

1. Evaluate the expression $-3 + 12x - x^3$ when $x = 4$.

$$\begin{aligned} & -3 + 12(4) - (4)^3 \\ & -3 + 48 - 64 = \boxed{-19} \end{aligned}$$

2. John wants to plant some oregano in a cube-shaped planter box. If one side of the box measures 8 inches, how much soil will be needed to fill the planter?

$$8^3 = \boxed{512 \text{ in}^3}$$

3. Evaluate $5y^2 \div 2 - 7$ when $y = -1$.

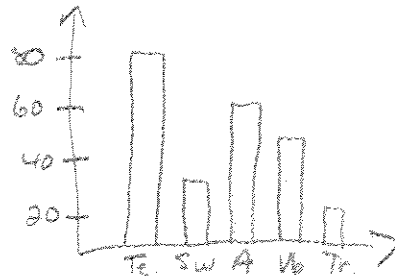
$$5(-1)^2 \div 2 - 7 = \boxed{-4.5}$$

4. Use a calculator to solve the problem. When Jane works overtime (any hours over 40 hours a week), she is paid 2 times her regular hourly rate. Last week she worked 50 hours. If her regular hourly rate is \$6.40, what did she earn last week?

$$\begin{aligned} & 6.40 \cdot 40 = 256 \\ & 12.80 \cdot 10 = 128 \\ & \boxed{\$384} \end{aligned}$$

5. Model the data in the table using a bar graph.

Sport	Number of Participants
Tennis	80
Swimming	30
Aerobics	60
Volleyball	45
Track	20



6. Write the numbers in *increasing* order. $7, -\frac{5}{6}, \frac{2}{3}, 0, -\frac{1}{2}, \frac{4}{5}$

$$-\frac{5}{6}, -\frac{1}{2}, 0, \frac{2}{3}, \frac{4}{5}, 7$$

7. Evaluate the sum $25.45 + (-1.34) + |-5.3|$.

$$\boxed{29.42}$$

8. Find the sum of the matrices. $\begin{bmatrix} 16 & -37 \\ 14 & -32 \end{bmatrix} + \begin{bmatrix} -33 & -17 \\ 39 & 8 \end{bmatrix} = \begin{bmatrix} -17 & -54 \\ 53 & -24 \end{bmatrix}$

9. Find the difference of the matrices $\begin{bmatrix} 8 & -12 \\ 7 & -2 \end{bmatrix} - \begin{bmatrix} -3 & -5 \\ -4 & 2 \end{bmatrix} = \begin{bmatrix} 11 & -7 \\ 11 & -4 \end{bmatrix}$

10. Find the product $(3.5)(-10)$.

$$\boxed{-35}$$

11. Simplify the expression $3(x - 4) - 3(7 - x)$.

$$3x - 12 - 21 + 3x = \boxed{6x - 33}$$

12. Divide: $40 \div (-5)$

$$\boxed{-8}$$

13. The temperature was $x^\circ \text{ F}$. It rose 14° F and is now -10° F . What was the original temperature? Write a linear model of the situation.

$$\begin{aligned} & x + 14 = -10 \\ & \quad \quad -14 \quad -14 \\ \hline & \boxed{x = -24} \end{aligned}$$

Solve the equation:

14. $3x = 21$

$x = 7$

15. $\frac{x}{7} = 8$

$x = 56$

16. Solve: $6x + 14 + 2x = 62$

$8x + 14 = 62$
 $8x = 48$
 $x = 6$

17. Solve the equation: $5x + 14 - 2x = 9 - (4x + 2)$

$3x + 14 = 9 - 4x - 2$
 $3x + 14 = -4x - 2$
 $7x = -7$
 $x = -1$

18. Solve the equation. Round your result to two decimal places. $8.4y - 13.5 = 1.3y - 13.3$

$7.1y = .2$
 $y = .03$

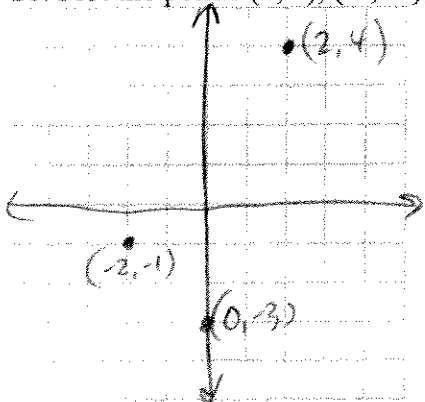
19. If an 18 ounce can of apple juice sells for \$3.60, find the cost of one ounce. How much would 24 ounces cost?

$\frac{3.60}{18} = .20$
 $24 \times .2 = 4.80$

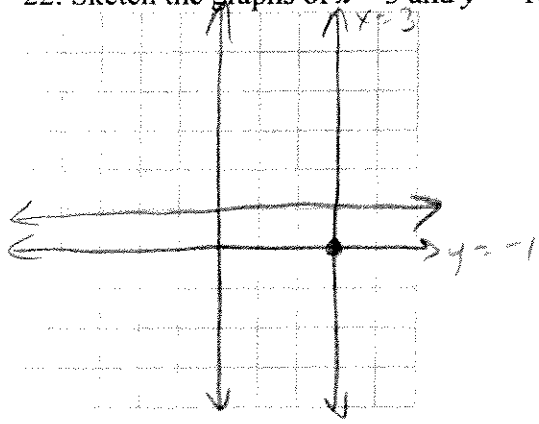
20. Write the equation as a function of s : $9 = t - 5s$

$9 = t - 5s$
 $+5s$ $+5s$
 $5s + 9 = t$

21. Plot the points (2, 4), (-2, -1), and (0, -3).

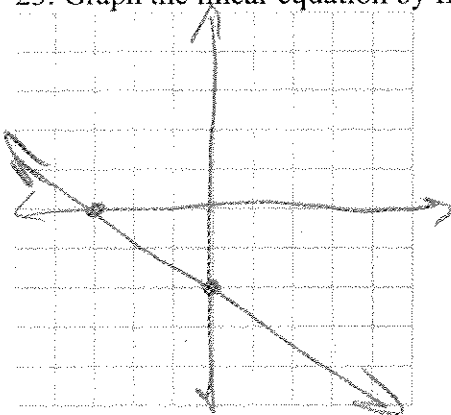


22. Sketch the graphs of $x = 3$ and $y = -1$. Find the point at which the two graphs intersect.



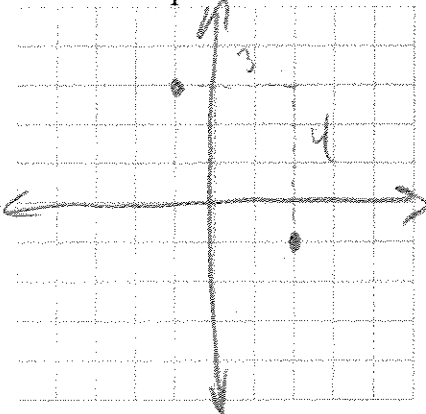
$(3, -1)$

23. Graph the linear equation by finding x- and y-intercepts. $4x + 6y = -12$



$$\begin{aligned} 0 + 6y &= -12 \\ y &= -2 \\ 4x + 0 &= -12 \\ x &= -3 \end{aligned}$$

24. Plot the points and find the slope of the line passing through the points (2, -1) and (-1, 3).



$$\frac{4}{-3} = m$$

$$\frac{42,000}{165} = 254.55 \frac{\text{ft}}{\text{min}}$$

25. During the first 165 minutes of flight, the Concorde climbs from ground level to an altitude of about 42,000 ft. What is the Concorde's rate of change in altitude during this time? Round your answer to the nearest hundred.

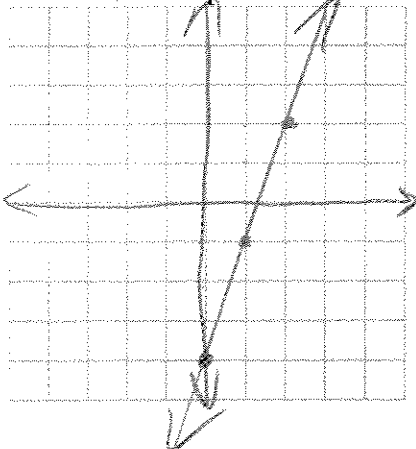
$$300 \text{ ft/min}$$

26. The weight, W , of a plank varies directly with its length, l . A 5 foot plank weighs 25 pounds. Write an equation relating W and l .

$$l = 5 \quad \frac{25}{5} = \frac{5k}{5}$$

$$W = 5l$$

27. Write in slope-intercept form and sketch the line. $3x - y = 4$



$$\begin{aligned} 3x - y &= 4 \\ -y &= -3x + 4 \\ y &= 3x - 4 \end{aligned}$$

28. Is the relation $\{(-3, 4), (7, 5), (-3, 1), (4, 7)\}$ a function?

NO

29. Lupe plans to paint baskets. The paint costs \$15.25. The baskets cost \$6.50 each. Write a function $C(x)$, for cost of x baskets.

$$C(x) = 6.50x + 15.25$$

Determine the cost of three baskets.

$$C(3) = 34.75$$

30. Write an equation of the line with slope $\frac{1}{2}$ and y-intercept 5.

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

31. The cost of a school banquet is \$80 plus \$15 per person attending. Determine the linear equation that models this problem. What is the cost for 75 people?

$$y = 15x + 80$$

$$y = 15(75) + 80$$

$$y = 1205$$

32. Write an equation of a line with slope 4 passing through the point $(-6, 2)$.

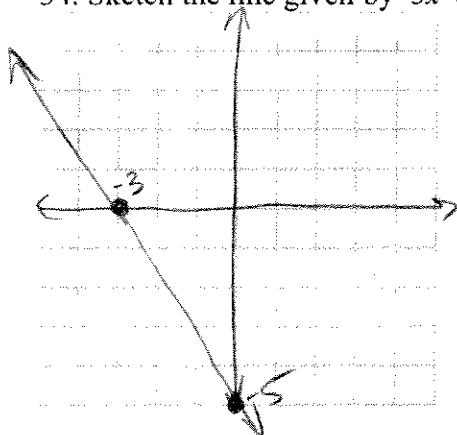
$$y - 2 = 4(x + 6)$$

33. Write an equation for the line containing points $(6, 24)$ and $(3, 9)$.

$$\frac{9 - 24}{3 - 6} = \frac{-15}{-3} = 5$$

$$y - 9 = 5(x - 3)$$

34. Sketch the line given by $5x + 3y = -15$. Label the x- and y-intercepts.

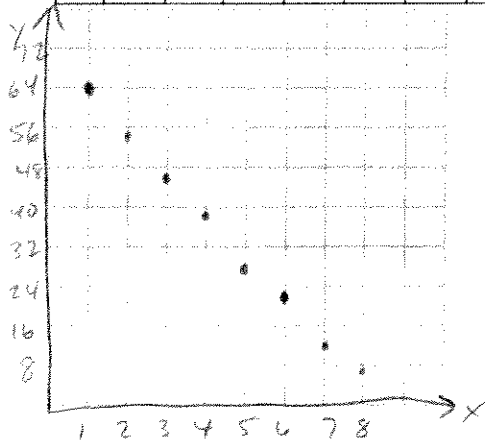


$$y = -5$$

$$x = -3$$

35. In the table, x represents the number of hours you have worked at a lawn-mowing job and y represents the number of ounces of water left in your water cooler. Construct a scatter plot for this data and find an equation you think best represents the data.

x	1	2	3	4	5	6	7	8
y	64	55	46	38	28	22	12	7



$(1, 64)$
 $(8, 7)$

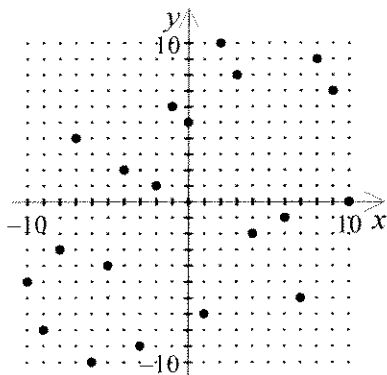
$$\frac{64 - 7}{1 - 8} = \frac{57}{-7}$$

$$64 = -\frac{57}{7}(1) + b$$

$$\frac{505}{7} = b$$

$$y = -\frac{57}{7}x + \frac{505}{7}$$

36. What type of relationship – positive, negative, or none – is shown by the scatter plot?



NONE

37. Use the point-slope form to write an equation of the line that passes through the point (2, -3) with a slope of $\frac{1}{4}$.

$$y + 3 = \frac{1}{4}(x - 2)$$

38. Rewrite the equation $y = -\frac{3}{4}x - \frac{1}{2}$ in *standard form* with integer coefficients.

$$4y = -3x - 2 \quad 3x + 4y = -2$$

39. A real estate sales agent receives a salary of \$325 per week plus a commission of 1.75% of sales. Write a linear model for the weekly income of y in terms of sales x .

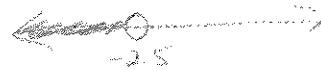
$$y = .0175x + 325$$

40. Solve and graph the inequality: $5x - 1 < 3(x - 2)$.

$$5x - 1 < 3x - 6$$

$$2x < -5$$

$$x < -\frac{5}{2}$$



41. Solve the inequality. $3 + \frac{3}{4}x \leq 9$.

$$\frac{3}{4}x \leq 6$$

$$x \leq 8$$

42. Solve the inequality. $5 \leq x + 3 < 11$

$$2 \leq x < 8$$

43. Solve the equation algebraically. $|x - 2| - 2 = 7$

$$x - 2 = 9$$

$$x - 2 = -9$$

$$x = 11$$

$$x = -7$$

44. Solve: $|x - 7| < 7$

$$x - 7 < 7$$

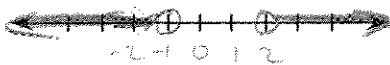
$$x < 14$$

$$x - 7 > -7$$

$$x > 0$$

$$0 < x < 14$$

45. Sketch the graph of the inequality $|2x - 1| > 3$.



$$2x - 1 > 3$$

$$2x > 4$$

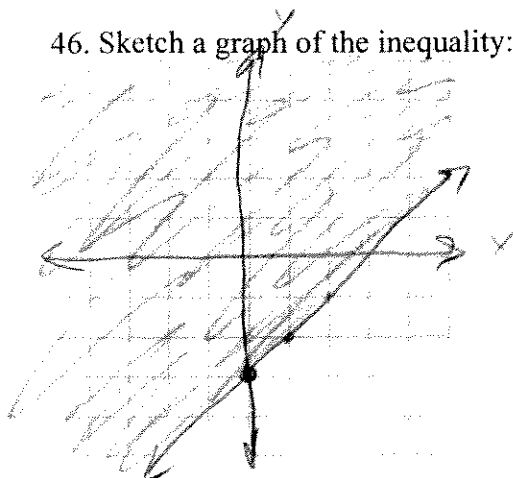
$$x > 2$$

$$2x - 1 < -3$$

$$2x < -2$$

$$x < -1$$

46. Sketch a graph of the inequality: $3x - 3y \leq 9$.



$$\begin{aligned} -3y &\leq -3x + 9 \\ \frac{-3y}{-3} &\leq \frac{-3x}{-3} + \frac{9}{-3} \end{aligned}$$

$$y \geq x - 3$$

47. A wholesaler has \$90,000 to spend on certain models of TV sets and VCRs. If the TV sets may be obtained at \$400 each and the VCRs at \$150 each, write an inequality that restricts the purchase of x TVs and y VCRs.

$$400x + 150y \leq 90,000$$

48. The list shows the final exam grades for Mr. Allen's history class.

~~72, 60, 55, 98, 56, 71, 54, 83, 89, 57, 75, 96, 64, 88, 61, 93, 90, 92, 89, 87~~

Construct a stem-and-leaf plot for the data.

54 55 56 57 60 61 64 71 72 75 83 87 88 89 90 92 93 96 98

5	4	5	6	7
6	0	1	4	
7	1	2	5	
8	3	7	8	9
9	0	2	3	6

Key 5/4 = 54

49. What are the mean, median, and mode of the data in the following sample?

4, 18, 11, 1, 1, 14, 2, 1, 17, 7, 1

1, 1, 1, 1, 2, 4, 7, 11, 17, 18

Mean: 7

Median: 4

Mode: 1

10
12
35
62
77

50. Draw a box-and-whisker plot for the data. 15, 16, 20, 10, 13, 12, 24.

10, 12, 13, 15, 16, 20, 24
1Q 2Q 3Q

