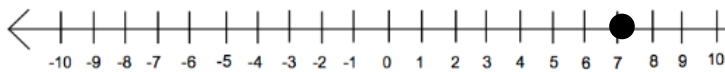


Unit 1

1. Given the two functions $f(x) = -2x - 4$ and $h(x) = 3x - 4$, compare $f(-2)$ and $h(0)$.

2. Mark solved and graphed the following problem incorrectly, where did he make his mistake?

$$\begin{aligned}
 3(x - 2) &= 16 \\
 3x - 6 &= 16 \\
 3x &= 22 \\
 x &= \frac{22}{3}
 \end{aligned}$$

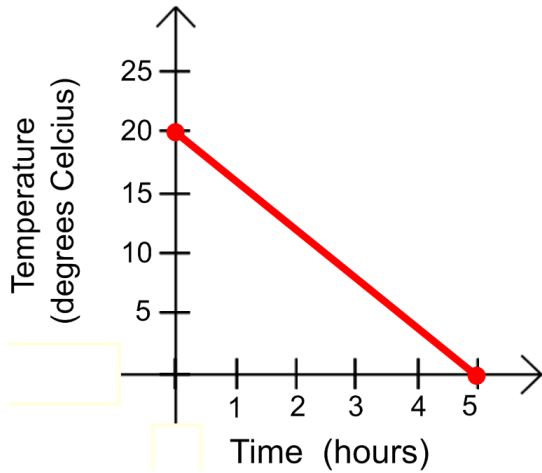


3. Solve the equation below:
 $7(x - 2) + 4 = -3(x + 4)$

4. Find the value of x .
 $2x - 8 \geq -12$

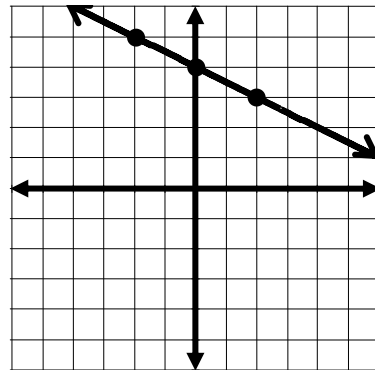
Unit 3

5. Nicholas is making ice cubes and measured the temperature of the water as it cooled. The data is graphed below.



Identify the x -intercept, y -intercept, and rate of change of the function. Include units and interpret the meaning in context.

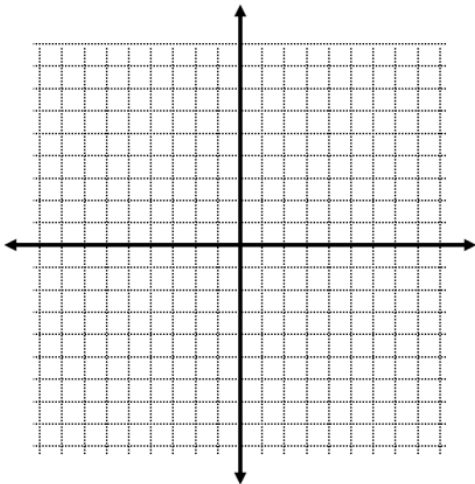
6. Write the equation of the line.



7. Sara types at a constant rate of 40 words per minute. She records the number of words at different times during her assignment. Fill in the missing values in the table.

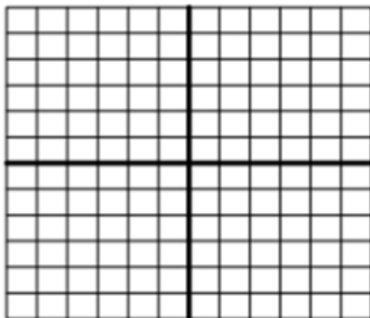
| Time in Minutes | Number of Words |
|------------------------|------------------------|
| 1 | |
| 1.5 | |
| 2 | |

8. Graph a line with a greater slope, but the same y-intercept as $y = x - 3$.



Unit 4

9. Graph $y = |x + 1| - 5$

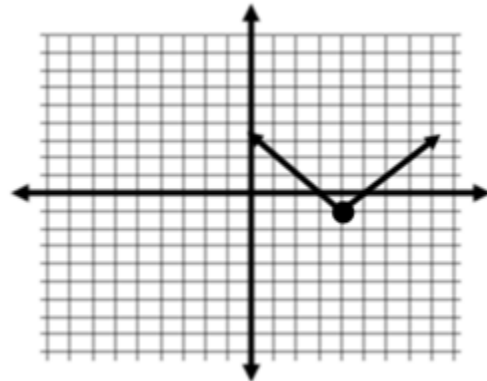


10. Explain the difference between the graphs of:

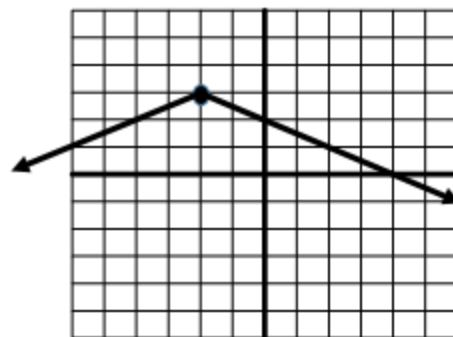
A: $f(x) = |x|$

B: $f(x) = |3x|$

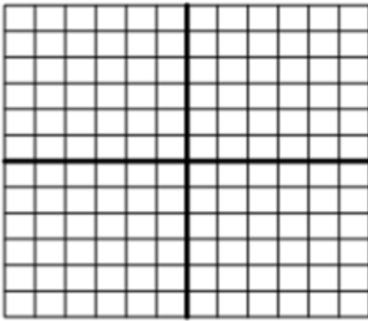
11. What is the coordinate of the minimum/maximum?



12. Using the graph below, what is the rate of change from $f(-6)$ to $f(-2)$?



13. Graph the equation of $f(x) = |x - 3| - 2$ and then write as a piece-wise function.



$$f(x) = \begin{cases} & \text{when } x \leq \\ & \text{when } x > \end{cases}$$

Unit 5

14. Simplify:
 $(b^2 + 2b^3 + b^4) + (6b^4 + b^3 + 8b^2)$

15. Simplify: $(x + 6)(x - 6)$

16. Rewrite in factored form:
 $-8 + 2b + 12b^3$

17. Rewrite in factored form:
 $n^2 - 5n - 6$

18. Rewrite in factored form:
 $4n^2 + 16n + 7$

19. Rewrite in factored form: $n^2 - 100$

20. Rewrite in factored form:
 $5x^2 + 30x - 35$

Unit 6

21. The following are the number of hits in a round of hacky sack.
- | | | | | | |
|----|----|----|----|---|----|
| 15 | 19 | 10 | 5 | 6 | 18 |
| 4 | 12 | 7 | 24 | | |

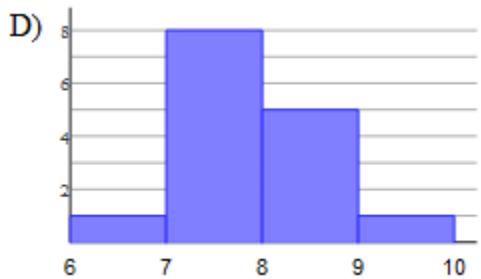
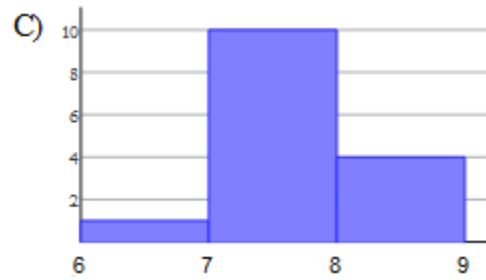
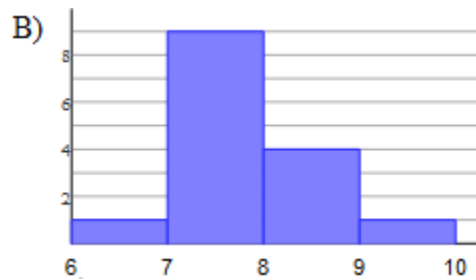
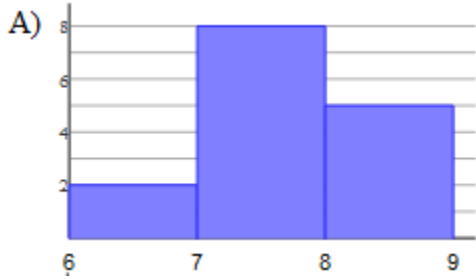
Construct a box-and-whisker plot.



What is the interquartile range?

22. Which Histogram correctly represents the number of hours slept reported in the below survey?

7 6.5 7.75 8.25 7.5
 9.25 8 7.5 8.5 7
 7.75 7.25 7.5 8 8.25



| Golfer A | Golfer B |
|-------------------------------|-------------------------------|
| Average distance = 325 yards | Average distance = 325 yards |
| Standard deviation = 10 yards | Standard deviation = 20 yards |

23. If each golfer hits 5 drives, which golfer probably hit the farthest shot?

A radio station is conducting a survey to determine what type of music they should play on their station. The results are recorded in the table below:

| | Male | Female | Total |
|-----------|------|--------|-------|
| Rap | 35 | 26 | 61 |
| Country | 22 | 31 | 53 |
| Hard Rock | 21 | 15 | 36 |
| Total | 78 | 72 | 150 |

24. Calculate the relative frequencies in regard to the total number surveyed.

| | Male | Female | Total |
|-----------|------|--------|-------|
| Rap | | | |
| Country | | | |
| Hard Rock | | | |
| Total | | | 100% |

25. If the station wants to cater to males, which type of music should they play?

- A) Rap
- B) Country
- C) Hard Rock

26. What is the relative frequency for your decision above?

Unit 7

27. Solve: $8b^2 - 7 = 193$

28. Find the roots of
 $x^2 - 11x + 19 = -5$

30. Use the quadratic formula to find the exact roots of $y = x^2 + 4x + 3$.

31. Find the vertex of the graph by completing the square.

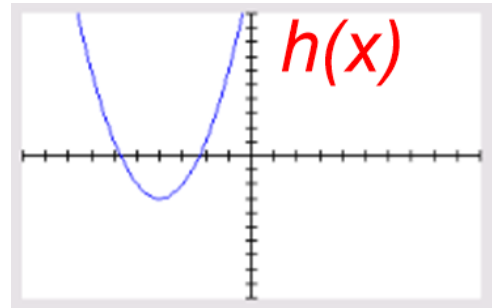
$$m^2 + 2m - 42 = 0$$

32. Write the transformations of $f(x) = -2(x + 5)^2 - 8$ from the parent function $y = x^2$.

33. Which function has a value of
- a
- that is positive? There could be more than one correct answer.

$$f(x) = -5(x + 7)^2 + 3$$

| x | $g(x)$ |
|-----|--------|
| -1 | 5 |
| 0 | 7 |
| 2 | 5 |
| 4 | 0 |



34. What is the average rate of change from
- $D(2)$
- to
- $D(3)$
- ? Include units.

| Time in minutes (t) | Depth (D) in meters |
|---|---|
| 0 | 2 |
| 1 | 3 |
| 2 | 6 |
| 3 | 11 |
| 4 | 6 |

35. A groundhog lives in tunnels underground. The depth, in feet, of this groundhog's tunnel is modeled by the function $d(x) = 0.1x^2 - 0.7x - 3$, where x is the horizontal distance in feet. What is the lowest depth of the tunnel?

38. Which function below has a y-intercept of 5?

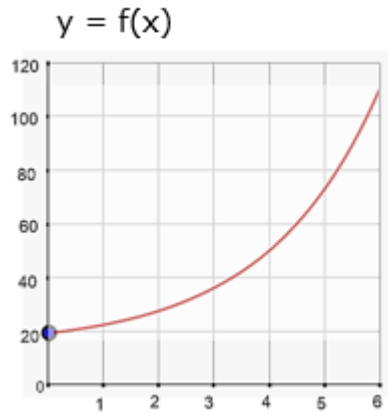
- A) $f(x) = 5(2)^x$
- B) $f(x) = 2(5)^x$
- C) $f(x) = 3(5)^{-x}$
- D) $f(x) = \frac{1}{5}(5)^x$

39. Does $f(x)$ or $g(x)$ have a greater y-intercept?

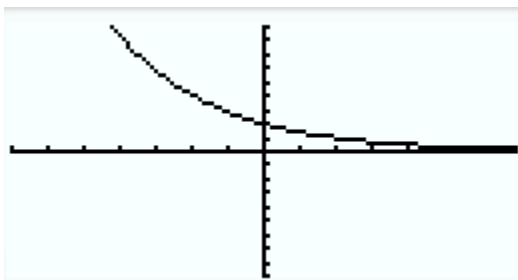
Unit 8

36. Is the growth in the table below linear or exponential?

| x | y |
|-----|-----|
| 0 | 1 |
| 1 | 2 |
| 2 | 4 |
| 3 | 8 |
| 4 | 16 |



37. What is the domain and range of the function?

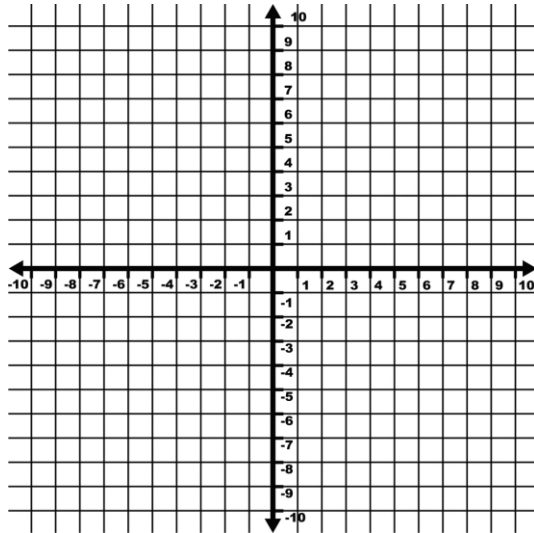


| x | -1 | 0 | 1 | 2 |
|--------|----|----|-----|-----|
| $g(x)$ | -3 | -9 | -27 | -81 |

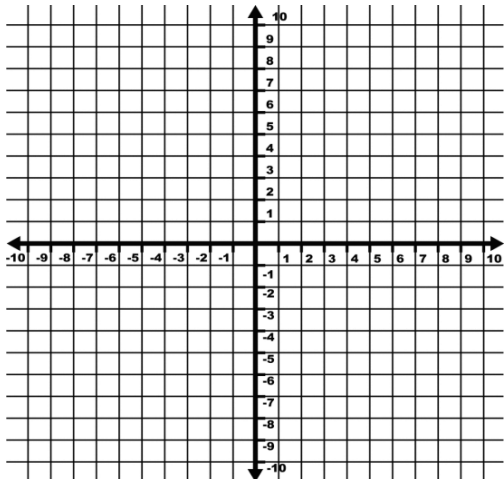
40. You bought a used boat for \$2300. The value of the boat will decrease each year because of depreciation. The boat depreciates at a rate of 3% per year. What will be the value of the boat in 7 years?

Unit 9

41. Graph and list the domain and range of $y = \sqrt{x} - 5$.



42. Graph $f(x) = \sqrt{x-3}$



Shift $f(x)$ up 4 and to the right 3. Label this $h(x)$.

What is the equation of the line for $h(x)$?

43. A function for the speed (in meters per second) at which a long jumper was running is given by $s = 8\sqrt{h}$ where h is the maximum height that the jumper reaches.

a) What was the long jumper's maximum height if he was running at a speed of 16 meters per second?

b) What was the long jumper's speed if he was jumping at a maximum height of 16 meters?

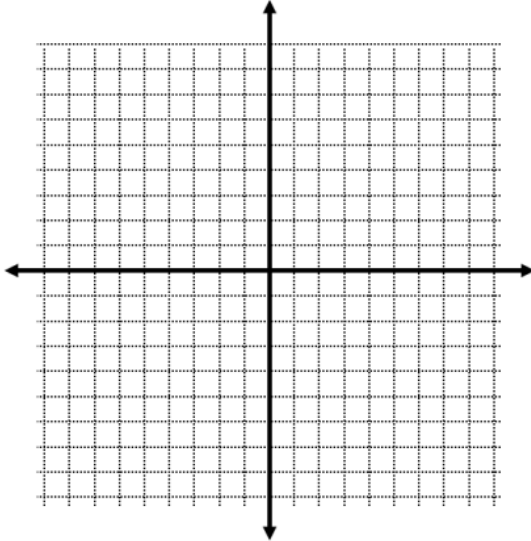
Unit 10

44. Determine if the lines are parallel, perpendicular, coincident, or intersecting, but not perpendicular.

$$\begin{cases} y = 3x + 8 \\ y = 3x - 12 \end{cases}$$

45. Solve the system by graphing.

$$\begin{cases} y = \frac{1}{4}x - 2 \\ y = -x - 7 \end{cases}$$



46. Solve the linear system.

$$\begin{cases} 2x + 3y = 7 \\ -2x + 2y = 3 \end{cases}$$

47. Determine the solution to the system of equations.

$$\begin{cases} y = 4x + 6 \\ y = -5x - 21 \end{cases}$$

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

$$\begin{cases} 4x + 8y = 2 \\ 3x + 6y = 5 \end{cases}$$

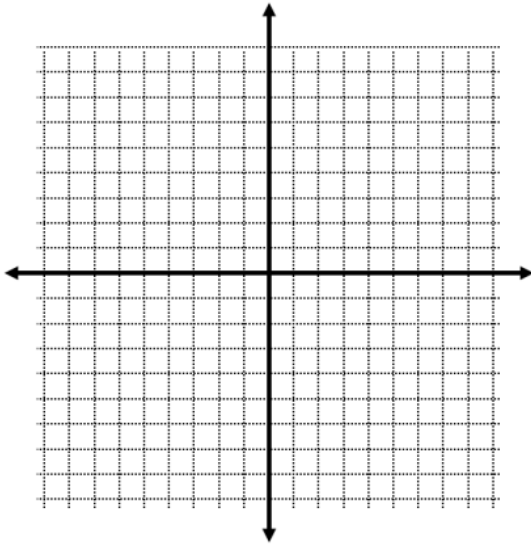
49. The school that Jose goes to is selling tickets to a concert. On the first day of ticket sales the school sold 4 senior citizen tickets and 2 child tickets for a total of \$50. The school took in \$42 on the second day by selling 3 senior citizen tickets and 2 child tickets.

(A) Write a system of equations that models the situation.

(B) How much does a child ticket cost?

50. Graph the system of linear inequalities.

$$\begin{cases} y < \frac{1}{4}x - 2 \\ y > -x + 3 \end{cases}$$



51. Solve the system.

$$\begin{cases} y = x^2 + 3x + 2 \\ y = -4x - 8 \end{cases}$$

52. Robert works two jobs to pay for college. With his class schedule and homework he works less than 30 hours per week. He makes \$8 an hour delivering pizza and makes \$12 an hour at the bookstore. He needs to earn at least \$280 per week to pay his college bills. Let x represent the hours spent working at the bookstore and let y represent the hours spent delivering pizzas.



Use the graph to determine **two different solutions** to the problem. Interpret the meaning of each solution in context and include units.