

HW Lesson 1.1

NAME _____

1. Determine if each of the following relationships can be represented with a function f where $y = f(x)$. Give a reason for your answer.
- A child's height in inches, y , on their birthday at age x .
 - x = month of the year, y = price of gas at a gas station.
 - The cost of mailing a small package, y , based on its weight, x .

2. A table of selected values is given for a function f .

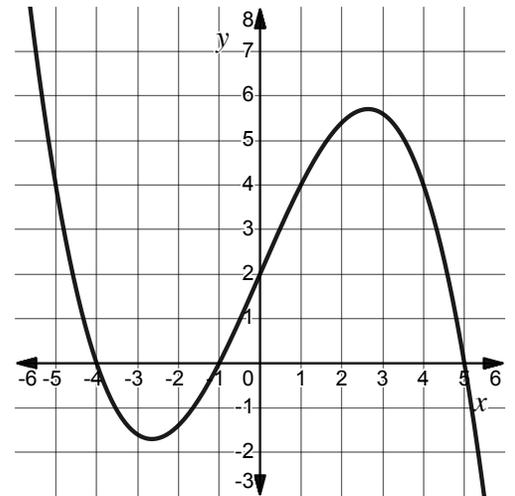
x	-5	-2	0	2	7
$f(x)$	11	8	-3	4	-2

- Find $f(2)$.
- What is the value of x when $f(x) = -2$?

3. The graph of $y = h(x)$ is shown.

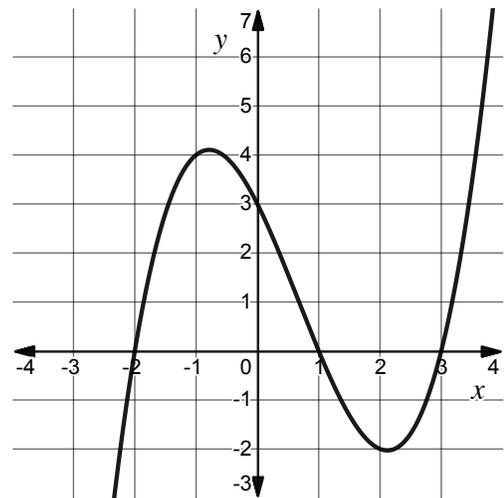
a. Find $h(1)$.

b. For which value(s) of x is $h(x) = 0$?



4. The graph of $y = g(x)$ is shown. Order the following from least to greatest:

$g(-1)$, $g(-2)$, $g(0.5)$, $g(2.5)$



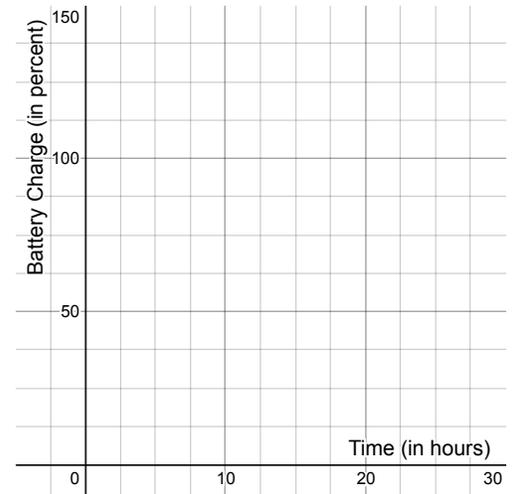
5. Let $M(t)$ represent the rate at which people enter Macy's department store, in people per hour, t hours into their Black Friday sale. Use function notation to express that people enter Macy's department store at a rate of **432** people per hour **3.5** hours into Macy's Black Friday sale.

6. Let $L(t)$ represent the number of likes on a social media post, t hours after it is posted. Interpret the statement $L(4) = 2L(3)$.

7. A cell phone battery is fully charged and then its charge is tracked over a 24-hour period. Assume the phone is not recharged during the 24-hour period.

a. A function f gives the charge of the battery over time. Give a possible domain and range for f .

b. Sketch a graph of f using your given domain and range.



8. The temperature of a mug of hot chocolate in degree Fahrenheit is given by $H(t) = 70 + 100(0.819)^t$ where t is the time, in minutes, after it is prepared.

a. Find $H(2)$ and interpret your answer in the context of this problem.

b. What is an appropriate domain for this situation? Explain.

c. What is an appropriate range for this situation? Explain.

9. Let $f(x) = \sqrt{81 - x^2}$.

a. What is the domain of the function?

b. What is the range of the function?

-  10. Let $C(t)$ be the total number of cups of coffee sold at a coffee shop on a particular day, t hours after the store opens at 6 AM. The store closes at 4 PM. The table gives values of the function C for selected values of t .

t	1	2	4	5	7
$C(t)$	13	41	88	111	143

a. Find $C(5) - C(2)$ and interpret your answer in the context of this problem.

b. Determine a reasonable value for $C(3)$.

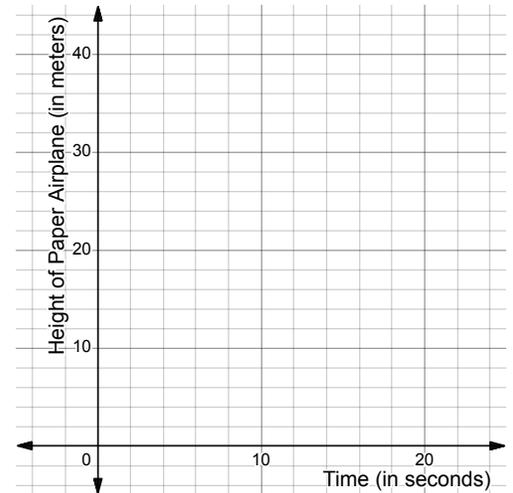
c. What is the y -intercept of the graph of $y = C(t)$? Explain.

d. What is a reasonable domain and range of C ?

11. A group of friends from your math class are having a contest to see who can throw a paper airplane out of a window and land on a target on the ground. The window you are throwing your paper airplane from is 20 meters off the ground, and your paper airplane reaches a maximum height of 25 meters during its flight. It takes 15 seconds for your paper airplane to reach the target on the ground.

a. A function h gives the height of the paper airplane over time. Give a possible domain and range for h .

b. Sketch a graph of h using your given domain and range.

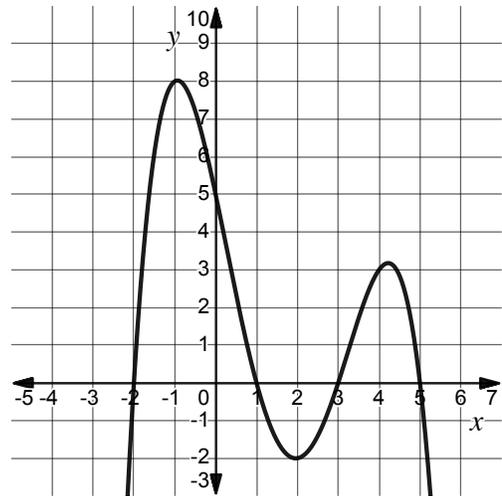


12. A movie theater opens at 12 PM and closes at 12 AM. Let $M(t)$ be the total amount of ticket sales in dollars at a movie theater on a particular day, t hours after the theater opens. The table gives values of the function M for selected values of t .

t	2	4	7	9	11
$M(t)$	\$1,300	\$5,200	\$41,600	\$166,400	\$665,600

- a. Find $M(11) - M(4)$ and interpret your answer in the context of this problem.
- b. Determine a reasonable value for $M(5)$.
- c. What is the y -intercept of the graph $y = M(t)$? Explain.
- d. What is a reasonable domain and range of M ?
13. Let $P(t)$ represent the number of pizzas delivered by a pizza delivery worker, t hours into his shift. Interpret the statement $P(3) - P(1) = 7$.

14. The graph of $y = f(x)$ is shown. Order the following from greatest to least.
 $f(4), f(2), f(1), f(0)$



15. The express elevator in the Seaside Vista Hotel can hold a maximum of 8 people with a total allowable weight of less than 1900 pounds. Let $W(p)$ represent the total weight of p occupants of elevator and their luggage. Which of the following best describes the range of W ?
- A) $W(p)$ is a natural number and
 $0 \leq W(p) \leq 1900$
- B) $W(p)$ is a real number and
 $0 \leq W(p) \leq 1900$
- C) $W(p)$ is a natural number and
 $0 \leq W(p) \leq 8$
- D) $W(p)$ is a real number and
 $0 \leq W(p) \leq 8$

16. Let $g(x) = \sqrt{25 - x^2}$.

a. Identify the domain of g .

b. Identify the range of g .

17. Let $j(x) = \frac{12}{x^2 - 4}$.

a. Identify the domain of j .

b. Identify the range of j .

18. Let $f(x) = \frac{1}{2}x + 14$. Selected values for a function g are given in the table.

x	-4	-2	0	2	4
$g(x)$	0	4	6	2	0

- a. Evaluate $f(10)$.
- b. Find the y -intercept of the function, g .
- c. Find all zeros of the function f .
- d. Order the following from least to greatest:
 $f(-4), f(2), g(-4)$.
- e. Find $f(2) - g(2)$.

19. Let $f(x) = 4x - 1$. The graph of a function g is given for $-5 \leq x \leq 5$.

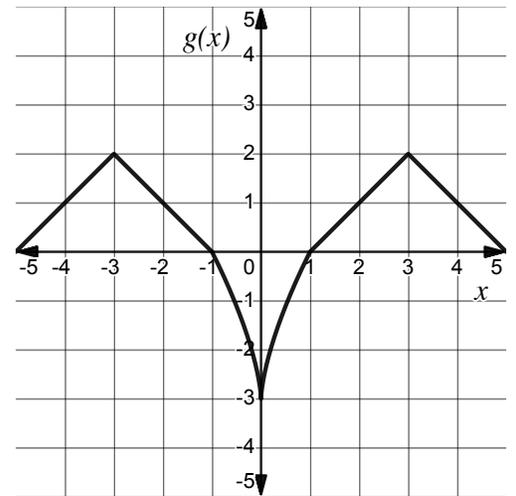
a. Evaluate $g(-4)$.

b. Find all zeros of the function f .

c. Which function, f or g , has the greater output at $x = -1$?

d. Find $f(3) \cdot g(3)$.

e. On which interval(s) is g decreasing?



20. Let $p(x) = \frac{1}{\sqrt{x-9}}$.

a. What is the domain of the function?

b. What is the range of the function?

21. Let $m(x) = \frac{7}{x+2}$.

a. What is the domain of the function?

b. What is the range of the function?