

Getting ready for....

FSA Algebra 1 EOC

Functions and Modeling



2014-2015

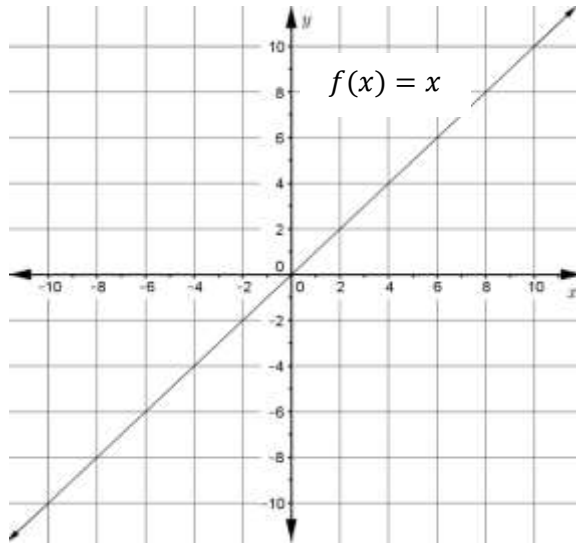
Student Packet

FS Algebra 1 EOC Review

MAFS.912.F-BF.2.3

Comparing Functions – Linear

The graph of $f(x) = x$ is shown below:



Describe how the graph of each of the following functions compares to the graph of function f .

1. $g(x) = x + 3$

2. $h(x) = x - 5$

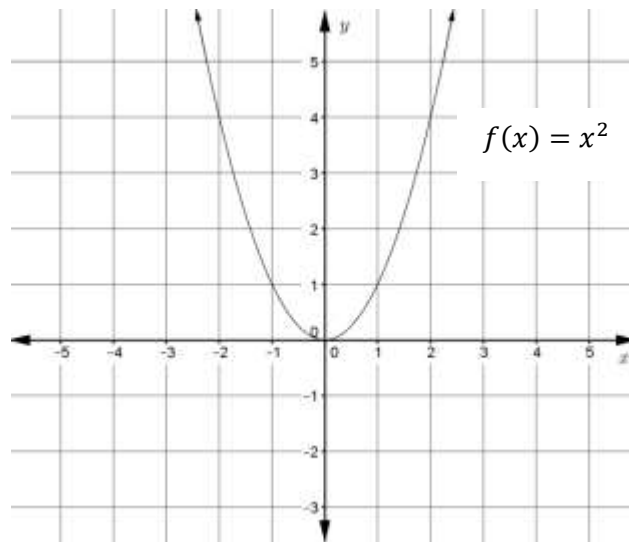
3. $j(x) = -2x$

4. $k(x) = 3x + 8$

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Comparing Functions – Quadratic

The graph of $f(x) = x^2$ is shown:



Describe how the graph of each of the following functions compares to the graph of function f .

1. $g(x) = (x + 3)^2 - 2$

2. $h(x) = (x - 4)^2 + 6$

3. $j(x) = 2x^2$

4. $k(x) = \frac{1}{2}x^2$

5. $m(x) = -x^2$

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Comparing Functions – Exponential

1. Use technology to graph each of the following functions.

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

$$g(x) = 2^x + 3$$

$$h(x) = 2^x - 5$$

In general, what is the effect of the value of c on the graph of the function $f(x) = b^x + c$?

2. Use technology to graph each of the following functions.

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

$$k(x) = 4^x$$

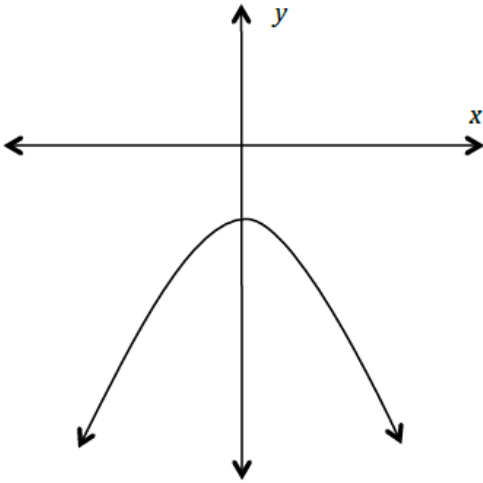
$$m(x) = \left(\frac{1}{4}\right)^x$$

In general, what is the effect of the value of b on the graph of the function $f(x) = b^x + c$?

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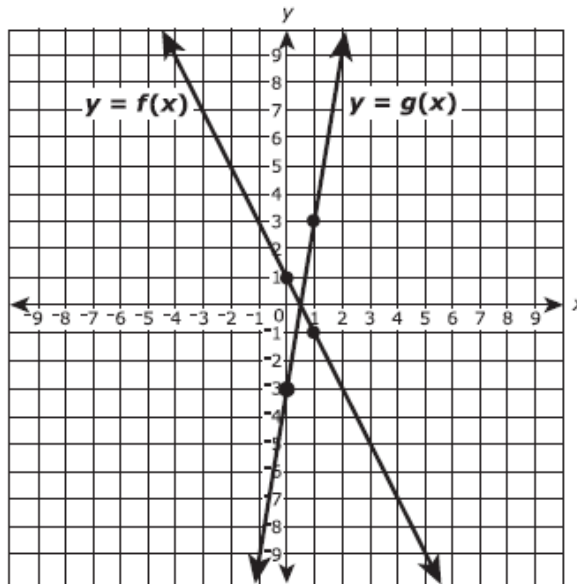
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1. Write an equation that could represent the graph below. Justify why your equation is appropriate for this graph.



Equation:

2. The figure shows the graphs of the functions $y = f(x)$ and $y = g(x)$. The four indicated points all have integer coordinates.

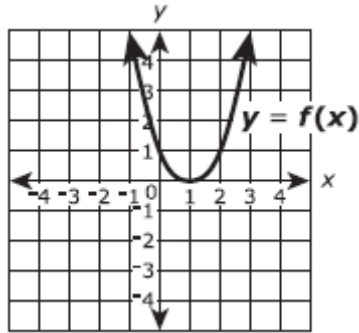


If $g(x) = k \cdot f(x)$, what is the value of k ?

Enter your answer in the box.

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3. Consider the function $f(x)$, shown in the xy –coordinate plane, as the parent function.

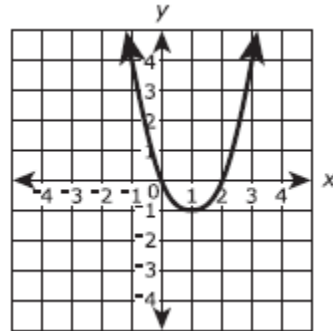


Part A

The graph of a transformation of the function $f(x)$ is shown.

Which expression defines the transformation shown?

- A. $f(x + 0) - 1$
- B. $f(x + 0) + 1$
- C. $f(x - 1) + 0$
- D. $f(x + 1) + 0$

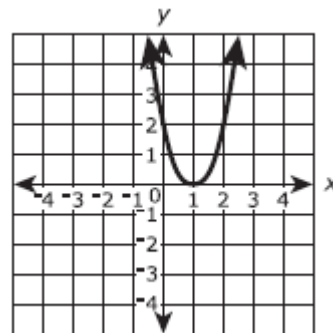


Part B

The graph of a transformation of the function $f(x)$ is shown.

Which expression defines the transformation shown?

- A. $\frac{1}{2}f(x + 0) + 0$
- B. $2f(x + 0) + 0$
- C. $\frac{1}{2}f(x - 1) - 1$
- D. $2f(x + 1) - 0$

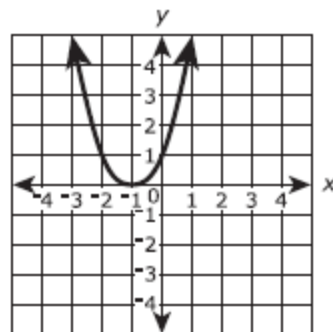


Part C

The graph of a transformation of the function $f(x)$ is shown.

Which expression defines the transformation shown?

- A. $f(x) - 2$
- B. $f(x - 2) + 0$
- C. $f(x) + 2$
- D. $f(x + 2) + 0$



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What Is the Function Notation?

The formula for the volume, V , of a cube is $V = s^3$ where s is the length of a side of the cube. Rewrite this formula using function notation and explain the meaning of the symbols used.

What Is the Value?

Use the table of values below for function f .

a	$f(a)$
6	4
8	6
10	7
13	8
14	10

If $f(a) = 8$, what is a ? Explain/justify your answer.

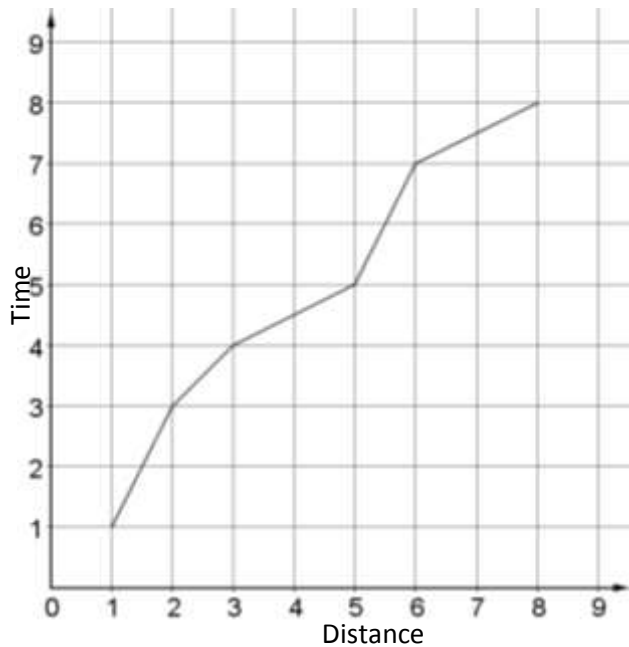
Evaluating a Function

Given $h(x) = x^2 - 2$, find the value of $h(-3)$. Show all of your work.

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Graphs and Functions

The graph of function f is shown below. Distance is the independent variable, and time is the dependent variable.



1. Circle the location on the graph that corresponds to $f(3)$.
2. What is the value of $f(3)$ according to the graph? Explain how you know.

Cell Phone Battery Life

For some function f , the percentage of battery life remaining is dependent on the number of minutes that a cell phone has been in use.

1. Describe in words what $f(22)$ represents.
2. Explain what the statement $f(a) = 50$ means.

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MAFS.912.F-IF.1.2 EOC Practice

1. What is the value of $f(16) - f(0)$ when $f(x) = 4x - 8$?
 - A. 16
 - B. 48
 - C. 56
 - D. 64

2. The height, h , in feet, of an object thrown upward from a height of 144 feet is a function of time, t , in seconds. The height can be determined by the function $h(t) = -16t^2 + 128t + 144$. What is the height of the object at 3 seconds?
 - A. 144 feet
 - B. 384 feet
 - C. 432 feet
 - D. 672 feet

3. In 1997 there were 31 laptop computers at Grove High School. Starting in 1998 the school bought 20 more laptop computers at the end of each year. The equation $T = 20x + 3$ can be used to determine T , the total number of laptop computers at the school x years after 1997. What was the total number of laptop computers at Grove High School at the end of 2005?
 - A. 160
 - B. 171
 - C. 191
 - D. 268

4. The number of miles a car can be driven depends on the number of gallons of gas in its tank. The function $m = 25g$ models a situation in which a car gets 25 miles per gallon. If the gas tank holds 20 gallons of gas, which inequality represents its range?
 - A. $0 \leq g \leq 20$
 - B. $0 \leq m \leq 500$
 - C. $m \leq 500$
 - D. $g \leq 20$

5. Which equation could best be used to determine the value of $f(3)$ for the function $f(x) = 2x + 4$?
 - A. $f(3) = 23 + 4$
 - B. $f(3) = 2(3) + 4$
 - C. $f(3) = 3(2x) + 4$
 - D. $f(3) = 3(3x + 4)$

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MAFS.912.F-IF.1.1

Identifying Functions

In each of the following, x is the independent variable and y is the dependent variable. Decide whether or not each relation is a function and justify your decision.

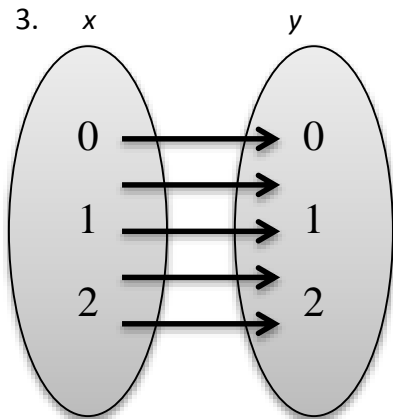
1.

x	y
1	3
1	3
1	4
1	6
1	7

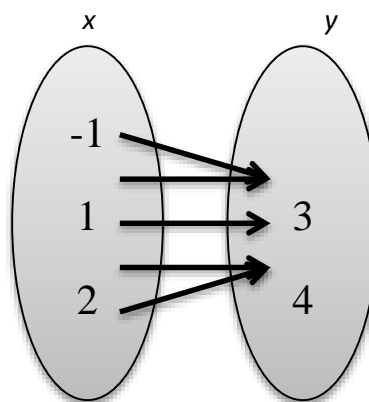
2.

x	y
0	5
2	5
3	5
3	5
4	5

3.



4.



What Is a Function?

Explain what a function is including any important properties of functions.

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Cafeteria Function

Below is one of the cafeteria menus available at Sara's school. Use the information from the menu to answer the following questions.

1. Can the variable, *food item on the menu*, be considered a function of *price*, **(price, food)**? Why or why not?

2. Can the variable, *price*, be considered a function of *food item*, **(food, price)**? Why or why not?

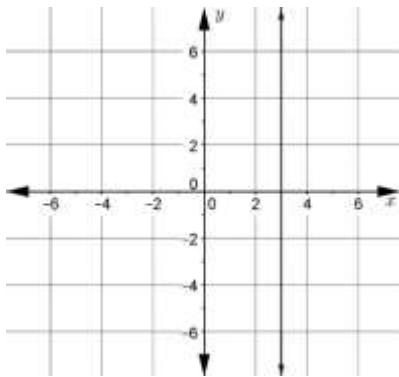


<u>Cafeteria Menu</u>	
Pizza Slice	\$1.79
Hot Dog	\$1.89
Hamburger	\$2.89
Cheeseburger	\$2.99
Bacon Burger	\$2.99
Grilled Chicken Sandwich	\$3.89
Fried Chicken Sandwich	\$3.89

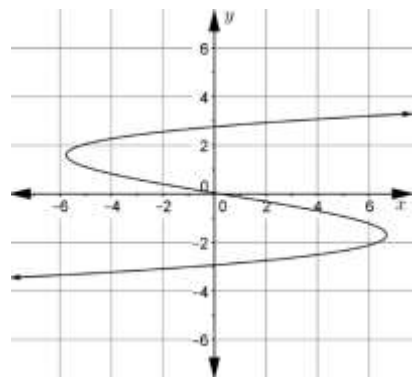
Identifying the Graphs of Functions

For each graph, x is the independent variable, and y is the dependent variable. Determine which of the graphs represent a function and which do not. Justify each of your choices.

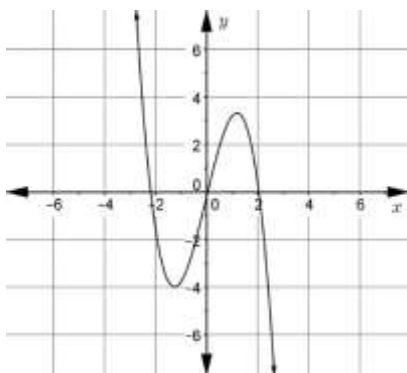
a)



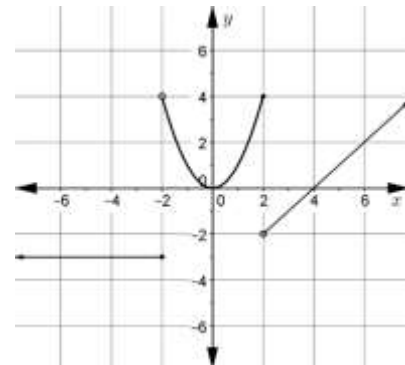
b)



c)



d)

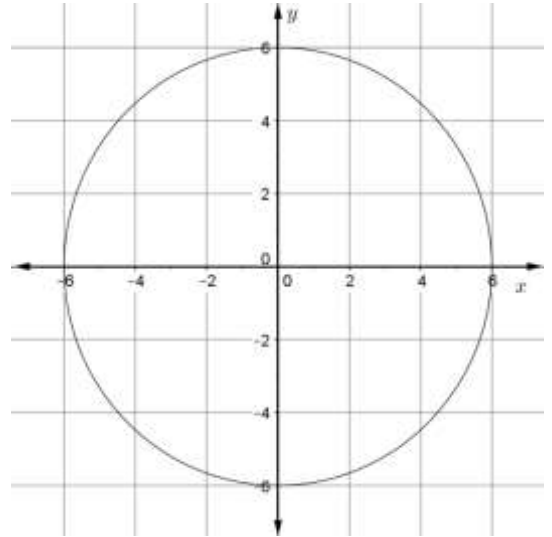


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Circles and Functions

The graph below does not represent a function. Which portion of the graph could you remove in order for the remaining portion to represent a function? Illustrate the change on the graph and explain your reasoning below.

Note: For this function, consider x the independent variable and y the dependent variable.



Writing Functions

Complete the table of values so that Table 1 represents y as a function of x , but Table 2 does not. Justify and explain your answers.

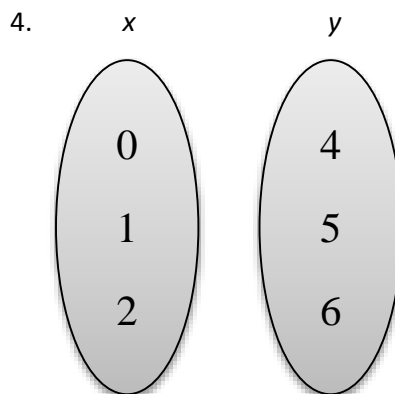
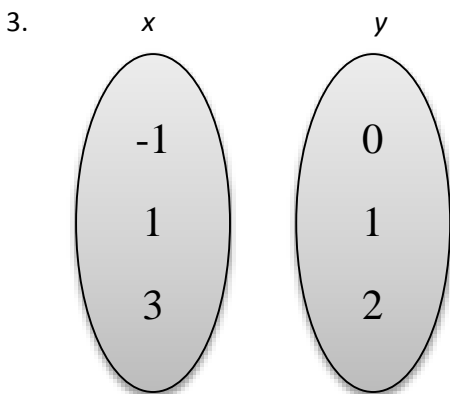
Table 1

x	y

Table 2

x	y

Complete the mapping diagrams so that Diagram 3 represents y as a function of x , but Diagram 4 does not. Justify and explain your answers.



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MAFS.912.F-IF.1.1 EOC Practice

- Collin noticed that various combinations of nickels and dimes could add up to \$0.65.
 - Let x equal the number of nickels.
 - Let y equal the number of dimes.

What is the domain where y is a function of x and the total value is \$0.65?

- $\{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13\}$
- $\{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13\}$
- $\{0, 1, 3, 5, 7, 9, 11, 13\}$
- $\{1, 3, 5, 7, 9, 11, 13\}$

- Let f be a function such that $f(x) = 2x - 4$ is defined on the domain $2 \leq x \leq 6$. The range of this function is

- $-\infty \leq y \leq \infty$
- $0 \leq y \leq 8$
- $0 \leq y \leq \infty$
- $2 \leq y \leq 6$

- Given that y is a function of x , which of the following tables best represents a function?

A.

x	y
-7	12
-3	8.5
0	-1
-3	-8.5
7	-12

B.

x	y
-5	-17
-2	-11
1	-5
2	-3
5	3

C.

x	y
-2	-14
-2	-8
-2	-5
-2	-1
-2	7

D.

x	y
-8	-7
-5	-2
0	1
-5	4
-8	12

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4. Which of the following could be a function?
- A. The height of a student in your school related to the shoe size of that student.
 - B. The hair length of a student in your school related to the height of that student.
 - C. The color of hair of a student in your school related to the age of that student.
 - D. The student ID number of a student in your school related to the full name of that student.
5. Which statement below is correct for the following set of ordered pairs?

$$\{ (0, 1.2), (3, 2), (-1.2, 3), (4, -2), (1, -1.2), (1, 2, 4) \}$$

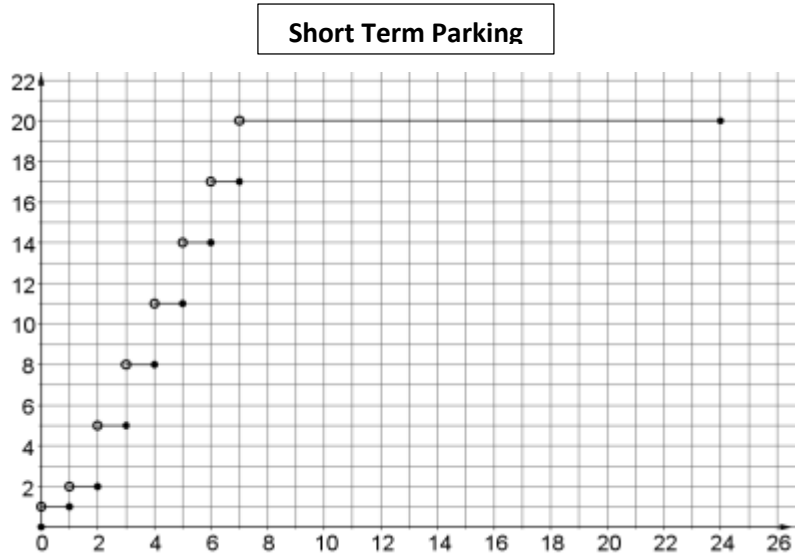
- A. The set is a function since each element in the domain has a different element in the range.
- B. The set is a function since each element in the range has a different element in the domain.
- C. The set is a not a function since each element in the domain has a different element in the range.
- D. The set is a not function since each element in the range has a different element in the domain.

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MAFS.912.F-IF.2.5

Airport Parking

The Miami airport offers several different parking options for visitors. A new short term (no more than 24 hours) parking garage charges \$1 per hour (or any part thereof) for the first two hours and after that, \$3 per hour (or any part thereof) not to exceed \$20 per day.



What is the domain of this function?

Explain how you determined the domain.

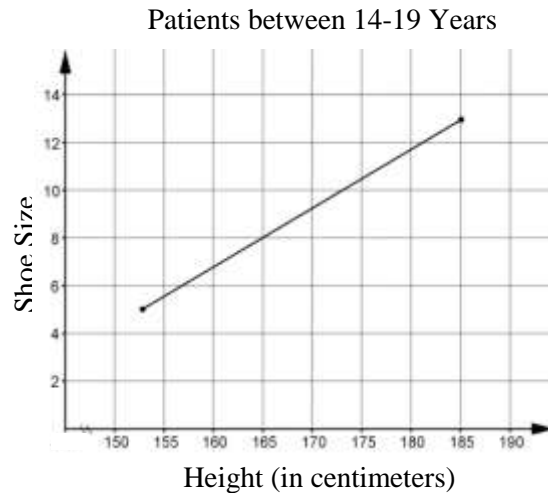
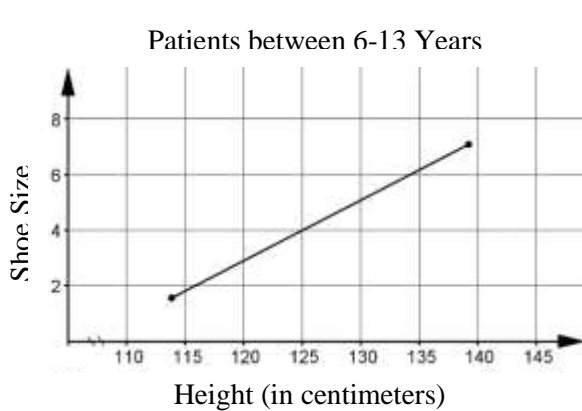
Describe the Domain

1. Suppose the function $E(c)$ represents the earnings of a volleyball team from selling c cupcakes. Describe an appropriate domain of this function. Include a description of the kinds of numbers in the domain as well as any limitations on their values.
2. Suppose the function $H(t)$ gives the heart rate of a runner at various points in time during a 20 mile run. Describe an appropriate domain of this function. Include a description of the kinds of numbers in the domain as well as any limitations on their values.

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Height vs. Shoe Size

A doctor wants to compare the relationship between height and shoe size. He uses data from his patients between 6 and 13 years old to make one graph and data from his patients between 14 and 19 years old to make another graph.



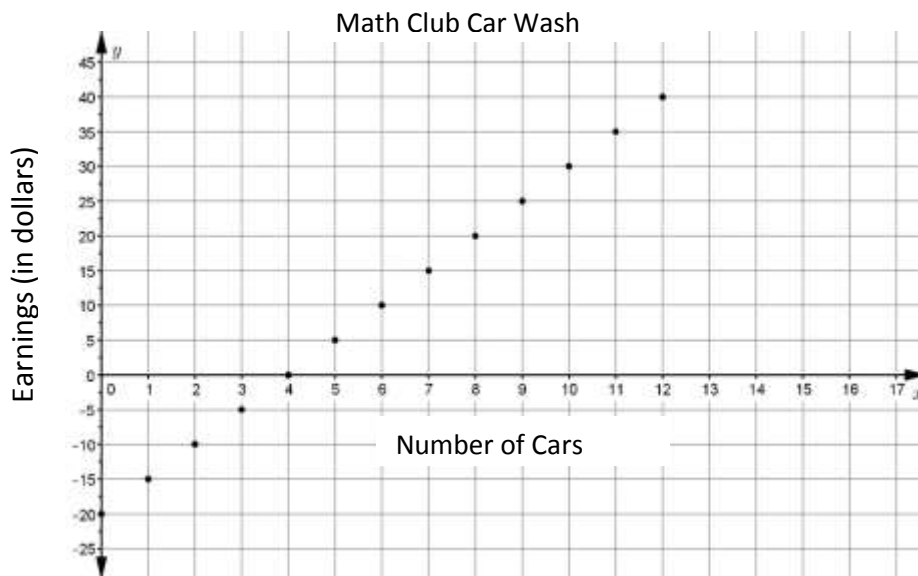
Identify the domain of each graph and describe its meaning in terms of the context.

1. Patients between ages 6-13 years:

2. Patients between ages 14-19 years:

Car Wash

The math club decided to have a car wash to raise money for competition expenses. The graph below shows the relationship between cars washed and earnings (in dollars). Describe the domain of the graphed function as precisely as possible.



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MAFS.912.F-IF.2.5 EOC Practice

- A local theater sells admission tickets for \$9.00 on Thursday nights. At capacity, the theater holds 100 customers. The function $M(n) = 9n$ represents the amount of money the theater takes in on Thursday nights, where n is the number of customers. What is the domain of $M(n)$ in this context? Select the correct answer.
 - all whole numbers
 - all non-negative rational numbers
 - all non-negative integers that are multiples of 9
 - all non-negative integers less than or equal to 100
- If the function $f(x)$ represents the number of hours that it takes a person to catch x fish in a lake. What domain makes sense for the function?
 - $-\infty \leq x \leq \infty$
 - $0 < x < \infty$
 - $x \leq 0$
 - $x \geq +\infty$
- Officials in a town use a function, C , to analyze traffic patterns. $C(n)$ represents the rate of traffic through an intersection where n is the number of observed vehicles in a specified time interval. What would be the most appropriate domain for the function?
 - $\{\dots - 2, -1, 0, 1, 2, 3, \dots\}$
 - $\{-2, -1, 0, 1, 2, 3\}$
 - $\{0, \frac{1}{2}, 1, 1\frac{1}{2}, 2, 2\frac{1}{2}\}$
 - $\{0, 1, 2, 3, \dots\}$
- The function $h(t) = -16t^2 + 144$ represents the height, $h(t)$, in feet, of an object from the ground at t seconds after it is dropped. A realistic domain for this function is
 - $-3 \leq t \leq 3$
 - $0 \leq h(t) \leq 144$
 - $0 \leq t \leq 3$
 - all real numbers*

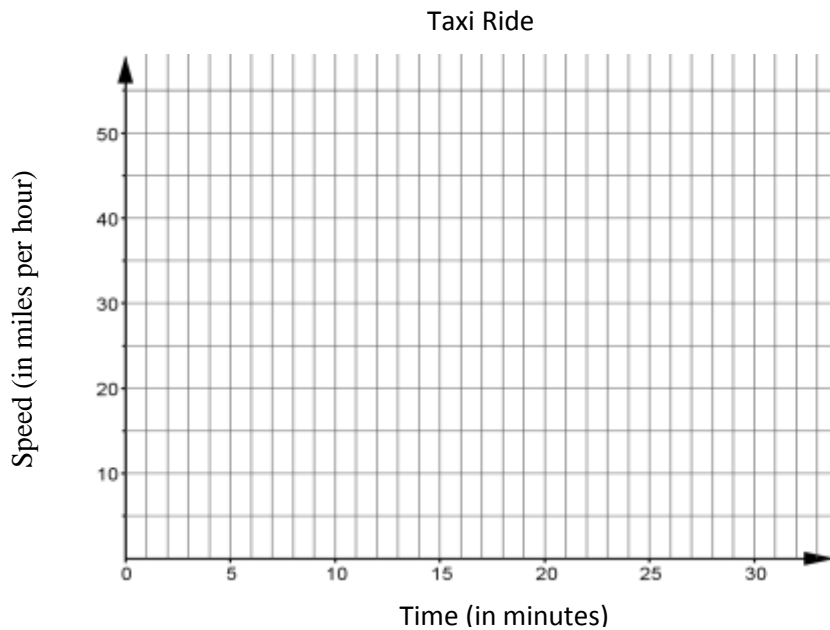
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Taxi Ride

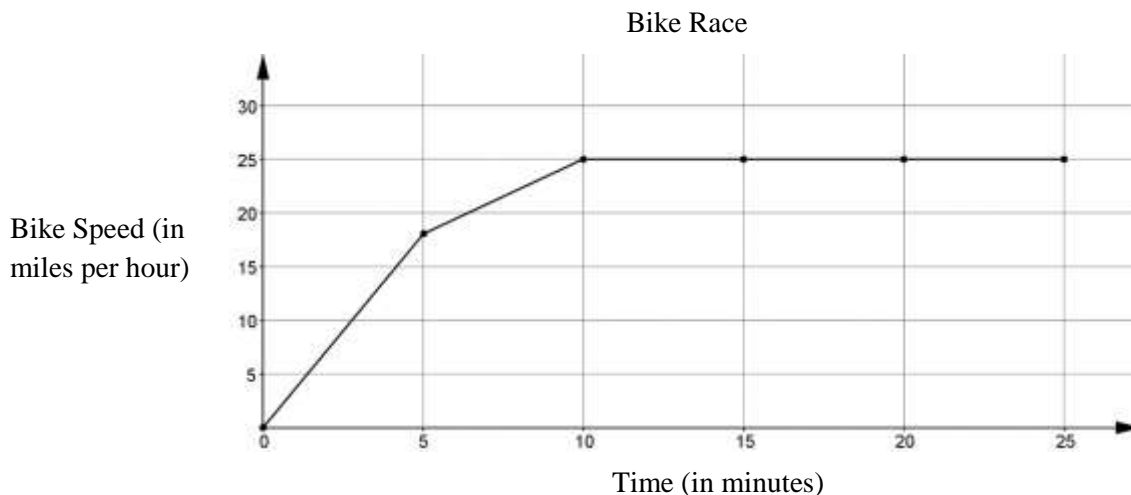
Read the scenario below and sketch a graph that shows the relationship between the time spent traveling and the speed of the taxi.

A taxi cab in the city picks up a customer and pulls out into traffic. After accelerating gradually, the taxi achieves a speed of 30 mph and maintains that speed for 3 minutes. The taxi then slows down to stop at a red light. After two minutes, when the light turns green, the taxi turns onto a major road and accelerates steadily until reaching a speed of 45 mph. The taxi maintains the speed of 45 mph for 10 minutes. Finally, the taxi comes to a gradual stop and lets the customer out at the destination.



Bike Race

The graph displays the relationship between the passage of time and the speed at which Jake travels in the first 25 minutes of a bicycle race.



Evaluate each interpretation of the graph. Explain why each interpretation does or does not describe the graph.

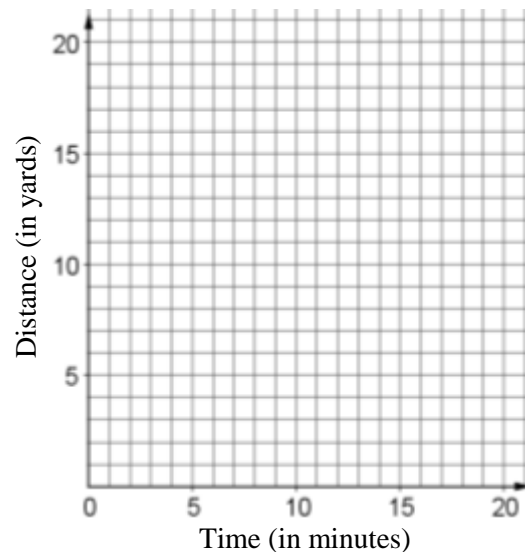
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- A) Jake starts the race and increases his speed. After 10 minutes, his bike tire goes flat, and he is unable to continue in the race.
- B) Jake starts the race and increases his speed. He then maintains a steady pace for the next portion of the race.
- C) Jake pedals up a hill and then pedals along a flat road on the top of the hill.

Surf's Up

Brad loves to surf. The table shows Brad's distances from the shore at different times as he paddles out and rides the waves back to shore.

Time (in minutes)	Distance (in yards)
0	0
3	20
5	30
6	15
10	40
12	10
15	30
18	30
20	0



Answer the questions based on the values in the table. A graph is available if you wish to graph the data.

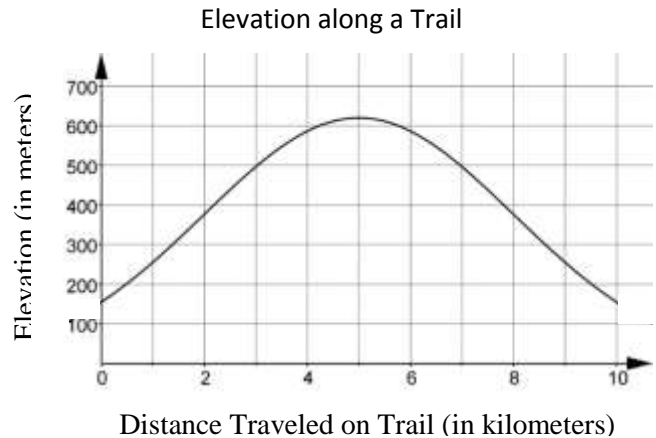
1. What is Brad's maximum distance from shore, and what is Brad's minimum distance from shore?
2. Interpret the x -intercepts (i.e., the time-intercepts) of the graph of this data in the context of this problem. What is Brad doing at these points?
3. How can you identify the x -intercepts (i.e., the time-intercepts) without graphing the data?

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Elevation along a Trail

The Jones family went for a hike along a trail, first going uphill to the trail's end, then reversing their path, walking downhill back to the trail's start. The graph depicts their elevation during the roundtrip hike (out and back).

1. How long was the trail (one way)? Explain.
2. Is the graph symmetric? Explain why this is expected from the context.

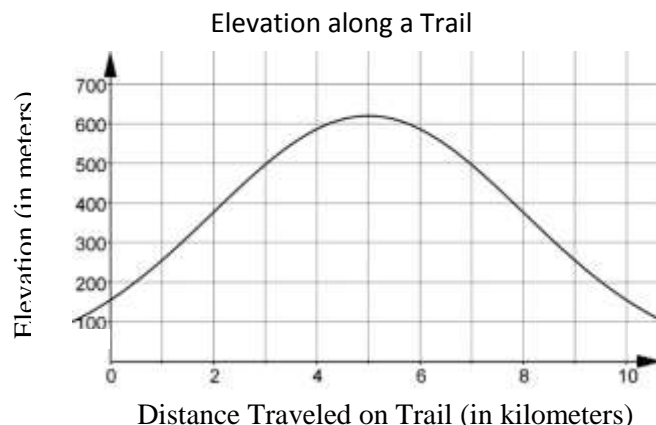


3. Determine the change in elevation from the start to the end of the trail (i.e., the point where the family turned around and began walking back).

Uphill and Downhill

The Jones family walks along a trail, going uphill, then follows the same path downhill. The graph $y = f(x)$ depicts the elevation along the trail for the roundtrip.

1. Identify and interpret the intercepts of the graph of f .
2. Identify and interpret interval(s) in which the graph of f is increasing.

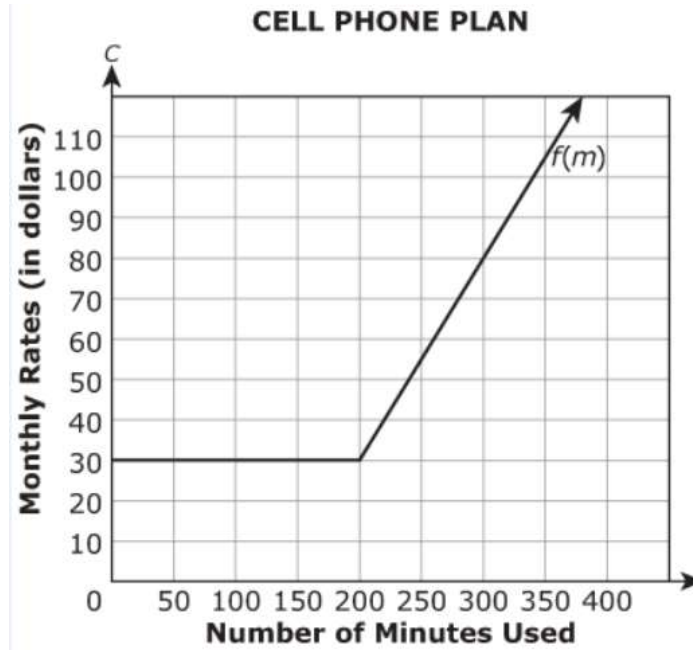


3. Is the graph of f periodic? Explain.

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MAFS.912.F-IF.2.4 EOC Practice

1. Corinne has a cell phone plan that includes 200 minutes for phone calls and unlimited texting. An additional fee is charged for using more than 200 minutes for phone calls. The figure below is the graph of $C = f(m)$, where C is the monthly cost after m minutes used.



Part A

What is the minimum monthly cost for Corinne's cell phone plan? Show or explain your work.

Part B

What is the value of $f(150)$. Explain its meaning in terms of the cell phone plan.

Part C

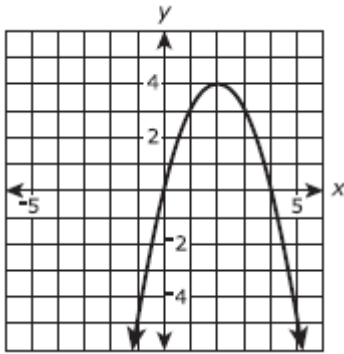
For what m is $f(m) = 55$? Explain its meaning in terms of the cell phone plan.

Part D

What is the cost per minute after Corinne uses her monthly allowance of 200 minutes? Show or explain your work.

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2. The function $f(x) = 4x - x^2$ is graphed in the xy -coordinate plane as shown.



Part A

Based on the graph of the function, which statements are true? Select **ALL** that apply.

- f is increasing on the interval $x < 0$.
- f is decreasing on the interval $x < 0$.
- f is increasing on the interval $0 < x < 2$.
- f is decreasing on the interval $0 < x < 2$.
- f is increasing on the interval $2 < x < 4$.
- f is decreasing on the interval $2 < x < 4$.
- f is increasing on the interval $x > 4$.
- f is decreasing on the interval $x > 4$.

Part B

Based on the graph of the function, which statements are true? Select all that apply.

- $f(x) < 0$ on the interval $x < 0$.
- $f(x) > 0$ on the interval $x < 0$.
- $f(x) < 0$ on the interval $0 < x < 2$.
- $f(x) > 0$ on the interval $0 < x < 2$.
- $f(x) < 0$ on the interval $2 < x < 4$.
- $f(x) > 0$ on the interval $2 < x < 4$.
- $f(x) < 0$ on the interval $x > 4$.
- $f(x) > 0$ on the interval $x > 4$.

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3. A computer technician charges a one-time fee of \$50 plus an additional \$20 per hour of labor. If an equation is created to determine the technician's total charge, what does the \$50 represent?

- A. slope
- B. coefficient
- C. x-intercept
- D. y-intercept

4. Given two equations of lines:

$$y = -\frac{1}{4}x + 2 \quad \text{and} \quad -2y = \frac{1}{2}x - 4$$

How do the lines compare?

- A. They are different lines with the same slope.
- B. They are different lines with the same y-intercept.
- C. They are the same line, both with a slope of $1/2$ and a y- intercept of -4
- D. They are the same line, both with a slope of $- 1/4$ and a y- intercept of 2 .

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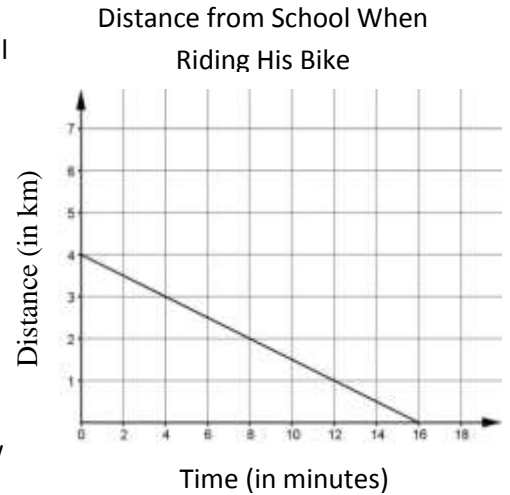
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Comparing Linear Functions

The graph models Jeremy's distance (in kilometers) from school (along the bike route) after t minutes on his bike.

The equation $d = -\frac{1}{2}t + 6$ models Jeremy's distance (in kilometers) from school (along the bus route) after t minutes on the bus.

1. Which mode of transportation travels farther to get to school? Explain how you determined this.
2. Which mode of transportation takes less time to get Jeremy to school? Show your work and justify your answer.

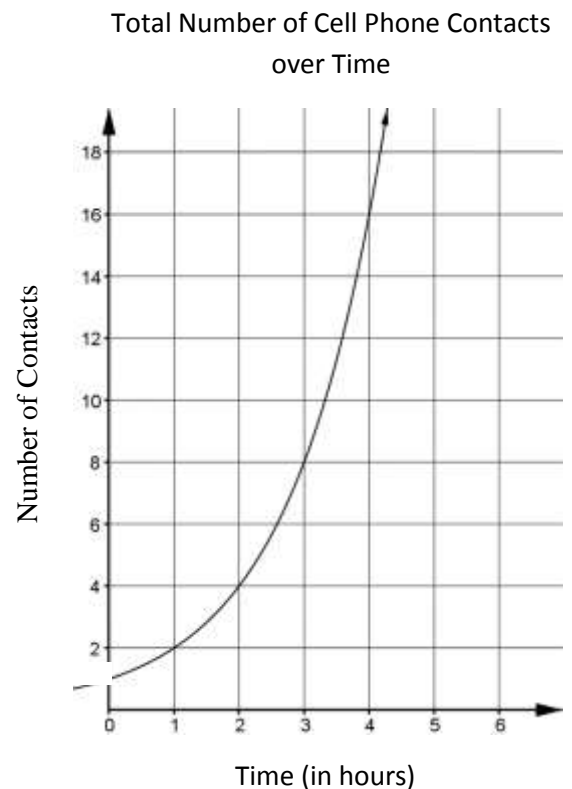


Comparing Linear and Exponential Functions

A mother and daughter purchase new cell phones at the same time. Suppose the number of contacts the mom adds can be expressed by the equation $C = 4h$ where h is the number of hours since the cell phone purchase and C is the total number of contacts.

Suppose the graph to the right represents the number of contacts the daughter is adding over the same time period.

1. Explain the difference in the rates of increase in the number of contacts for the two models. Justify your answer.
2. Whose contacts are increasing more rapidly? Justify your answer.



FS Algebra 1 EOC Review

Comparing Quadratics

Sally and Sam are testing out their new potato shooters from their tree houses which are at different heights. The chart to the right shows the time, t , in seconds and height, h , in meters of the potato pieces shot from Sam's shooter. The time, T , and height, H , of Sally's potato shooter can be represented by the following equation:

Sally's Shooter $H = -T^2 + 4T + 5$

Use the information provided to answer the following questions:

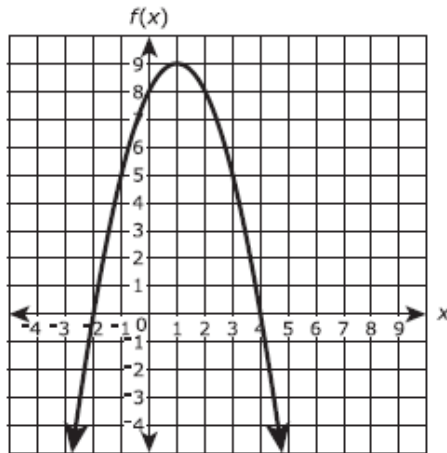
1. Whose potato pieces went higher? Show your work below and then justify your answer.
2. Whose potato pieces stayed in the air longer, Sally or Sam's? Show your work below and then justify your answer.

Sam's Shooter	
t	h
0	7
0.5	9
1	10
1.5	10
2	9
2.5	7
3	4
3.5	0

FS Algebra 1 EOC Review

MAFS.912.F-IF.3.9 EOC Practice

1. The figure shows a graph of the function of $f(x)$ in the xy -coordinate plane, with the vertex at $(1, 9)$ and the zeros at -2 and 4 .



The function g is defined by $g(x) = -3x + 2$. Which statements are true? Select **ALL** that apply.

- $f(-2)$ is greater than $g(-2)$.
- $f(-1)$ is less than $g(-1)$.
- $f(0)$ is greater than $g(0)$.
- $f(1)$ is less than $g(1)$.
- $f(2)$ is greater than $g(2)$.

2. Which table shows the same rate of change of y with respect to x as $y = 4 - \frac{5}{8}x$?

A.

x	y
-3	-12
-1	-4
2	8
5	20

B.

x	y
-4	6.5
2	2.75
4	1.5
8	-1

C.

x	y
-4	10.4
2	0.8
4	-2.4
8	-8.8

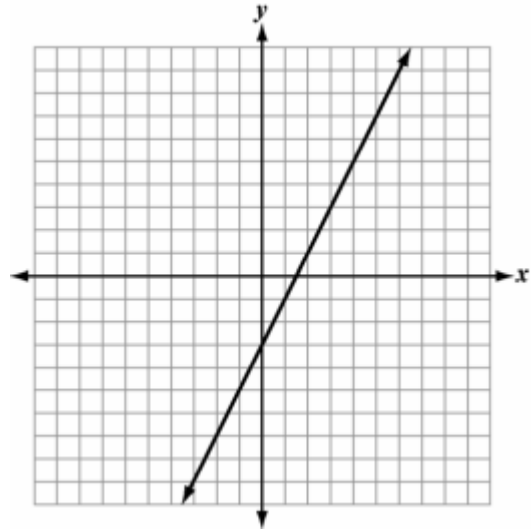
D.

x	y
-3	12
-1	4
2	-8
5	-20

FS Algebra 1 EOC Review

3. Two linear functions are represented by the set of ordered pairs and the graph below.

$$\{(-4, -6), (-2, -2), (2, 6), (4, 10)\}$$



Which statement is true about the functions?

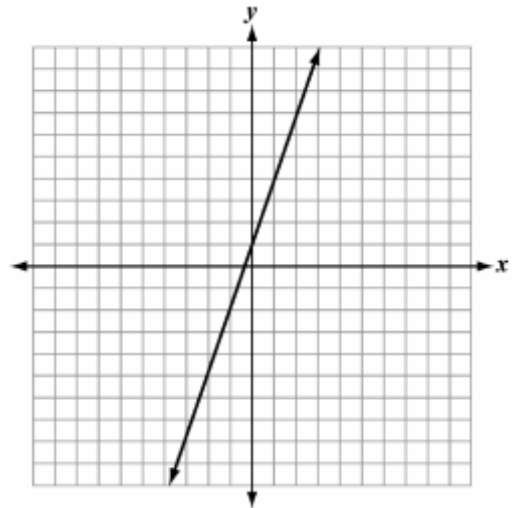
- A. The two functions are the same.
- B. The two functions have the same y-intercept
- C. The two functions have the same x-intercept
- D. The two functions have the same rate of change

4. Which function is different from the others?

A.

$$f(x) = 3x + 1$$

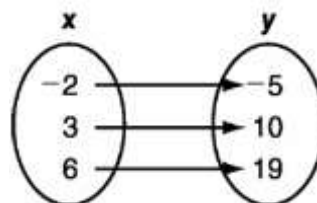
B.



C.

x	y
-5	-14
4	12
12	36

D.



FS Algebra 1 EOC Review

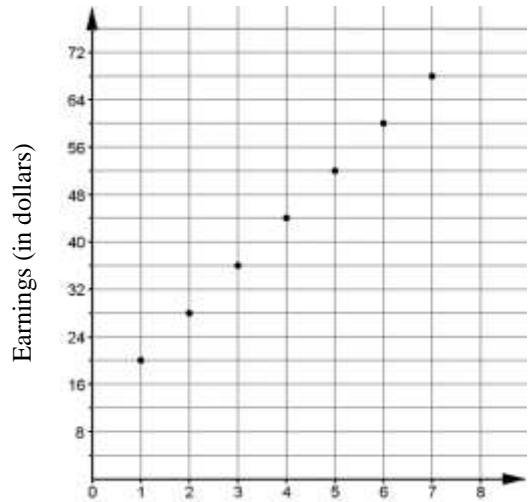
MAFS.912.F-IF.2.6

Identifying Rate of Change

Jasmine supervises movie night for children at her neighborhood clubhouse the first Friday of each month. She is paid \$12 for supervising and \$8 per child that attends. The following graph represents the relationship between the number of children attending and her earnings.

1. What is the average rate of change in Jasmine's earnings when the number of children that attend changes from one to four? Show your work below.
2. What is the average rate of change in Jasmine's earnings when the number of children that attend changes from six to seven? Show your work below.

Jasmine's Movie Night



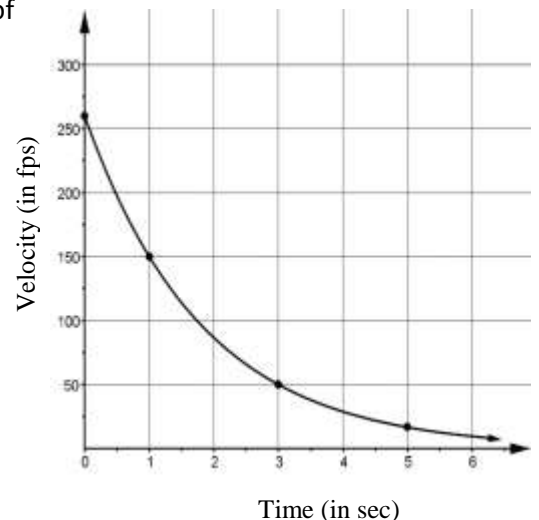
3. Compare the values you calculated for problems #1 and #2. What do you notice about these values? Explain in detail why this occurred.

Air Cannon

The graph represents the velocity of souvenirs shot from an air cannon into the crowd during a football game. When shot, the souvenir has an initial velocity of 260 feet per second (fps).

1. During which one-second interval is the rate of change the greatest? Justify your answer.
2. What is the average rate of change in velocity over the interval from 1-3 seconds? Show your work below.
3. What is the average rate of change in velocity over the interval from 3-5 seconds if at 5 seconds the velocity is 17 fps? Show your work below.

Air Cannon

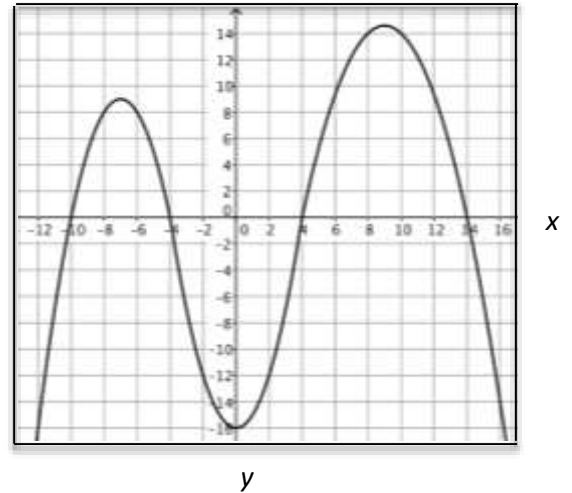


FS Algebra 1 EOC Review

Estimating the Average Rate of Change

Use the graph provided to answer the questions below.

1. Visually compare the graph at the interval $-10 \leq x \leq -8$ to the graph at the interval $4 \leq x \leq 8$. For which interval is the average rate of change in y greater?



2. Estimate the average rate of change in y for the interval $-10 \leq x \leq -8$. Mark these coordinates on the graph and show your work below.

3. Estimate the average rate of change in y for the interval $4 \leq x \leq 8$. Mark these coordinates on the graph and show your work below.

Pizza Palace

Pizza Palace offers five sizes: personal (8 in), small (10 in), medium (12 in), large (14 in) and extra large (16 in). The cost, $C(d)$, of making a pepperoni pizza can be expressed as a function of the diameter, d , of the pizza.

1. What is the average rate of change in cost from an 8 in to a 16 in pizza? Show your work.

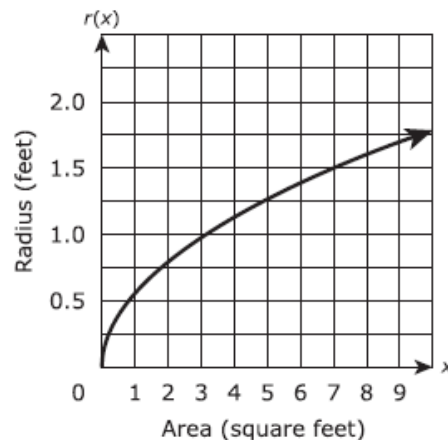
d	$C(d)$
8	2.51
10	3.93
12	5.65
14	7.70
16	10.05

2. What does this value mean in the context of this problem?

FS Algebra 1 EOC Review

MAFS.912.F-IF.2.6 EOC Practice

1. The function $r(x)$ represents the radius of a circle for a given area x . A graph of the function is shown in the figure.



According to the graph what is the approximate average rate of change in the radius of the circle as the area increases from 3 square feet to 7 square feet?

- A. 0.125 foot per square foot
- B. 0.25 foot per square foot
- C. 0.5 foot per square foot
- D. 8 feet per square foot

2. Which of the following best describes the relationship between the math class grade and number of days absent represented by the table?

Days Absent	0	3	6	9	12	15
Math Grade	95%	88%	81%	74%	67%	60%

- A. The math class grade is not affected by the number of days absent.
- B. The math class grade decreases steadily as the number of days absent decreases.
- C. The math class grade increases steadily as the number of days absent increases.
- D. The math class grade decreases steadily as the number of days absent increases.

3. Use the table to answer the question.

Gulf Water Temperature, Gulfport
(data collected on the fifteenth of the month)

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.
Water Temperature (°F)	63.9	64.4	66.8	73.1	78.1	82.4	85.2	86.7	84.5

A scientist measures the water temperature in the Gulf at Gulfport on the fifteenth of each month. Her data is shown in the table.

What is the average rate of change between March 15 and June 15?

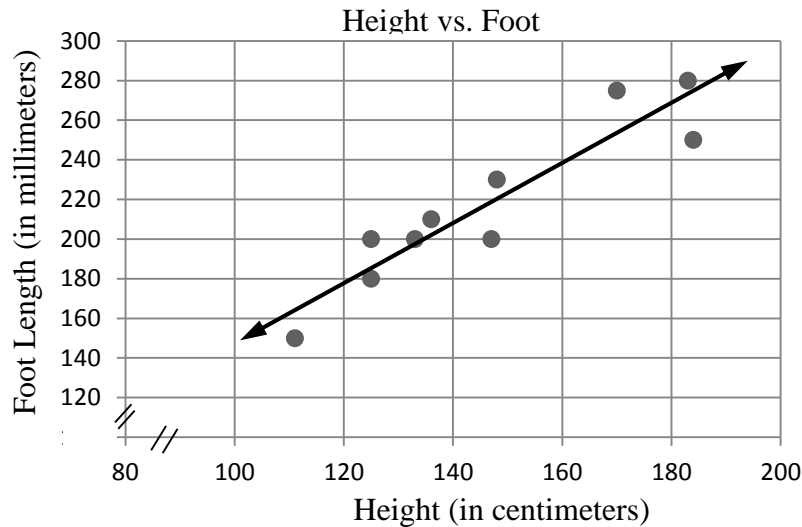
- A. 2.6°F per month
- B. 3.9°F per month
- C. 5.2°F per month
- D. 7.8°F per month

FS Algebra 1 EOC Review

MAFS.912.S-ID.3.7

Slope for Foot Length Model

Data on the heights, h , and foot lengths, f , were collected for 10 males. A linear model, $f = (1.6)h - 10$, was fitted to the data. A graph of the model is shown below.

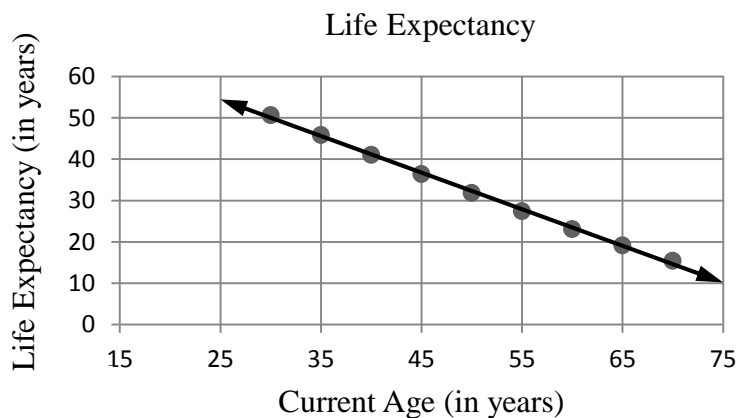


Identify the slope of the line to which the data were fitted and interpret it in terms of the context of the model.

Slope for Life Expectancy

The graph displays life expectancy as a function of age for females with ages between 30 and 70. Life expectancy is the average number of years (L) that a person will live beyond her current age (A).

The linear model that corresponds to this graph is $L = 87.0 - 0.88A$



Identify the slope of the line that models the data and interpret it in terms of the context of the model.

FS Algebra 1 EOC Review

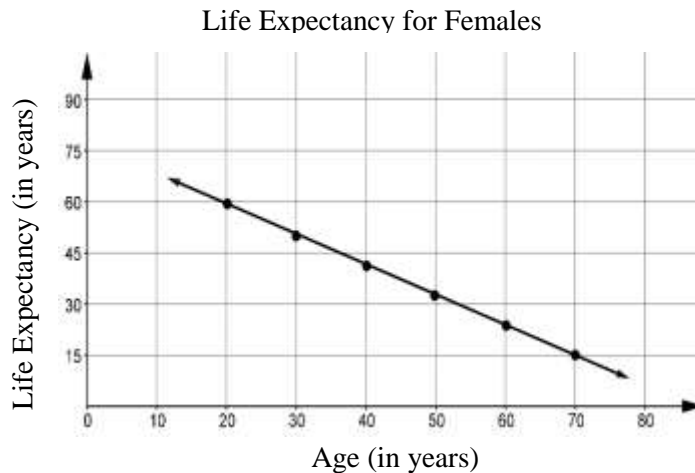
Bungee Cord Model

1. Suppose the equation of a line is given by $y = 5x + 8$. Explain what the constant term, 8, indicates about the graph of the line.
2. Scientists at the new company BunG tested their bungee cords using weights from 0 to 500 pounds. Using the data from testing, they modeled the relationship between the weight on the bungee cord and the length of the cord with the function $L = 0.05W + 10$ where W is the weight of the cord (in pounds) and L is the length of the cord (in feet). Identify the constant term and explain its meaning in the context of the data.

Intercept for Life Expectancy

The graph displays life expectancy as a function of age for females with ages between 20 and 70. Life expectancy is the average number of years (L) that a person will live beyond her current age (A).

The linear model that corresponds to this graph is $L = 77.0 - 0.89A$.



1. Identify the L -intercept (i.e., the y -intercept) of the graph and interpret it in terms of the context of the model.
2. Identify any issues or concerns related to an interpretation of the L -intercept of this model.

FS Algebra 1 EOC Review

MAFS.912.S-ID.3.7 EOC Practice

- The distance in miles, y , a bicyclist is from home after riding x hours is represented by the equation $y = 8x + 7$. What does the slope represent in this situation?
 - the number of hours it takes the bicyclist to ride 15 miles
 - the distance the bicyclist is from home when $x = 0$
 - the steepness of the hill the bicyclist is climbing
 - the speed of the bicyclist
- One type of redwood tree has an average height of 65 feet when it is 20 years old. If the tree is more than 20 years old, the average height, h , can be modeled by the function $h = 1.95(a - 20) + 65$, where a is the age of the tree in years. Which statement about this situation is true?
 - Every additional 1.95 ft of length over 20 ft adds 45 years to the age of this type of redwood tree.
 - For this type of redwood tree, the average height increases by 1.95 ft per year throughout its lifetime.
 - Each additional year of age over 20 years adds 1.95 ft to the average height of this type of redwood tree.
 - For this type of redwood tree, the average height increases by 65 ft for every 20 years of growth.
- The table shows the playing time in minutes of high-definition videos and the file size of these videos in megabytes (MB).

Videos

Playing Time, x (min)	File Size, y (MB)
0.5	60
1.5	180
2	240
4.5	540
5	600

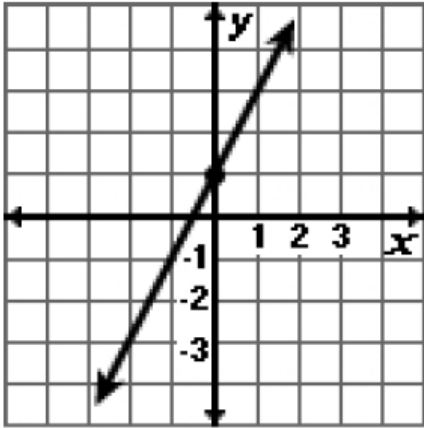
What does the slope of the graph of this situation represent?

- The increase in the file size of the video per minute of playing time
- The file size of each video
- The playing time of each video
- The increase in the playing time per MB of video

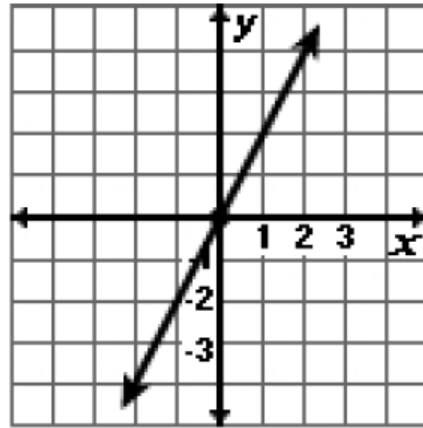
FS Algebra 1 EOC Review

4. Which is the graph of a linear function with a slope of 2 and a y-intercept at (0, 1)?

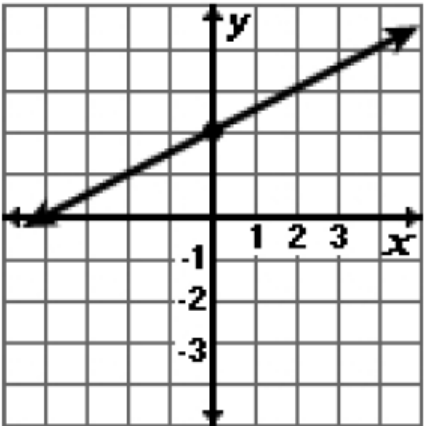
A.



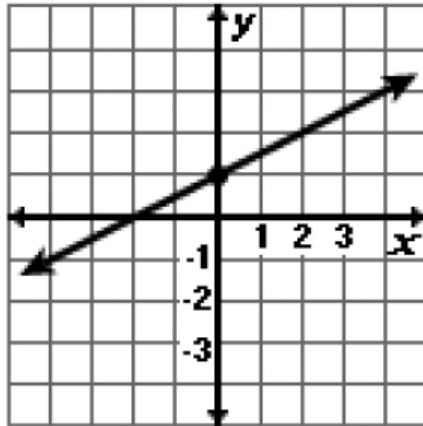
B.



C.



D.



FS Algebra 1 EOC Review

MAFS.912.F-IF.3.8

Launch from a Hill

A slingshot is used to propel a rock into the air with an initial velocity of 160 feet per second from the top of a 384 foot hill onto a flat plane. The function $s(t) = -16t^2 + 160t + 384$ describes the height of the rock after t seconds.

1. Write this function in factored form.

2. Use the factored form to identify the zeros of the function and explain their meaning in the context of the problem.

A Home for Fido

The Jacksons wish to build a rectangular enclosure for their dog, Fido. They purchased 100 feet of fencing for the enclosure. The area of the enclosure, A , is related to the length of one of the sides, x (measured in feet), by the formula $A(x) = -x^2 + 50x$.

1. Represent the function in an equivalent form by completing the square.

2. Use this new form to identify the vertex of the graph and explain its meaning in the context of the problem.

FS Algebra 1 EOC Review

Exponential Functions 1

Let $y = 50(1.1)^t$.

1. Does this function represent exponential growth or decay? Explain.

2. What is the percent rate of change of y with respect to t ? Explain how you determined this.

Exponential Functions 2

Let $y = 50(0.8)^t$.

3. Does this function represent exponential growth or decay? Explain.

4. What is the percent rate of change of y with respect to t ? Explain how you determined this.

FS Algebra 1 EOC Review

MAFS.912.F-IF.3.8 EOC Practice

1. Write the function $y - 3 = \frac{2}{3}(x - 4)$ in the equivalent form most appropriate for identifying the slope and y-intercept of the function.

2. The area, A , in square feet, of a rectangular storage bin in a warehouse is given by the function $A(x) = -2x^2 + 36x$, where x is the width, in feet, of the storage bin.

Part A

If the function is graphed in a coordinate plane, which statement would be true?

- A. The x-intercepts of the function are 0 and 8, which are a lower bound and an upper bound for the possible values of the length of the storage bin.
- B. The x-intercepts of the function are 0 and 8, which are a lower bound and an upper bound for the possible values of the width of the storage bin.
- C. The x-intercepts of the function are 0 and 18, which are a lower bound and an upper bound for the possible values of the length of the storage bin.
- D. The x-intercepts of the function are 0 and 18, which are a lower bound and an upper bound for the possible values of the width of the storage bin.

Part B

The process of completing the square can be used to calculate the width, in feet, of the storage bin that gives a maximum area. What is the missing value?

$$A = -2x^2 + 36x$$

$$A = -2(x - 9)^2 + ?$$

Enter your answer in the box.

3. A cliff diver's height above the water, in meters, is modeled by the function $h(d) = -d^2 + 2d + 24$, where d represents how far the diver is from the cliff. How far from the cliff will the diver be when she reaches the water?
- A. 0 meters
 - B. 4 meters
 - C. 6 meters
 - D. 24 meters

FS Algebra 1 EOC Review

4. Given the function $f(x) = -x^2 + 8x + 9$,

Part A

State whether the vertex represents a maximum or minimum point for the function. Explain your answer.

Part B

Rewrite $f(x)$ in vertex form by completing the square.

FS Algebra 1 EOC Review

MAFS.912.A-APR.2.3

Zeros of a Quadratic

Without using a graphing calculator or other graphing technology, identify the zeros of each polynomial. Show all work in the space below.

1. $p(x) = x^2 - 14x + 49$

2. $q(x) = 2x^2 - 7x - 15$

3. What do the zeros of the polynomial tell you about its graph?

Zeros of a Cubic

Without the use of a graphing calculator or other graphing technology, identify the zeros of each polynomial. Show all work in the space below.

1. $p(x) = 3x^3 + 6x^2 - 9x$

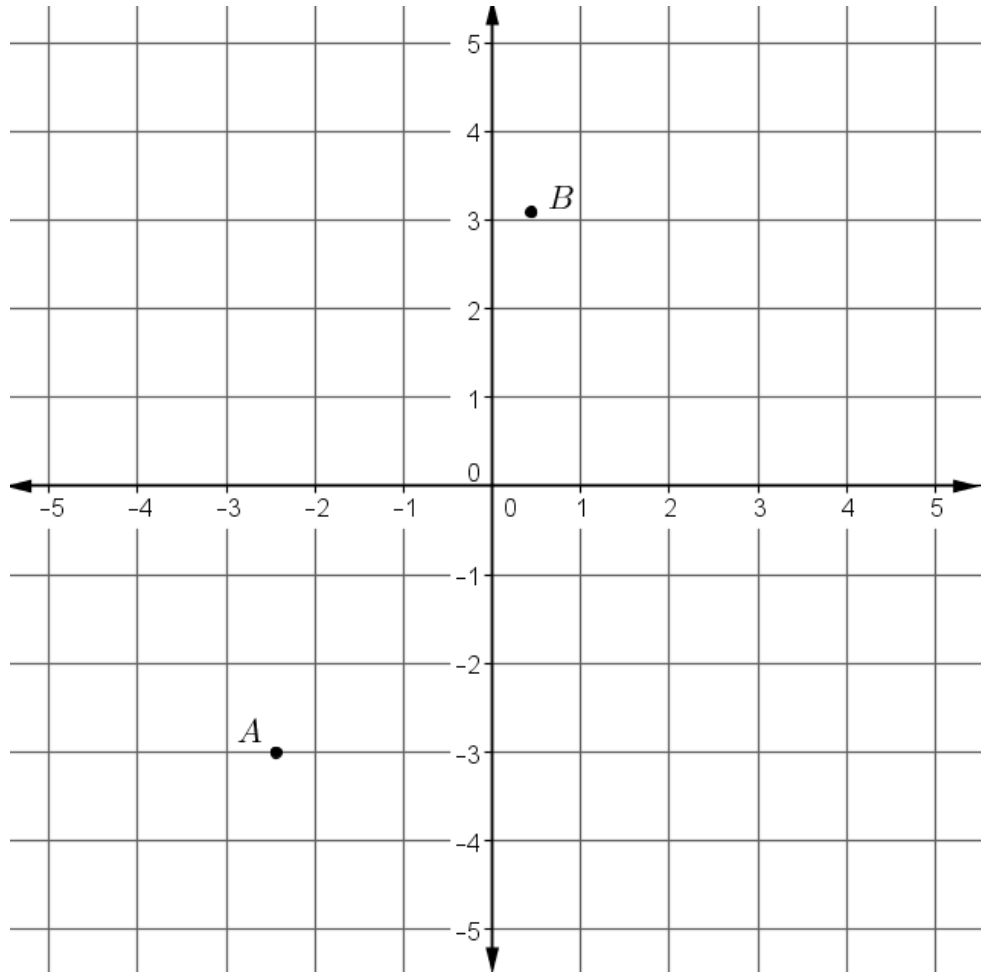
2. $q(x) = 2x^3 + 8x^2 + 8x$

3. What do the zeros of a polynomial tell you about its graph?

FS Algebra 1 EOC Review

Use Zeros to Graph

Without the use of a graphing calculator or other graphing technology, identify the zeros of the polynomial function $P(x) = 2x(x + 2)(x + 1)$. Show how you calculated the zeros in the space below. Then use the zeros to sketch the graph of P between points A and B .



FS Algebra 1 EOC Review

MAFS.912.A-APR.2.3 EOC Practice

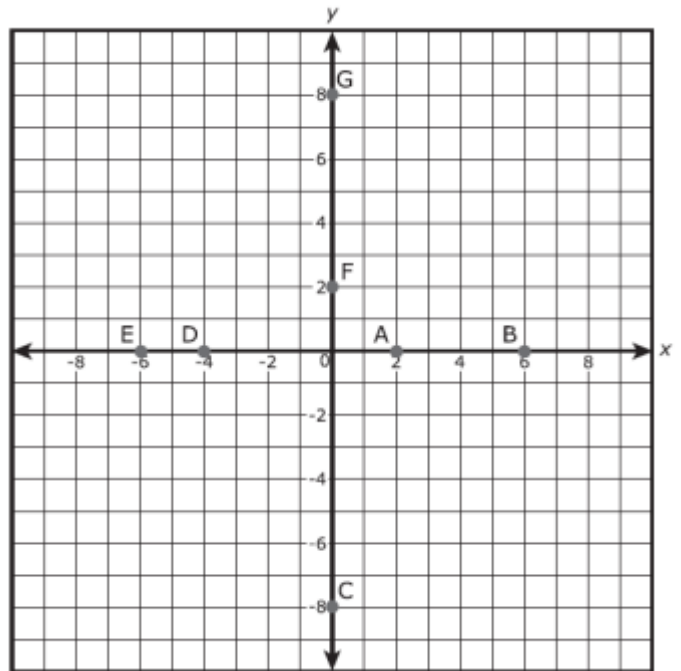
1. Several points are plotted on the graph.

Select the plotted points on the graph that represent the zeros of the function:

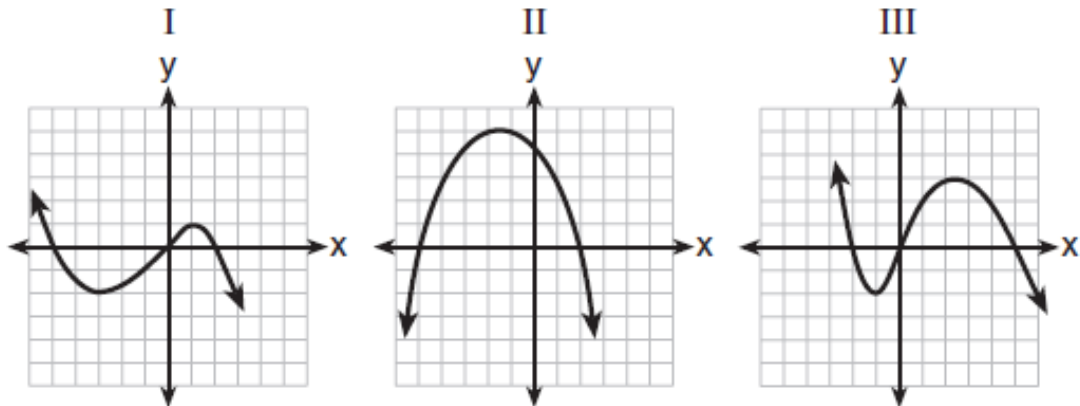
$$f(x) = (x^2 + 2x - 8)(x - 6)$$

Select **ALL** that apply.

- (2, 0)
- (6, 0)
- (0, -8)
- (-4, 0)
- (-6, 0)
- (0, 2)
- (0, 8)



2. A polynomial function contains the factors x , $x - 2$, and $x + 5$. Which graph(s) below could represent the graph of this function?



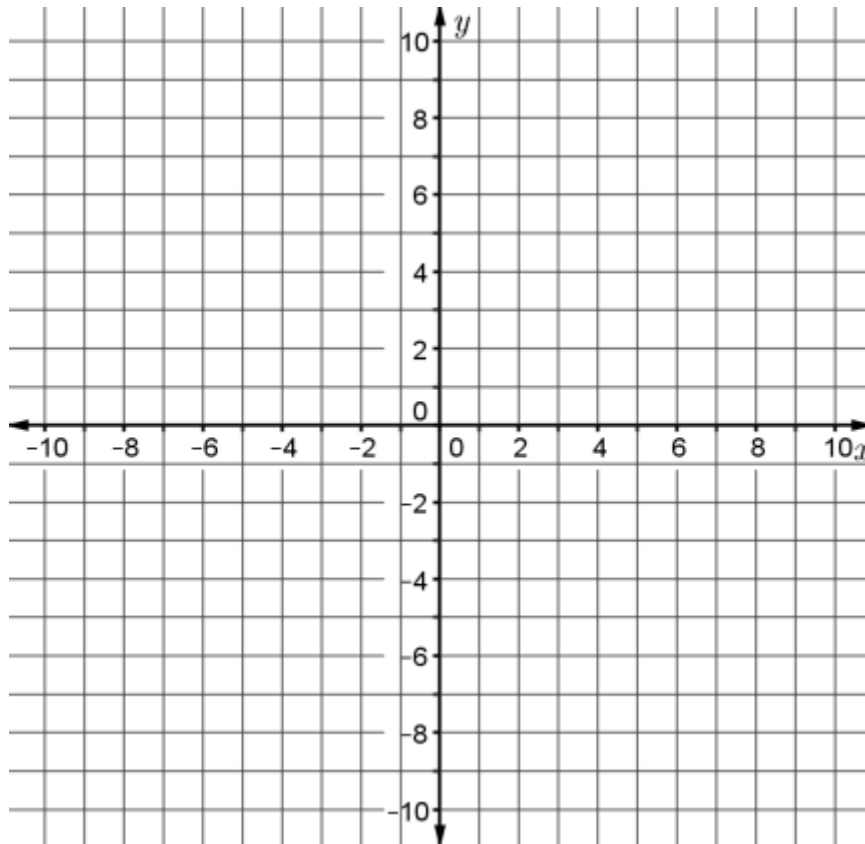
- A. I only
- B. II only
- C. I and III
- D. I, II, and III

FS Algebra 1 EOC Review

MAFS.912.F-IF.3.7

Graphing a Linear Function

Graph the function $g(x) = -3x + 6$.

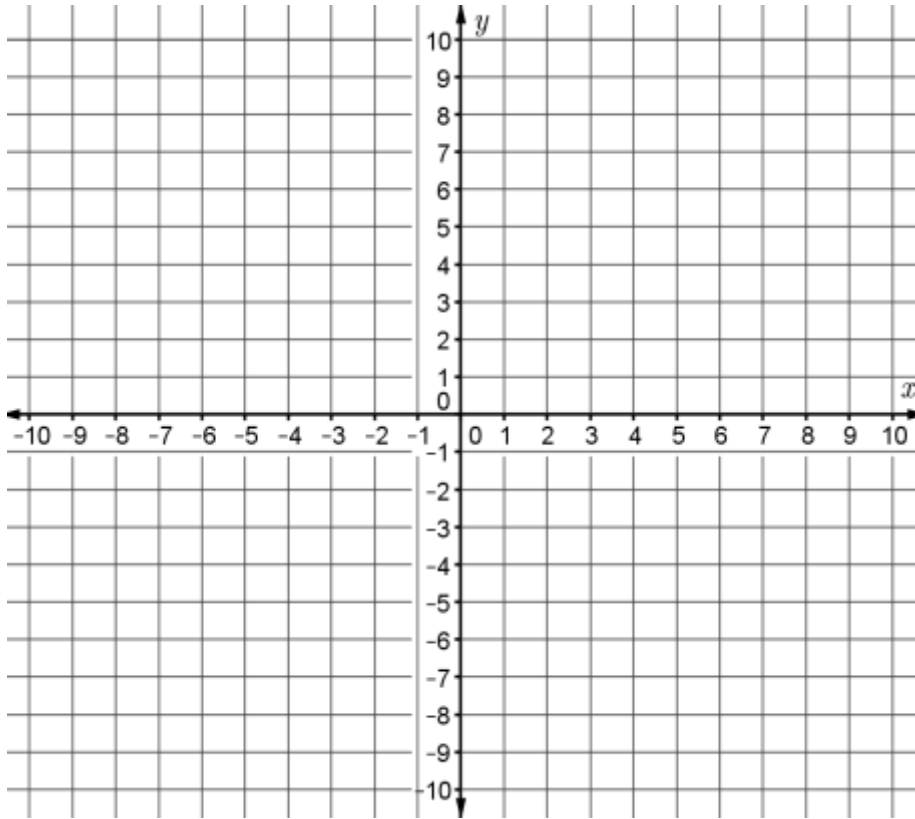


1. Identify and label the x-intercept and y-intercept of the graph.
2. What is the minimum of this function over the interval $\{x \mid -5 \leq x \leq 5\}$?
3. What is the maximum of this function over the interval $\{x \mid -5 \leq x \leq 5\}$?

FS Algebra 1 EOC Review

Graphing a Quadratic Function

Graph the function $f(x) = x^2 + 2x - 3$.

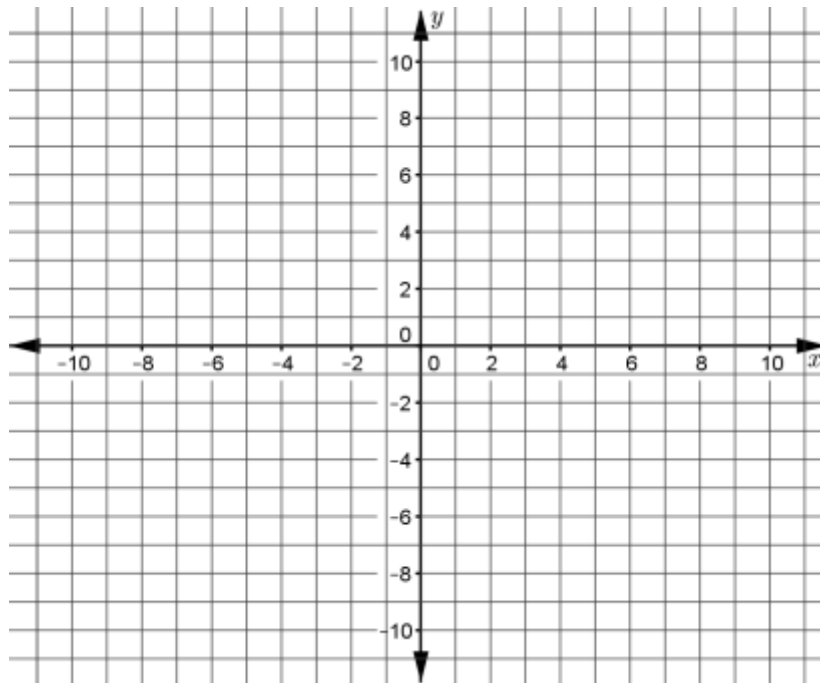


1. What are the zeros of this function? Where on the graph are the zeros of the function located?
2. Does this function have a maximum? If so, where is it?
3. Does this function have a minimum? If so, where is it?

FS Algebra 1 EOC Review

Graphing an Exponential Function

Graph the function $g(x) = 3^x$ and answer the questions below.

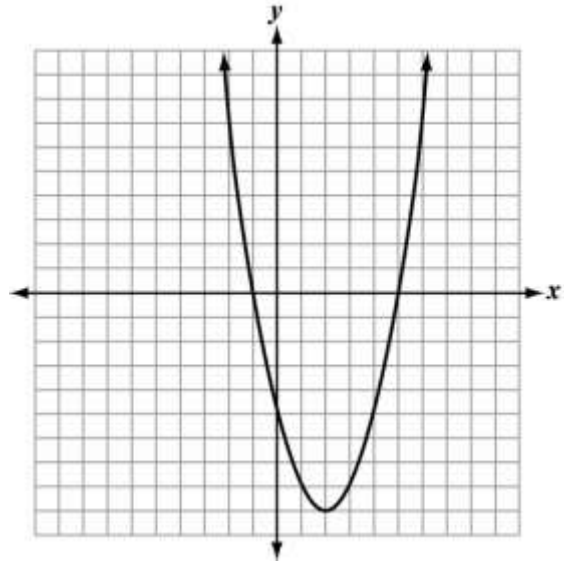


1. Is this function an example of exponential growth or exponential decay?
2. Are there any intercepts? If so, describe them.
3. What happens to the value of $g(x)$ as x gets larger and larger?

FS Algebra 1 EOC Review

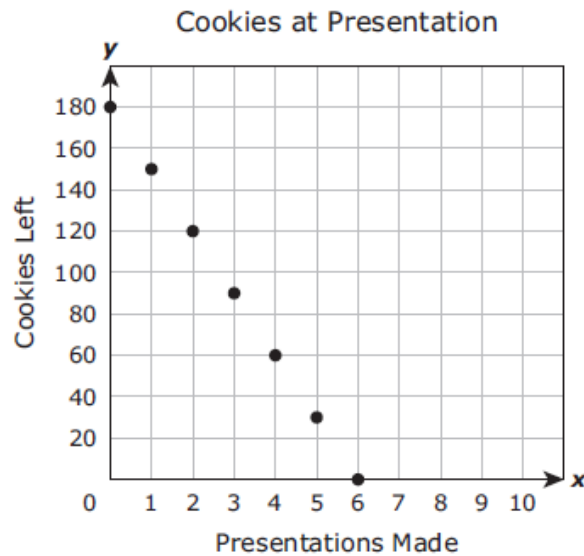
MAFS.912.F-IF.3.7 EOC Practice

1. What are the x-intercepts of the parabola?



- A. $(0, -1)$ and $(0, 5)$
- B. $(2, 0)$ and $(-9, 0)$
- C. $(-1, 0)$ and $(5, 0)$
- D. $(0, -5)$ and $(-5, 0)$

2. The graph shows the relationship between the number of cookies a presenter at a convention had left to give away and the number of presentations she had made.

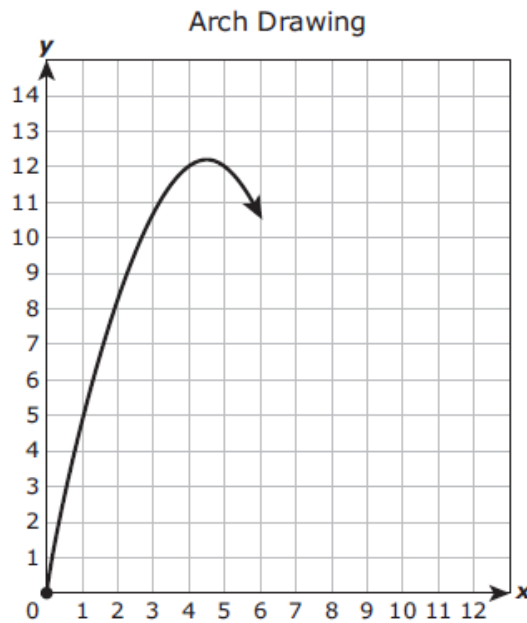


What does the x-intercept of the graph represent?

- A. The number of cookies the presenter had before making any presentations
- B. The maximum number of cookies the presenter gave away during every presentation
- C. The number of presentations the presenter made per hour
- D. The maximum number of presentations the presenter made before running out of cookies

FS Algebra 1 EOC Review

3. An architecture student is drawing a graph of an arch. As shown below, the arch has the shape of a parabola that begins at the origin and has a vertex at $(4.6, 12.2)$.



Other than the origin, at which point will the graph intersect the x-axis?

- A. $(12.2, 0)$
B. $(9.2, 0)$
C. $(4.6, 0)$
D. $(10.6, 0)$
4. In the xy -coordinate plane, the graph of the equation $y = 3x^2 - 12x - 36$ has zeros at $x = a$ and $x = b$, where $a < b$. The graph has a minimum at $(c, -48)$. What are the values of a , b , and c ?
- A. $a = 2, b = 4, c = 2$
B. $a = -2, b = 6, c = 2$
C. $a = -31, b = 31, c = 0$
D. $a = 3, b = 6, c = 2$

FS Algebra 1 EOC Review

Prove Linear

1. Suppose that f is a linear function such that $f(x) = 3x + 2$. Show that $f(8) - f(6) = f(3) - f(1)$.

2. Prove that linear functions grow by equal differences over equal intervals. In other words, suppose that f is any linear function and show that:

$$\text{If } x'_2 - x'_1 = x_2 - x_1 \text{ then } f(x'_2) - f(x'_1) = f(x_2) - f(x_1).$$

Prove Exponential

1. Suppose that f is an exponential function such that $f(x) = 5 \cdot 3^x$. Show that $\frac{f(4)}{f(2)} = \frac{f(7)}{f(5)}$.

2. Prove that exponential functions grow by equal factors over equal intervals. In other words, if

$$f(x) = a \cdot b^x \text{ and } x_2 - x_1 = x'_2 - x'_1, \text{ then show that } \frac{f(x_2)}{f(x_1)} = \frac{f(x'_2)}{f(x'_1)}.$$

FS Algebra 1 EOC Review

How Does Your Garden Grow?

Janie and Juan are both planting seeds in a garden. Each planted two seeds on the first day and then a certain number of additional seeds each day for four days. Juan recorded the number of seeds he planted each morning in the chart to the right. Janie decided that every morning she would plant twice as many seeds as she did the day before.

Juan's Seeds	
Days	Seeds Planted
1	2
2	4
3	6
4	8
5	10

1. Did the number of seeds Janie planted change at a constant rate per day? Show your work below to justify your answer.
2. Did the number of seeds Juan planted change at a constant rate per day? Show your work below to justify your answer.
3. Whose rate of seed planting is increasing more rapidly – Janie's or Juan's? Explain and justify your answer.
4. What type of function would best model the number of seeds Juan planted over time: exponential, linear, or quadratic? Explain and justify your answer.

FS Algebra 1 EOC Review

Exponential Growth

Cindy and Simone were working on separate biology experiments. Cindy's experiment started with only one cell, but her cells were doubling in number every minute. Simone started with 80 cells in her experiment. Simone documented the cell population growth per minute in the chart to the right.

Simone's Experiment	
# of minutes	# of cells
0	80
1	120
2	180
3	270
4	405

1. Do the number of cells in Simone's experiment increase at a constant percentage rate? If so, what is the percentage rate? If not, describe how the number of cells is increasing. Show your work below to justify your answer.
2. In which experiment are the numbers of cells increasing more rapidly? Justify your answer.
3. Should Simone's cell growth be modeled by a linear, quadratic, or exponential function? Explain your answer.

FS Algebra 1 EOC Review

MAFS.912.F-LE.1.1 EOC Practice

- Christy and Derron set goals for improving their recorded times for the mile. Which statement best describes these goals?
 - Christy: Complete each new run in 5 fewer seconds than the previously recorded run.
 - Derron: Complete each new run in 5% less time than the previously recorded run.
 - Christy's goal can be modeled with an exponential function, while Derron's goal can be modeled with a linear function.
 - Christy's goal can be modeled with a linear function, while Derron's goal can be modeled with an exponential function.
 - Both goals can be modeled with exponential functions.
 - Both goals can be modeled with linear functions.
- Given that $y = ax + b$, $x_0 = -2$, and $x_1 = 3$, what is the difference between the value of y corresponding to x_1 and the value of y corresponding to x_0 ?
 - 5a
 - a
 - a
 - 5a
- Which situation best describes the graph?



- 8% per year increase in value of a \$1,000 deposit over 9 years.
 - 8% per year increase in value of a \$500 deposit over 9 years.
 - 8% per year decrease in value of a \$1,000 deposit over 9 years.
 - 8% per year decrease in value of a \$500 deposit over 9 years.
- Which equation represents a linear function?
 - $y = x + 1$
 - $xy = 1$
 - $y = x^2$
 - $x = \frac{1}{y}$

FS Algebra 1 EOC Review

MAFS.912.F-LE.2.5

Computer Repair

A new computer repair company offers house calls to their customers. They use the function $f(h) = 45h + 80$ to calculate the total repair bill, $f(h)$, for h number of hours worked.

1. What does 45 represent in the function?
2. What does 80 represent in the function?
3. Find h if $f(h) = 215$. What does this value of h mean in the context of the problem?

Suppose the function is changed from $f(h) = 45h + 80$ to $f(h) = 35h + 80$. What does this change mean in the context of the problem?

Lunch Account

Anthony has a lunch account in the school cafeteria. The balance, $g(x)$, in his account at the beginning of the month can be represented by the function $g(x) = -2.50x + 32$, where x is the number of meals purchased.

1. How much money was in Anthony's account at the beginning of the month?
2. What is the slope of the graph of this function?
3. What does the slope represent in the context of the problem?
4. Find $g(x)$ when $x = 11$. What does this pair of values mean in the context of the problem?

FS Algebra 1 EOC Review

MAFS.912.F-LE.2.5 EOC Practice

1. Point A on the graph represents the distance and time that Cat traveled on her trip. Which of the following represents her average speed?



- A. x-coordinate of point A
- B. y-coordinate of point A
- C. slope of line through A and (0, 0)
- D. distance from the origin to point A

2. The development budget (C) for a computer game company is described by the equation $C = \$50,000t + \$10,000$, where t is the number of years since the company's creation. Which statement is true?

- A. Each year development expenses increase by \$50,000.
- B. Each year development expenses increase by \$60,000.
- C. Each year development expenses are \$50,000.
- D. Each year development expenses are \$60,000.

3. Roy opened a savings account and made a deposit. Assuming he makes no deductions or additional deposits, his balance can be calculated using the function $f(t) = 850(1.065)^t$ where t represents the number of years since the initial deposit.

What does the number 850 represent?

- A. the amount of Roy's initial deposit
- B. the amount of interest Roy will earn each year
- C. the number of years it will take for Roy's money to double
- D. the maximum amount of interest Roy can earn with the account

4. Population growth of a country is modeled by the function below, where t is time in years. Based on the model, which is true about the country?

$$P = 10^7(1.04)^t$$

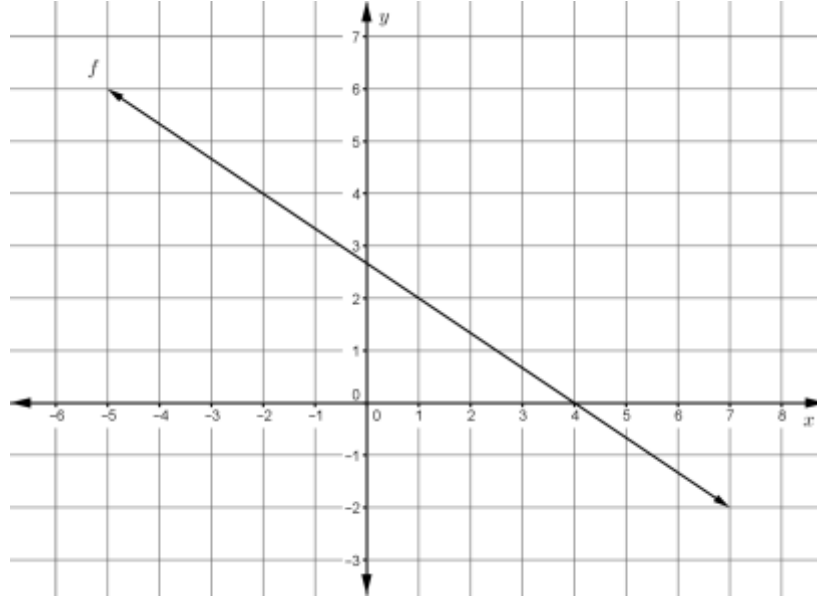
- A. Since reaching 10 million people, the population was growing by 0.04% each year.
- B. Since reaching 10 million people, the population was growing by 4% each year.
- C. Since reaching 100 million people, the population was growing by 0.04% each year.
- D. Since reaching 100 million people, the population was growing by 4% each year.

FS Algebra 1 EOC Review

MAFS.912.F-LE.1.2

Functions from Graphs

The graph of function f is shown below.



Write the function rule that corresponds to this graph. Show all of your work carefully and completely.

Writing an Exponential Function from a Description

Suppose you bought an antique desk for \$650. Each year the value of the desk increases by 5%. Write an exponential function that models the value, V , after t years. Explain your reasoning.

Writing an Exponential Function from a Table

Write an exponential function whose graph contains the given points. Show all work clearly and completely.

x	y
0	5
2	45

FS Algebra 1 EOC Review

What Is the Function Rule?

Write a function rule for each of the following sequences. Use the notation provided in the tables. Show all of your work carefully and completely.

1.

Term Number	1	2	3	4	...	n
Term	5	9	13	17	...	$f(n)$

1.

Term Number	1	2	3	4	...	n
Term	3	6	12	24	...	$g(n)$

Writing a Function from Ordered Pairs

The table displays several ordered pairs generated by the linear function f . Write an equation that shows how x and $f(x)$ are related. Show all of your work carefully and completely.

x	$f(x)$
-1	-4
0	2
1	8
2	14

FS Algebra 1 EOC Review

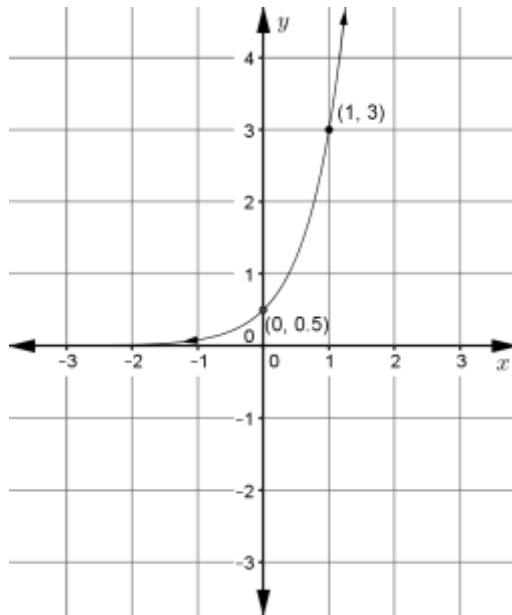
The Cost of Water

The water company that serves St. George Island charges a base facility fee of \$32.00 each month. In addition, they charge \$6.53 per kilogallon (1000 gallons) of water used.

Write a function that can be used to calculate the monthly charge for water service when x kilogallons of water are used. Explain your work.

Writing an Exponential Function From Its Graph

The graph of an exponential function is shown below.



Write an equation that represents this function using function notation. Show all work.

FS Algebra 1 EOC Review

MAFS.912.F-LE.1.2 EOC Practice

1. What is the equation of the function represented by this table of values?

x	-2	-1	0	1	2
y	$\frac{3}{25}$	$\frac{3}{5}$	3	15	75

- A. $y = 5x + 3$
- B. $y = 12x + 3$
- C. $y = 3 \cdot 5^x$
- D. $y = 5 \cdot 3^x$

2. Which expression represents the output of the n th term?

Input	1	2	3	4	5	n
Output	1	3	5	7	9	

- A. $n + 2$
- B. $n + 11$
- C. $2n + 1$
- D. $2n - 1$

3. A certain type of lily plant is growing in a pond in such a way that the number of plants is growing exponentially. The number of plants N in the pond at time t is modeled by the function $N(t) = ab^t$, where a and b are constants and t is measured in months. The table shows two values of the function.

t	$N(t)$
0	150
1	450

Which equation can be used to find the number of plants in the pond at time t ?

- A. $N(t) = 150(1)^t$
- B. $N(t) = 450(1)^t$
- C. $N(t) = 150(3)^t$
- D. $N(t) = 450(3)^t$

FS Algebra 1 EOC Review

4. In a basketball game, Marlene made 16 field goals. Each of the field goals were worth either 2 points or 3 points, and Marlene scored a total of 39 points from field goals.

Part A

Let x represent the number of two-point field goals and y represent the number of three-point field goals. Which equations can be used as a system to model the situation?

Select **ALL** that apply.

- $x + y = 16$
- $x + y = 39$
- $2x + 3y = 16$
- $2x + 3y = 39$
- $3x + 2y = 16$
- $3x + 2y = 39$

Part B

How many three-point field goals did Marlene make in the game? Enter your answer in the box.

FS Algebra 1 EOC Review

MAFS.912.F-BF.1.1

Saving for a Car

Juan is saving money for a down payment on a car. He has already saved \$300 and plans to continue saving at a rate of \$35 a week.

1. Write a function that models the relationship between how much money Juan has saved, $f(x)$, and the number of additional weeks of saving, x .
2. How much money will Juan have after 10 weeks? Show your work.
3. How many weeks will it take Juan to save \$1000? Show your work.

Giveaway

To promote its new game, the Play! Company is giving away \$1,000,000 to some lucky gamers. On the first day of the promotion, they will give away half of the million dollars. The next day, they will give away half of the first day's amount and so on.

1. Write a function that can be used to calculate the amount of money given away, $M(n)$, on the n th day.
2. How much money will be given on the 15th day of the promotion? Show your work.

FS Algebra 1 EOC Review

Furniture Purchase

Your parents purchased a new reclining chair for the living room. The chair will be delivered to your home. The cost of the chair is x dollars, the tax rate is 6.5%, and the delivery fee is \$50.

1. Write a function $f(x)$ for the purchase amount, x , and the delivery fee.
2. Write another function $g(x)$ for the cost of the chair after taxes.
3. Write the function $f(g(x))$ and interpret its meaning.
4. Write the function $g(f(x))$ and interpret its meaning.
5. Which results in a lower cost to you, $f(g(x))$ or $g(f(x))$? Explain why.

How Much Bacteria?

At some moment in time, a culture of Bacteria A contains 100 bacteria. After two hours, there are 300 bacteria, and after 4 hours, 900 bacteria are found. It continues to grow at this rate as long as conditions are favorable. In the same environment, 900 nonreproducing bacteria of another type (Bacteria B) are found.

1. Write a function describing the number of Bacteria A in the culture after t hours. Use function notation and show your work in the space below.
2. Write a function to describe the total number of bacteria (Bacteria A and Bacteria B) in the culture after t hours. Use function notation and show your work in the space below.
3. Using your function from question 2, determine when the number of bacteria in the culture will reach 9,000.

FS Algebra 1 EOC Review

MAFS.912.F-BF.1.1 EOC Practice

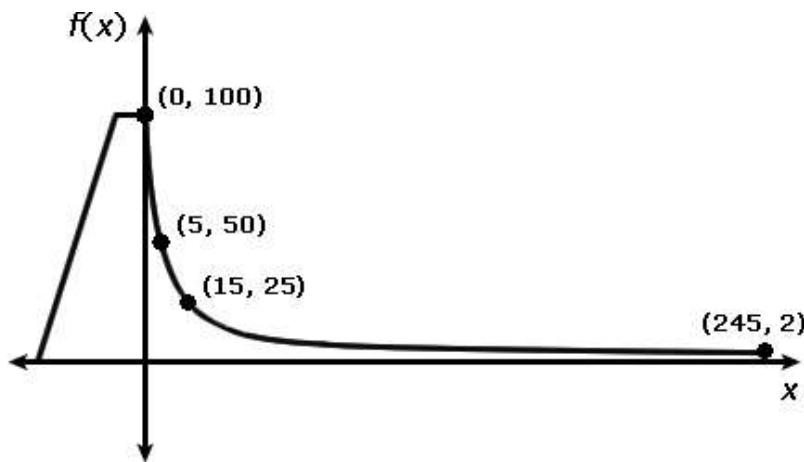
1. Every day commuting to and from work, Jay drives his car a total of 45 miles. His car already has 2,700 miles on it.

Which function shows the total number of miles Jay's car will have been driven after n more days?

- A. $d(n) = 60$
- B. $d(n) = 60n$
- C. $d(n) = 45 + 2,700n$
- D. $d(n) = 2,700 + 45n$

2. At the top of the water slide, Jessica sits 100 feet above the ground. She begins her descent and quickly drops to a height of 50 feet while moving only 5 feet forward. She drops to a height of 25 feet upon travelling 15 feet forward, eventually coming to rest 2 feet above the ground at the end of the 245-foot-long slide.

Which function models Jessica's entire descent down the water slide?



- A. $f(x) = 100 - 10x$
- B. $f(x) = \frac{500}{x+5}$
- C. $f(x) = \frac{2}{5}x^2 - 12x + 100$
- D. $f(x) = \frac{265-x}{10}$

3. If the first *Now* = 5, what formula can be used to find the terms of this pattern?

5, -10, 20, -40, 80 ...

- A. $Next = Now - 15$
- B. $Next = (-2) \cdot Now$
- C. $Next = 2 \cdot Now$
- D. $Next = (-4) \cdot Now + 10$

FS Algebra 1 EOC Review

4. The first five terms in a pattern are shown below.

$-0.5, -0.25, 0, 0.25, 0.5 \dots$

If the pattern continues, which expression can be used to find the n th term?

- A. $0.75n - 1.25$
- B. $-0.25n - 0.25$
- C. $0.25n - 0.75$
- D. $-0.50n + 0.25$

FS Algebra 1 EOC Review

MAFS.912.F-IF.1.3

Which Sequences Are Functions?

Two sequences are shown below. Determine if each sequence is a function and justify your decision. If the sequence is a function, describe its domain.

1. $g(x) = x^2$ for $x = 0, 1, 2, 3, 4, \dots$

2. 1, 5, 9, 13, 17, ...

Recursive Sequences

S is an example of a sequence defined recursively.

$$S(1) = 27$$

$$S(n) = S(n - 1) - 5 \text{ for all } n \geq 2$$

1. Write out the first five terms of this sequence by completing the table.

n	1	2	3	4	5
$S(n)$					

2. Explain why this sequence is a function.

3. Describe the domain of S .

FS Algebra 1 EOC Review

MAFS.912.F-IF.1.3 EOC Practice

1. For the function below, which set produces the sequence -11, 0, 5?

$$k(n) = 8n - 3n^2$$

- A. $k(-1), k(0), k(1)$
- B. $k(1), k(2), k(3)$
- C. $k(-3), k(-2), k(-1)$
- D. $k(-11), k(0), k(5)$

2. If a sequence is defined recursively by $f(0) = 2$ and $f(n + 1) = -2f(n) + 3$ for $n \geq 0$, then $f(2)$ is equal to

- A. -11
- B. 1
- C. 5
- D. 17

3. The third term in an arithmetic sequence is 10 and the fifth term is 26. If the first term is a_1 , which is an equation for the n th term of this sequence?

- A. $a_n = 8n + 10$
- B. $a_n = 8n - 14$
- C. $a_n = 16n + 10$
- D. $a_n = 16n - 38$

4. If $f(1) = 3$ and $f(n) = -2f(n - 1) + 1$, then $f(5) =$

- A. -5
- B. 11
- C. 21
- D. 43

5. A sequence is created from the function $k(n) = 3n + 1$, where n represents the position of the term in the sequence. The sequence does not begin at 0. Which list represents the first five terms of the sequence?

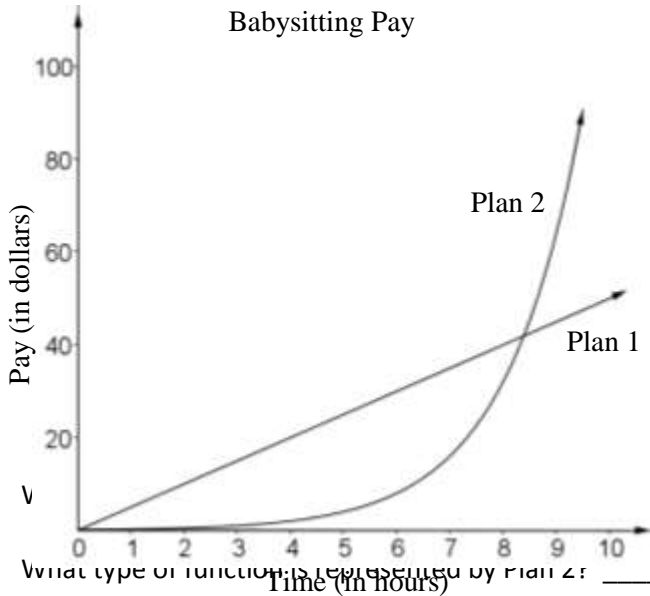
- A. 5, 6, 7, 8, 9
- B. 4, 7, 10, 13, 16
- C. 4, 7, 11, 18, 29
- D. 6, 9, 12, 15, 18

FS Algebra 1 EOC Review

MAFS.912.F-LE.1.3

Compare Linear and Exponential Functions

Sara has been asked to babysit for a neighbor. She is offered two payment options. With the first plan, she is paid \$5.00 per hour. With the second plan, she is paid \$0.25 for one hour, \$0.50 for two hours, \$1.00 for three hours, and so on, as shown in both the graph and the table.



Hours	Plan 1	Plan 2
1	5.00	0.25
2	10.00	0.50
3	15.00	1.00
4	20.00	2.00
5	25.00	4.00
6	30.00	8.00
7	35.00	16.00
8	40.00	32.00
9	45.00	64.00
10	50.00	128.00

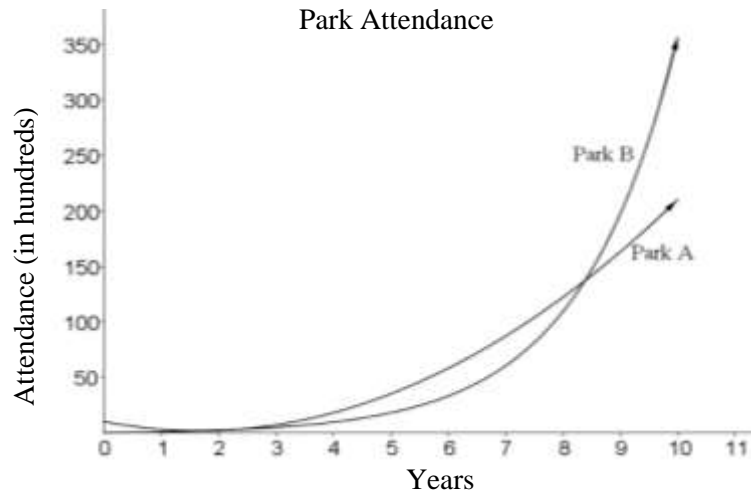
1. v _____
2. What type of function is represented by Plan 2? _____
3. How are the plans alike? Explain.
4. How are the plans different? Explain
5. Sara asks you which plan she should choose if she was going to babysit for four hours. What would you tell her? Justify your answer.
6. When should Sara choose Plan 2? Why?

FS Algebra 1 EOC Review

Compare Quadratic and Exponential Type equation here. Functions

Two nature parks opened the same year in neighboring towns. Park A's attendance can be represented by the equation $y = 3x^2 - 10x + 10$, and Park B's attendance can be represented by the equation $y = 1.8^x - 1$, where x represents the number of years since opening, and y represents the attendance in hundreds. Tables and graphs for both parks are shown below.

Year	Park A	Park B
1	3	0.8
2	2	2.2
3	7	4.8
4	18	9.5
5	35	17.9
6	58	33.0
7	87	66.2
8	122	109.2
9	163	197.4



1. In which years does Park A have the greater attendance?
2. In which years does Park B have the greater attendance?
3. Describe how the functions are different.
4. If the trends continue, will Park A's attendance ever surpass Park B's attendance again? Explain.