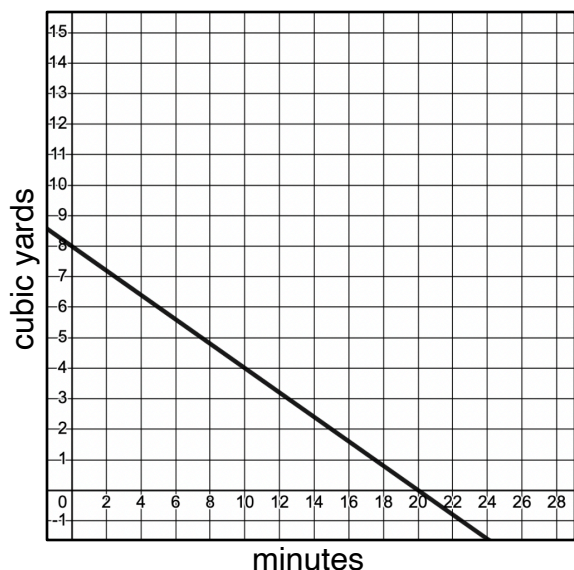


CATEGORY 2 - Readiness Standard 3.B

Calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems.

- 1 The graph describes the number of cubic yards of cement in a truck as it is being poured into the frame for a building slab. What is the rate of change in cubic yards with respect to the number of minutes?



Circle the appropriate word or number to complete the statement correctly:

The rate of change is a(n) increase of decrease of 0.4 minutes per minute cubic yards cubic yard.

- 2 A linear function contains the point $(-1, 5)$. The equation $y - 5 = -2(x + 1)$ describes the line. What is the rate of change in y with respect to x ?

- A -2
- B 5
- C -1
- D 2

- 3 A driver sets the cruise control of his car at 65 miles per hour. As he drives, the function $f(x) = 18 - 0.05x$ describes the number of gallons in the car's gas tank. What is the rate of change for this function?

- A 18 gallons
- B 65 miles per hour
- C 0.05 gallons per mile
- D 17.95 miles per gallon

- 4 The table describes the altitude of a small airplane from the moment it started its descent toward an airport until it landed.

Elapsed Time (min)	Altitude (meters)
0	225
2	175
5	100
7	50
9	0

What is the rate of change for the linear function described by the table?

- A $1/25$ miles per minute
- B -50 meters per minute
- C 25 miles per hour
- D -25 meters per minute

cont'd
→

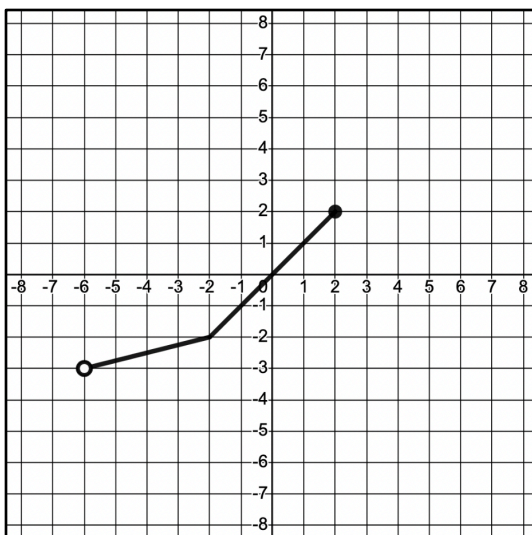
CATEGORY 3 - Readiness Standard 2.A

Determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete, and represent domain and range using inequalities.

- 1 Mr. Zepeda is a realtor. His pay is a function of his monthly sales. The equation $p(s) = 0.03s$ describes his monthly pay. Which set of numbers is a reasonable range for p ?

- A real numbers
- B rational numbers
- C positive rational numbers**
- D positive integers

2



Check **TWO** correct descriptions of the domain and range of the function in the graph above.

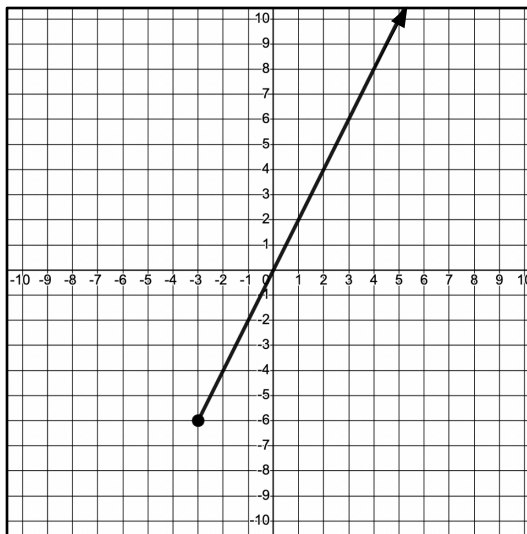
- Domain: $x < 2$
- Range: $-3 < y \leq 2$
- Range: $y \leq 2$
- Domain: all real numbers
- Domain: $-6 < x \leq 2$
- Range: all real numbers

- 3 A restaurant can hold up to 120 people. The function $f(g) = 14g + 250$ describes the price Rebecca was quoted for an anniversary party with a minimum of 50 guests. What is a reasonable domain for this function?

- A $g \geq 50$, g an integer
- B $g \leq 120$, g an integer
- C $950 \leq g \leq 1039$, g an integer

- D $50 \leq g \leq 120$, g an integer**

- 4 The graph of a function is shown. Write an inequality to describe the domain.



Select from the symbols below. Each symbol may be used more than once, but not all will be used.

-6 -3 x y $<$ $>$ \leq \geq

x \geq -3

cont'd
→

CATEGORY 3 - Supporting Standard 5.B

Solve linear inequalities in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides.

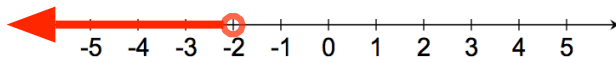
- 1 Solve the inequality, then graph the solution set.

$$4 - 3(3 + x) > 7x + 15$$

Check TWO correct statements:

- The endpoint will be a filled circle.
- The endpoint will be an empty circle.
- The graph will point toward the left.
- The graph will point toward the right.

Draw the graph:



- 2 Which is the solution set for the inequality

$$-2(6x - 8) - 7 \leq 3(15 - x)?$$

- A $x \geq 4$
- B $x \leq -4$
- C $x \leq 4$
- D $x \geq -4$

- 3 A rental company charges a service fee of \$20 and an additional \$15 per hour to rent out a ditch digging machine. The inequality $20 + 15h \leq 125$ can be used to determine the number of hours a renter could keep the machine and spend no more than \$125. Which is the solution set to this inequality?

- A $h \leq 7$
- B $h \geq 7$
- C $h \leq \frac{29}{3}$
- D $h \leq \frac{29}{3}$

- 4 Draw the solution set to the statement below on the number line.

"Five times a number, n , decreased by 9 is more than twice the same number."



- 5 Which number is included in the solution set for the inequality $4(x - 1) < 11 - x$?

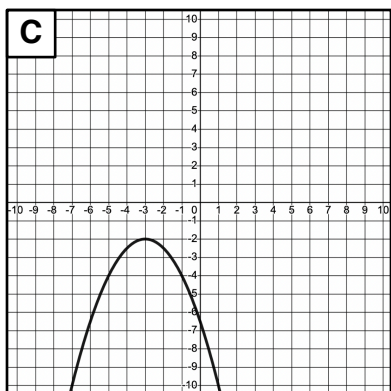
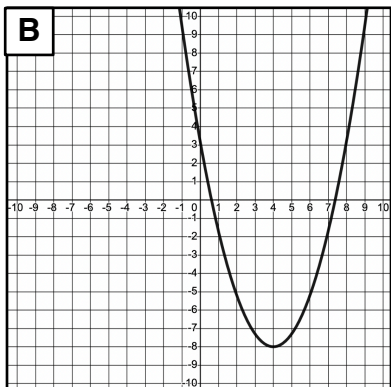
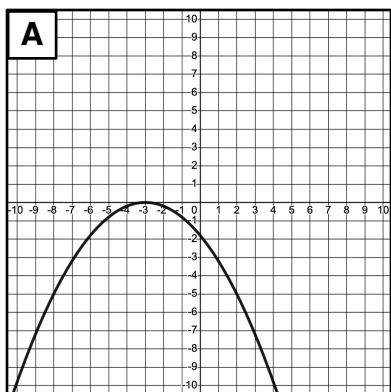
- A 3
- B 1
- C 5
- D 11

CATEGORY 4 - Readiness Standard 7.A

Graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry.

- 1 For each function in graphs A - D, check the boxes in the table that are true.

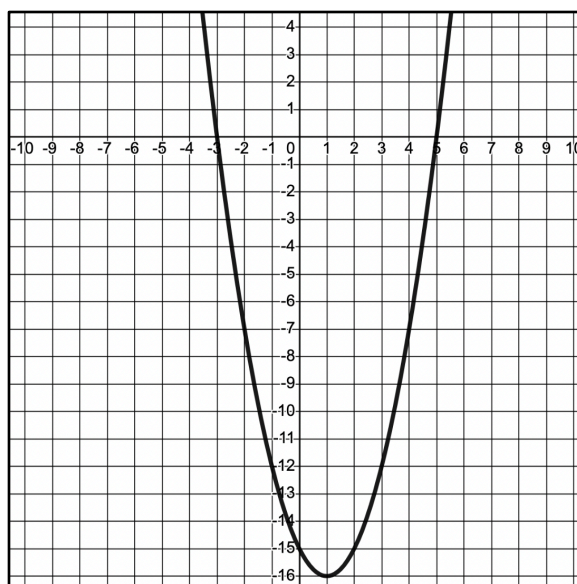
Graph	nbr. of zeros			value of vertex is a	
	0	1	2	maximum	minimum
A	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
B	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



- 2 What are the x-intercepts of the graph of the function $y = 5(x - 4)(x - 3)$?

- A (0, 4) and (0, 3)
B (3, 0) and (4, 0)
 C (-20, 0) and (-15, 0)
 D (0, 15) and (0, 20)

- 3 Which equation best represents the graph shown?



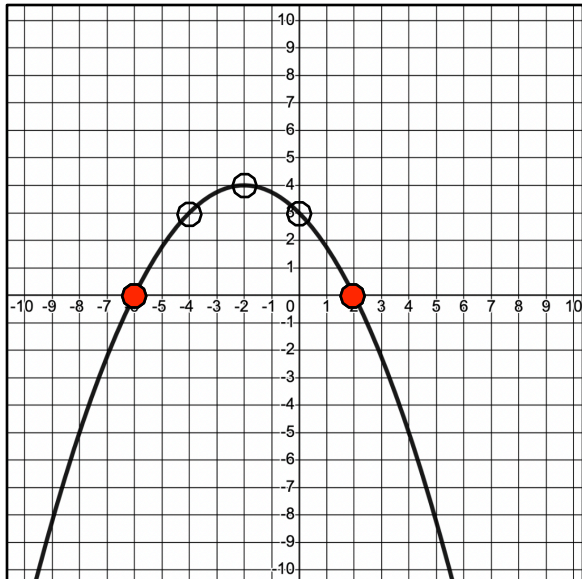
- A** $y = (x - 5)(x + 3)$
 B $y = (x + 5)(x - 3)$
 C $y = (x - 1)(y + 16)$
 D $y = (x + 1)(y - 16)$

cont'd
 →

CATEGORY 4 - Readiness Standard 7.A (cont'd)

Graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum value, vertex, and the equation of the axis of symmetry.

The graph of $f(x)$ is shown. Use the graph to answer items 8-9.



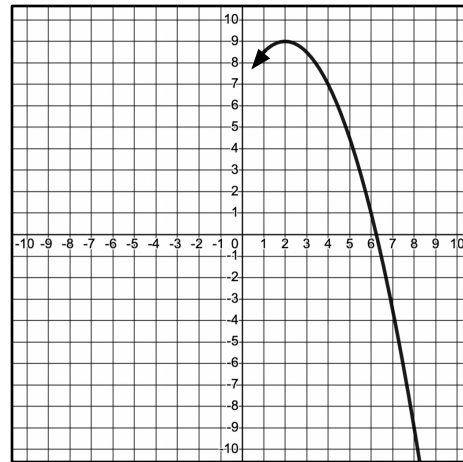
- 8** Five points are marked with circles on the parabola. Shade in the circle(s) that show the location of the zeros of the function.
- 9** What are the coordinates of the vertex and the y-intercept of the parabola?

vertex: **(-2, 4)**

y-intercept: **(0, 3)**

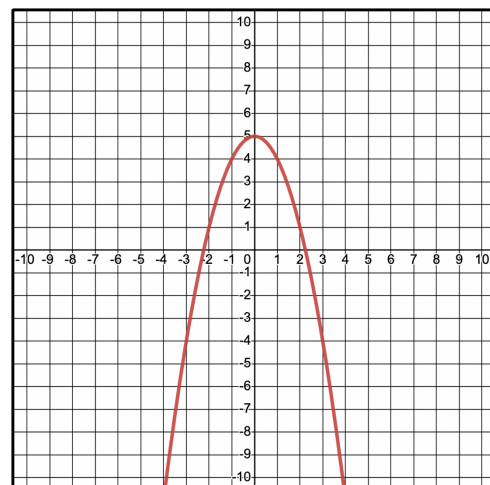
- 10** The parabola has a --
- A** minimum value.
 - B** maximum value.
 - C** both a minimum and a maximum.
 - D** neither a minimum nor a maximum.

- 11** A part of the graph of a quadratic function is shown.



The graph has a line of symmetry at $x = 2$. Between which two negative integers will the graph show a zero of the function?

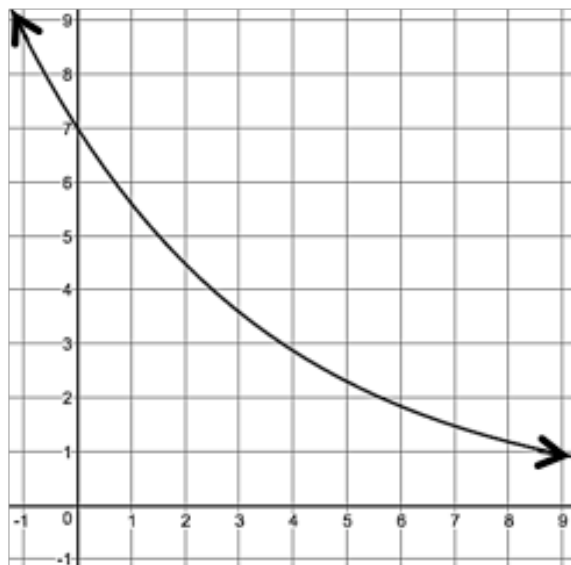
- A** Between -7 and -6
 - B** Between -5 and -4
 - C** Between -3 and -2
 - D** Between -2 and -1
- 12** Graph the function $y = -x^2 + 5$. Plot the vertex and two other points, then sketch the graph all the way to the edges of the grid.



CATEGORY 5 - Readiness Standard 9.D

Graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems.

- 1 The graph of an exponential function is shown.



Check **TWO** statements that are correct.

- The function has no zeros.
- The graph has a vertical asymptote.
- The y-intercept of the function is 7.
- The function is an example of exponential growth.

- 2 The function $f(x) = 32(1.2)^x$ describes the average cost of a restaurant meal for two in a certain city over the years 2005 to 2015, where x is the number of years since 2005. What was the average cost in 2005?

- A** \$32.00
- B \$38.40
- C \$33.20
- D \$26.67

- 3 Which type of function defined by

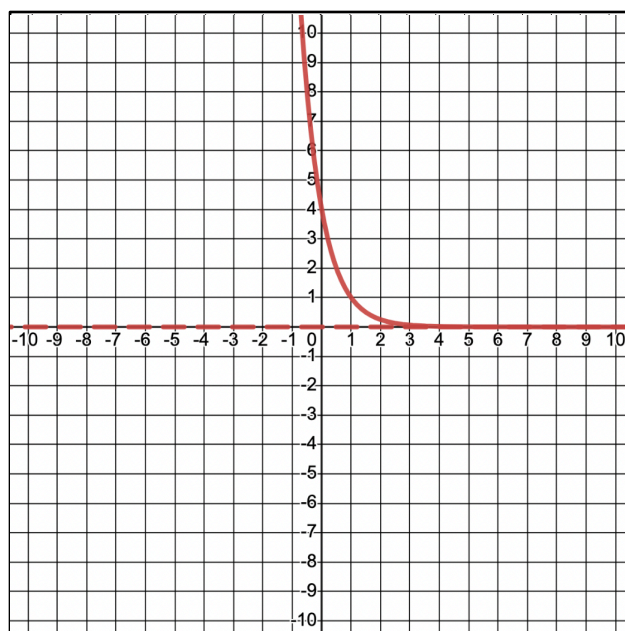
$$f(x) = 4(0.25)^x ?$$

Check the appropriate box:

- Linear
- Exponential Growth
- Quadratic
- Exponential Decay

Graph the function:

- a. Draw the asymptote as a dotted line, then plot two points on the graph.
- b. Use these features to draw the graph all the way to the edges of the grid.



cont'd
→