-14 \\ -4 \quad -4 \\ \hline 5b=-18 \\ \hline b=-18/5 \end{array} \quad \boxed{b=-18/5}$$

2. Write the linear function f with the given values $f(1) = -3$ and $f(5) = 5$.

$(1, -3)$ $(5, 5)$

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

$$\begin{array}{l} y = mx + b \\ 5 = 2(5) + b \\ 5 = 10 + b \end{array}$$

$$\begin{array}{r} 5 = 10 + b \\ -10 \quad -10 \\ \hline -5 = b \end{array}$$

$$\boxed{y = 2x - 5}$$

3. Give 3 ordered pairs that are solutions of $y = 2x - 3$.

$$\begin{array}{l} x = 0 \\ y = 2(0) - 3 \\ y = -3 \end{array} \quad \boxed{(0, -3)}$$

$$\begin{array}{l} x = 1 \\ y = 2(1) - 3 \\ y = 2 - 3 \\ y = -1 \end{array} \quad \boxed{(1, -1)}$$

$$\begin{array}{l} x = 2 \\ y = 2(2) - 3 \\ y = 4 - 3 \\ y = 1 \end{array} \quad \boxed{(2, 1)}$$

4. Find the equation that can be used to generate the table of values below.

x	-2	0	2	4
y	-5	-3	-1	1

$$m = \frac{-3 - (-5)}{0 - (-2)} = \frac{-3 + 5}{2} = \frac{2}{2} = 1$$

$$\begin{array}{l} y = mx + b \\ -3 = 1(0) + b \\ -3 = b \end{array}$$

$$\boxed{y = 1x - 3}$$

5. You and a friend drive toward each other. The equation $27h = 96 + 15h$ represents the number of hours until you and your friend meet. After how many hours will you meet?

$$\begin{array}{r} 27h = 96 + 15h \\ -15h \quad -15h \\ \hline 12h = 96 \\ \hline h = 8 \end{array}$$

$$\boxed{h = 8 \text{ hrs}}$$

6. Solve: $|4b - 5| = 19$

$$\begin{array}{r} 4b - 5 = 19 \\ +5 \quad +5 \\ \hline 4b = 24 \\ \hline b = 6 \end{array} \quad \boxed{b = 6}$$

$$\begin{array}{r} 4b - 5 = -19 \\ +5 \quad +5 \\ \hline 4b = -14 \\ \hline b = -7/2 \end{array} \quad \boxed{b = -7/2}$$

7. An online video game rental company has a one-time registration fee of \$9.99 and charges \$1.49 to rent each game. Write an inequality that represents how many games you can rent with a \$40 budget. Also find out how many games you can rent.

$$\boxed{1.49g + 9.99 \leq 40}$$

$$\begin{array}{r} 1.49g + 9.99 \leq 40 \\ -9.99 \quad -9.99 \\ \hline 1.49g \leq 30.01 \\ \hline g \leq 20 \end{array}$$

$$\boxed{g \leq 20}$$

8. Tim uses the function $C = .20m + 25$ to determine his phone bill for the month using m minutes. Find the monthly bill C when he talks for 75 minutes. Which variable is the dependent variable?

$$\begin{array}{l} C = .2(75) + 25 \\ 15 + 25 \\ C = 40 \end{array}$$

$$\boxed{\$40}$$

$$\begin{array}{l} C = \text{DEPENDENT} \\ m = \text{INDEPENDENT} \end{array}$$

9. What is the equation of the line that passes through the given point and parallel to the given equation?

(3, -7); $y = -3x + 7$

$y = mx + b$
 $-7 = -3(3) + b$
 $-7 = -9 + b$
 $+9 \quad +9$
 $2 = b$

$m = -3$

$y = -3x + 2$

10. Write the sentence as an inequality. Solve and graph the inequality.

Fifteen is no more than a number t divided by 5.

$15 \leq \frac{t}{5}$

11. Solve: $\frac{3}{4}(12c - 4) = 15c + 15$

$9c - 3 = 15c + 15$

$-9c \quad -9c$
 $-3 = 6c + 15$
 $-15 \quad -15$
 $-18 = 6c$
 $\frac{-18}{6} = \frac{6c}{6}$
 $-3 = c$

12. Solve and graph the inequality: $6 \geq -6(a + 2)$

$6 \geq -6(a + 2)$
 $6 \geq -6a - 12$
 $+12 \quad +12$
 $18 \geq -6a$

$\frac{18}{-6} \geq \frac{-6a}{-6}$
 $-3 \geq a$ or $a \leq -3$

13. Determine which of the lines, if any are parallel.

Line a: $y = 3x + 8$

Line b: $3y + x = 5$
 $-x \quad -x$
 $2y = -x + 5$
 $\frac{2y}{2} = \frac{-x + 5}{2}$
 $y = \frac{1}{2}x + \frac{5}{2}$

Line c: $6x - 2y = 14$
 $\frac{6x}{-6} - \frac{2y}{-6} = \frac{14}{-6}$
 $-\frac{2y}{-6} = -\frac{6x}{-6} + \frac{14}{-6}$
 $\frac{2y}{2} = \frac{-6x}{-2} + \frac{14}{-2}$
 $y = 3x - 7$

14. Solve: $\frac{1}{2}(6x + 2) = 5(x + 3)$

$3x + 1 = 5x + 15$
 $-3x \quad -3x$
 $1 = 2x + 15$
 $-15 \quad -15$
 $-14 = 2x$
 $\frac{-14}{2} = \frac{2x}{2}$
 $x = -7$

15. Find the x- and y-intercepts of the graph of the linear equation: $2x - 5y = 10$

$2(0) - 5y = 10$
 $-5y = 10$
 $\frac{-5y}{-5} = \frac{10}{-5}$
 $y = -2$

$2x - 5(0) = 10$
 $2x - 0 = 10$
 $2x = 10$
 $\frac{2x}{2} = \frac{10}{2}$
 $x = 5$

16. Solve and graph the inequality: $-6 < 3n + 9 < 21$

$-9 \quad -9 \quad -9$
 $-15 < 3n < 12$
 $\frac{-15}{3} < \frac{3n}{3} < \frac{12}{3}$
 $-5 < n < 4$

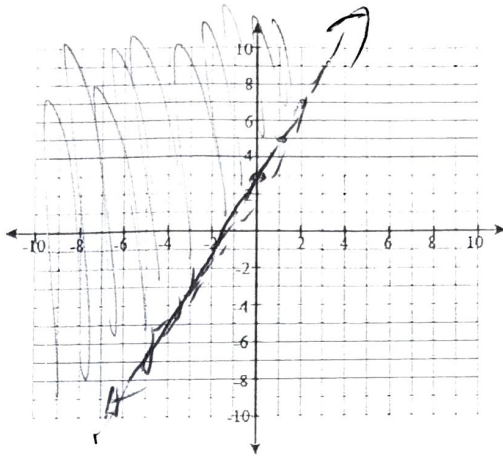
Graph: $-5 < n < 4$

17. You are renting a car for the weekend. The equation $2m + 15 = 3.5m$ represents the number m miles you must drive to spend the same amount at each of two rental companies. How many miles must you drive to spend the same amount at each company?

$2m + 15 = 3.5m$
 $-2m \quad -2m$
 $15 = 1.5m$
 $\frac{15}{1.5} = \frac{1.5m}{1.5}$
 $m = 10$ miles

18. Graph $14x - 7y < -21$

$$\begin{aligned} -14x & \quad -14x \\ -7y & < -14x - 21 \\ \frac{-7y}{-7} & < \frac{-14x - 21}{-7} \\ y & > 2x + 3 \end{aligned}$$



19. Solve this system of equations using any method.

$$\begin{cases} 4x + 3y = -1 \\ 3x + y = -7 \end{cases}$$

$$\begin{aligned} 3(-4) + y &= -7 \\ -12 + y &= -7 \\ \frac{+12}{+12} & \quad \frac{+12}{+12} \\ y &= 5 \end{aligned}$$

$$\boxed{(-4, 5)}$$

$$\begin{aligned} \textcircled{1} \quad 4x + 3y &= -1 \\ -9x - 3y &= 21 \\ \hline -5x &= 20 \\ \frac{-5x}{-5} &= \frac{20}{-5} \\ x &= -4 \end{aligned}$$

20. Evaluate the function $g(x) = -4.5x + 17$ when $x = -3$.

$$\begin{aligned} & -4.5(-3) + 17 \\ g(-3) &= 30.5 \end{aligned}$$

21. Determine whether each equation can be classified as having one, many or no solutions.

ONE
 $4c - 2 = 2c$
 $\frac{-2c}{-2c} \quad \frac{-2c}{-2c}$
 $2c - 2c = 2c - 2c$
 $0 = 0$
(C)

NONE
 $5(-g - 10) = 6 - 5g$
 $\frac{-5g - 50}{-5g} = \frac{6 - 5g}{-5g}$
 $-50 \neq 6$

MANY
 $8x + 12 = 4(2x + 3)$
 $8x + 12 = 8x + 12$

22. Determine which lines, if any, are parallel or perpendicular:

Line a: $y = 6x - 2$

Line b: $6y = -x$

Line c: $y + 6x = 1$

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

$$y = -6x + 1$$

$$\boxed{a \perp b}$$

23. Solve: $9|4p + 2| + 8 = 35$

$$\begin{aligned} & -8 \quad -8 \\ 9|4p + 2| + 8 &= 35 \\ \frac{9|4p + 2|}{9} &= \frac{27}{9} \end{aligned}$$

$$|4p + 2| = 3$$

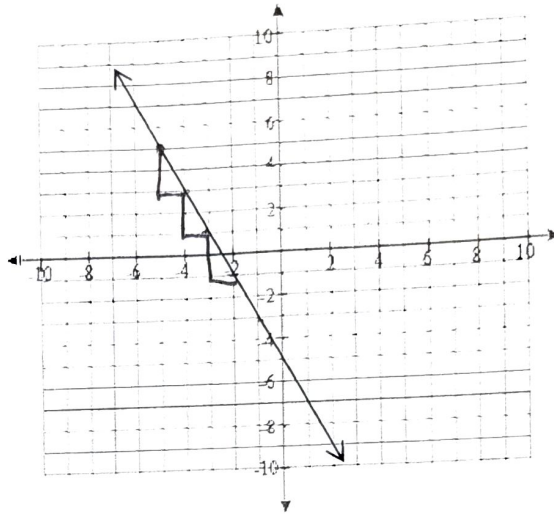
$$\begin{aligned} 4p + 2 &= 3 \\ \frac{-2}{-2} & \quad \frac{-2}{-2} \\ 4p &= 1 \\ \frac{4p}{4} &= \frac{1}{4} \end{aligned}$$

$$\begin{aligned} 4p + 2 &= -3 \\ \frac{-2}{-2} & \quad \frac{-2}{-2} \\ 4p &= -5 \\ \frac{4p}{4} &= \frac{-5}{4} \end{aligned}$$

$$\boxed{p = \frac{1}{4} \text{ or } p = -\frac{5}{4}}$$

24. What is the slope of the line at the right?

$$m = -2$$



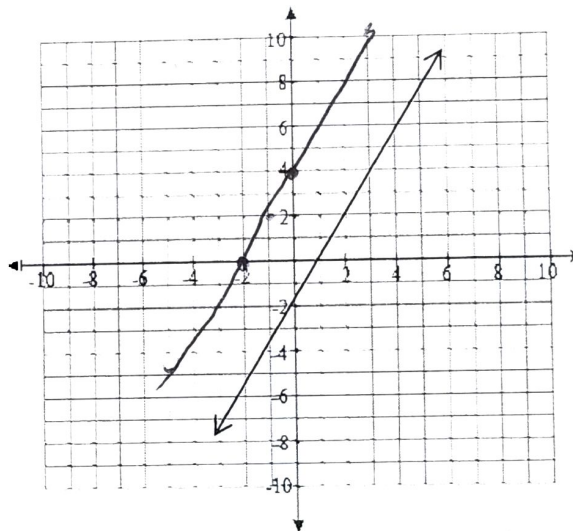
25. Find the common difference of the arithmetic sequence. State the next 3 terms.

-16, -12, -8, -4, ... $0, 4, 8$

\checkmark \checkmark \checkmark
 4 4 4 4 4

26. Use the graph at the right. If the x-intercept decreases by 3 and the slope remains the same, what will the y-intercept be?

$$(0, 4)$$



27. What value of x will make $f(x) = -13$? $f(x) = -3x + 11$

$f(x) = -3x + 11$

$$\begin{aligned} -13 &= -3x + 11 \\ -24 &= -3x \\ \frac{-24}{-3} &= \frac{-3x}{-3} \end{aligned}$$

$$x = 8$$

28. You need to write an essay that has at least 500 words. You have written 285 words so far. Write and solve an inequality that represents the number of words w that you have left to write.

$$285 + w \geq 500$$

$$\begin{aligned} 285 + w &\geq 500 \\ -285 & \quad -285 \\ \hline w &\geq 215 \text{ words} \end{aligned}$$

29. Use the slopes and y-intercepts to determine whether the graphs of the linear equation are parallel, perpendicular, coinciding, or neither.

$2x - y = 10$ and $-4x - 2y = -8$
 $-y = -2x + 10 \rightarrow y = 2x - 10$
 $\frac{-4x - 2y = -8}{+4x} \rightarrow \frac{-2y = -8}{-2} \rightarrow y = 4x - 4$
 $y = -2x + 10$ $y = 4x - 4$ **NEITHER**

30. You plant a spruce tree that is 14 inches tall and grows 4 inches a year and a hemlock tree that is 8 inches tall that grows 6 inches a year.

a. write a system of linear equations that represent this situation.

$4x + 14 = 6x + 8$

b. Solve the system using any method.

$x = 6$

$4x + 14 = 6x + 8$
 $-4x \quad -4x$
 $14 = 2x + 8$
 $-8 \quad -8$
 $6 = 2x$
 $3 = x$
 $y = 5$

31. What is the solution to the system of equations?

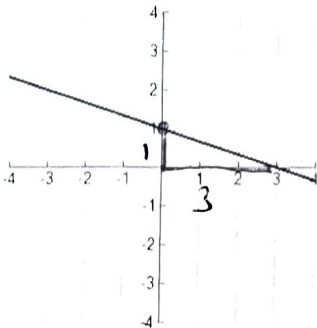
$x - 5y = -30$
 $3x + 5y = 10$

$4x = -20$
 $x = -5$

$-5 - 5y = -30$
 $-5y = -25$
 $y = 5$

$(-5, 5)$

32. What is the slope and y-intercept of the equation of the line on the graph below?



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

33. What is the equation of the line that passes through the given point and is parallel to the given equation?

$(4, -3); y = -3x + 5$

$m = -3$
 $x = 4$
 $y = -3$

$y = mx + b$
 $-3 = -3(4) + b$
 $-3 = -12 + b$
 $+12 \quad +12$
 $9 = b$

$y = -3x + 9$

34. Describe the number of solutions for the system below.

$2(2x + 3y = -6) \rightarrow$
 $4x + 6y = -12$
 $-4x - 6y = 12$

$4x + 6y = -12$
 $-4x - 6y = 12$
 $0 = 0$

INFINITE SOLUTIONS

35. The solution to the equation below is stepped out. List the properties that can be used to justify each step.

$$5x + 17 = 2$$

Step 1: $5x + 17 - 17 = 2 - 17$ SUBTRACTION PROPERTY

Step 2: $5x = -15$ SIMPLIFICATION

Step 3: $5x/5 = -15/5$ DIVISION PROP.

Step 4: $x = -3$ SIMPLIFICATION

36. Find a number such that, 13 less than 3 times a number is -34.

$$-34 = 3x - 13$$

$x = -7$

$$\frac{-34 + 13}{3} = \frac{3x - 13 + 13}{3}$$

$$\frac{-21}{3} = \frac{3x}{3}$$

37. Determine which table represent a linear function.

A.

x	0	1	2	3
y	-4	-2	0	2

LINEAR FUNCTION

B.

x	0	2	4	6
y	-8	-3	3	7

LINEAR
NON LINEAR

38. Solve: $-3 \leq 4x - 7 \leq 13$

$$\frac{-3 + 7}{4} \leq \frac{4x - 7 + 7}{4} \leq \frac{13 + 7}{4}$$

$$1 \leq x \leq 5$$

39. Determine which relations are functions.

A. $(-5, 3), (-3, 7), (-1, 11), (1, 15), (3, 19)$

FUNCTION

B. $(-2, -2), (2, 0), (-2, 8), (3, 7), (5, 9)$

NOT A FUNCTION

40. Graph the inequality: $y > -2x - 4$

