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?

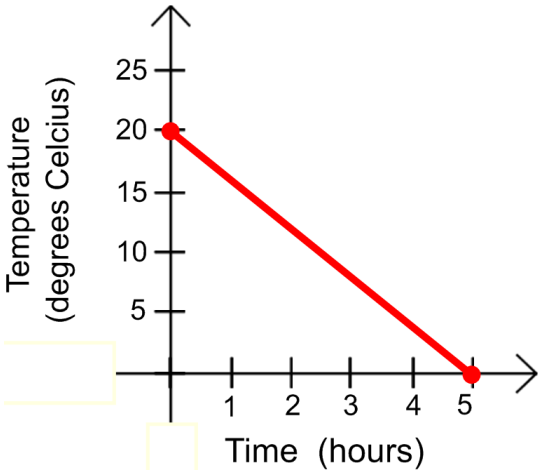
$$3(x-2) = 16$$
$$3x - 6 = 16$$
$$3x = 22$$
$$x = \frac{22}{3}$$

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

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

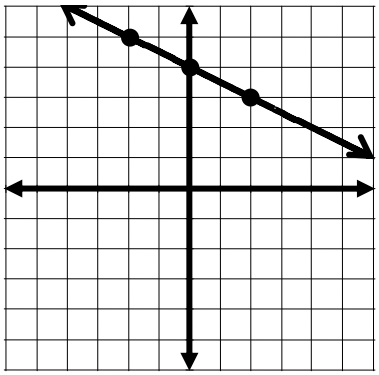
Unit 3

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.

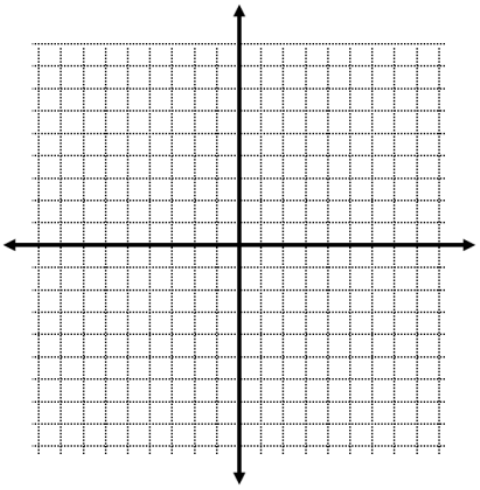
6. Write the equation of the line.



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.

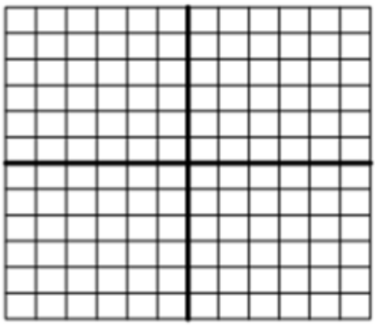
Time in Minutes	***Number of Words***
1	
1.5	
2	

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



Unit 4

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

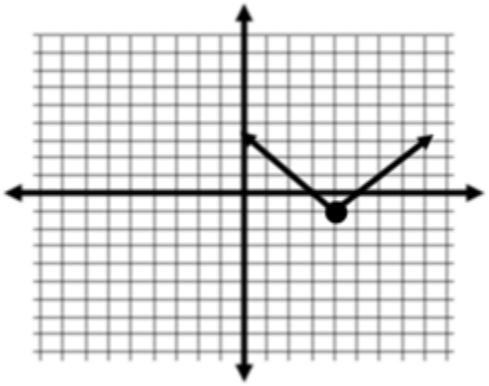


10. Explain the difference between the graphs of:

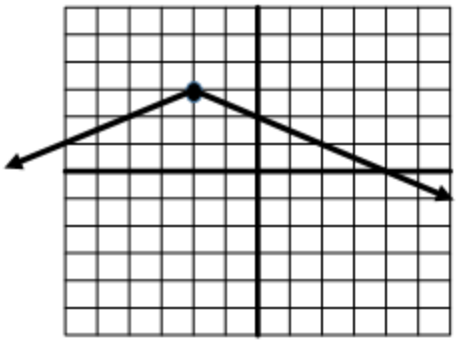
A: $f(x) = |x|$

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

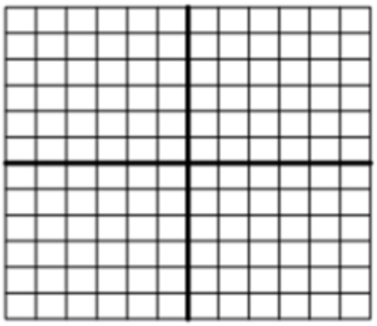
11. What is the coordinate of the minimum/maximum?



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

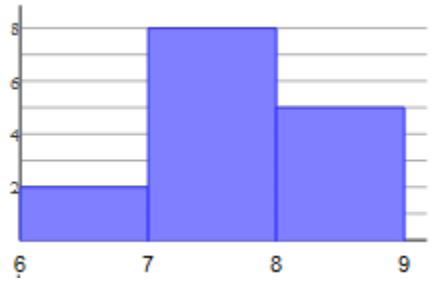
Construct a box-and-whisker plot.

What is the interquartile range?

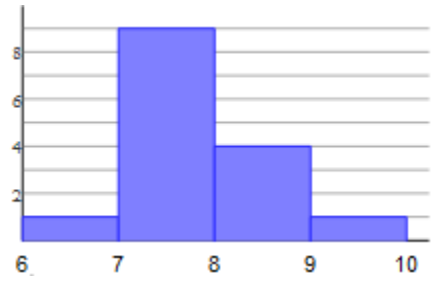
22. Which Histogram correctly represents the number of hours slept reported in the below survey?

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

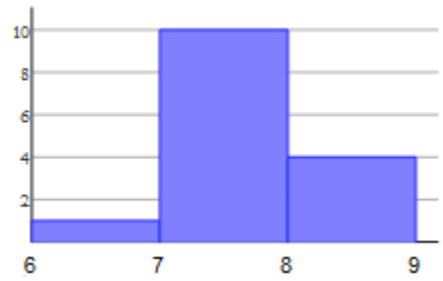
A)



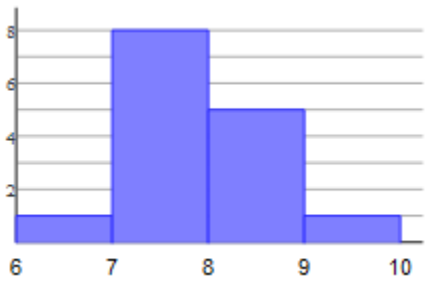
B)



C)



D)



Golfer A	Golfer B
Average distance = 325 yards Standard deviation = 10 yards	Average distance = 325 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.

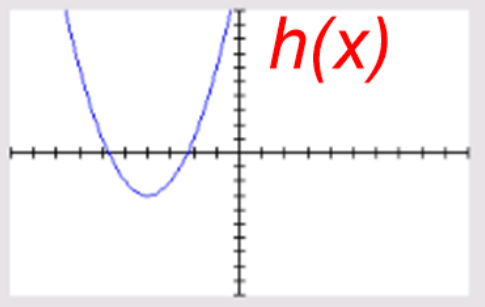
$$m^2 + 2m - 42 = 0$$

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

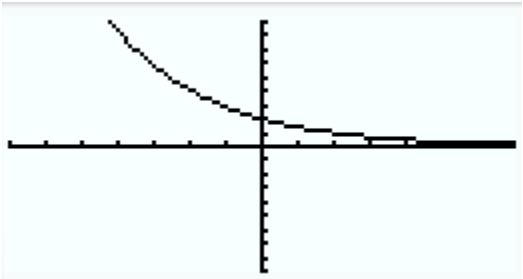
35. A groundhog lives in tunnels underground. The depth, in feet, of this groundhog's tunnel is modeled by the function $d(x) = 0.1x^2 - 0.7x - 3$, where ***x*** is the horizontal distance in feet. What is the lowest depth of the tunnel?

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?



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

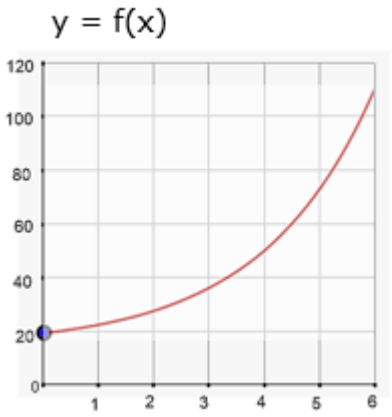
A) $f(x) = 5(2)^x$

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?

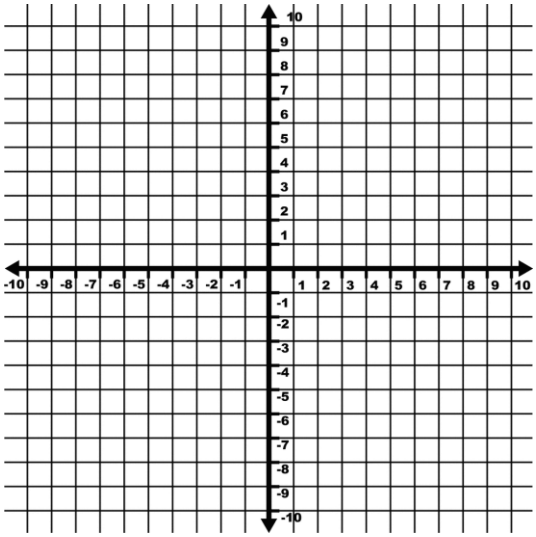


x	-1	0	1	2
g(x)	-3	-9	-27	-81

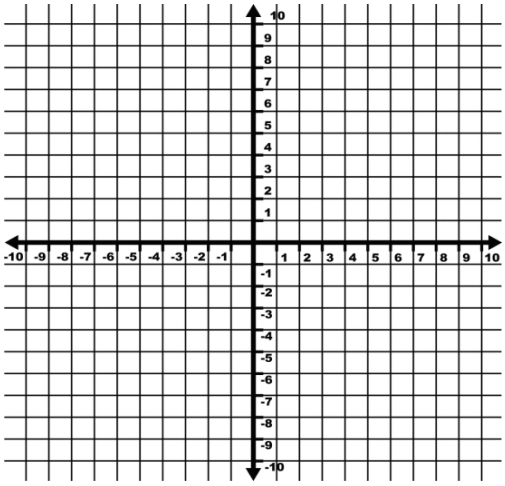
40. You bought a used boat for $2300. The value of the boat will decrease each year because of depreciation. The boat depreciates at a rate of 3% per year. What will be the value of the boat in 7 years?

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?

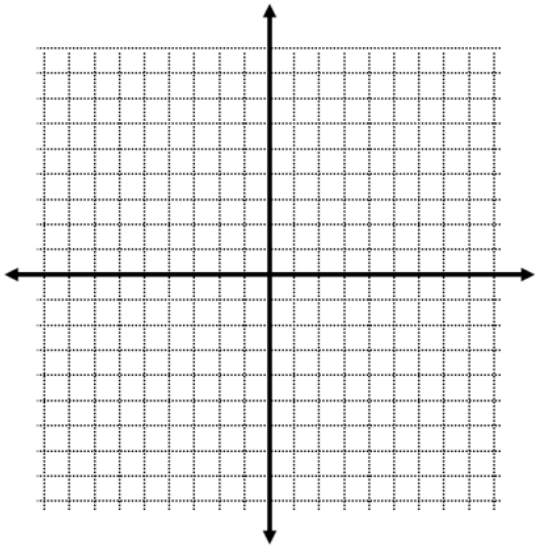
Unit 10

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?

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

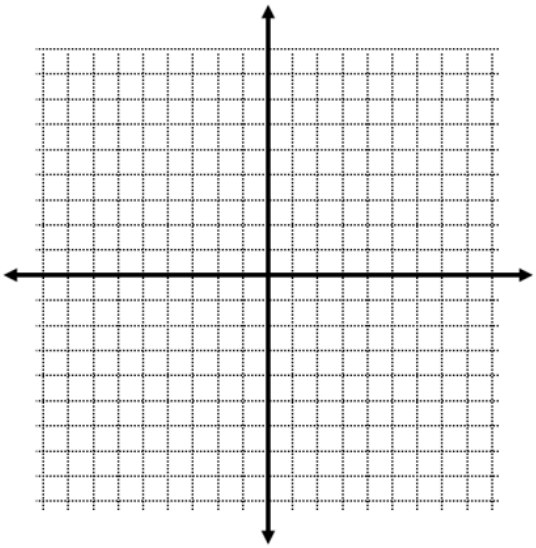
49. The school that Jose goes to is selling tickets to a concert. On the first day of ticket sales the school sold 4 senior citizen tickets and 2 child tickets for a total of $50. The school took in $42 on the second day by selling 3 senior citizen tickets and 2 child tickets.

(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.

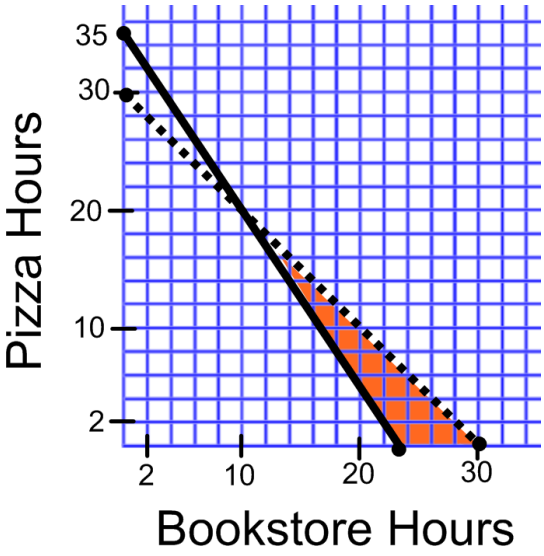
$$\begin{cases} y < \frac{1}{4}x - 2 \\ y > -x + 3 \end{cases}$$



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 **<u>two different solutions</u>** to the problem. Interpret the meaning of each solution in context and include units.

