

Intercepts Practice

1. The x-intercept and y-intercept of $y = 3x - 9$ are
- A) x-int. (0,3) B) x-int. (0,-9) C) x-int. (3,0) D) x-int. (-9,0)
y-int. (0,-9) y-int. (0,3) y-int. (0, -9) y-int. (3,0)

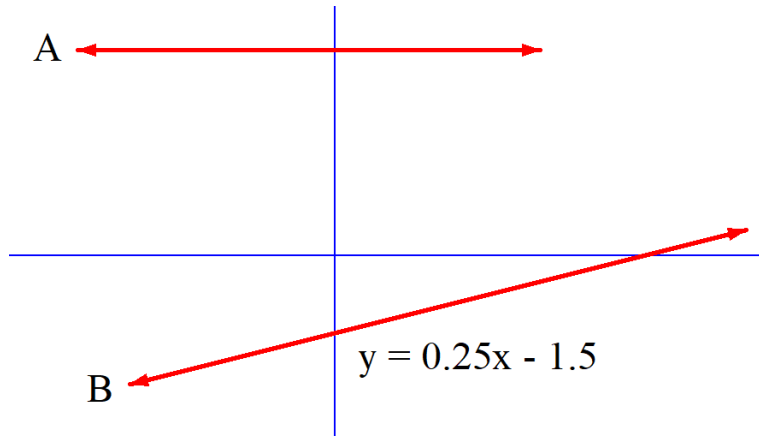
Use the following information to answer the next question.

Consider the following two linear equations.	
A.	$y = -4x + 8$
B.	$2y - 1 = x$

2. Which statement below is true?
- A) The x-intercept of equation A is not an integer.
B) The y-intercept of equation A is not an integer.
C) The x-intercept of equation B is not an integer.
D) The y-intercept of equation B is not an integer.
3. The y-intercept of $y = 2x^2 + 6x + 3$ is _____.
4. One x-intercept of $y = x^2 - 8x + k$ is (5,0). The value of k is _____.
5. Which of the following has only a y-intercept?
- A) $y = 9x - 7$
B) $-6y + 1 = 2x$
C) $y = 10$
D) $x = -5$

Use the following information to answer the next question.

The graph below shows line A and line B. The equation of line B is $y = 0.25x - 1.5$



The following statements are made.

Statement 1	The equation of line A could be $y = -4$.
Statement 2	The y-intercept of line B is $(0, -1.5)$.
Statement 3	The x-intercept of line B is $(0.25, 0)$.
Statement 4	The equation of line A could be $y = 4$.

6. Which two statements are true?

A) 1 and 2

B) 3 and 4

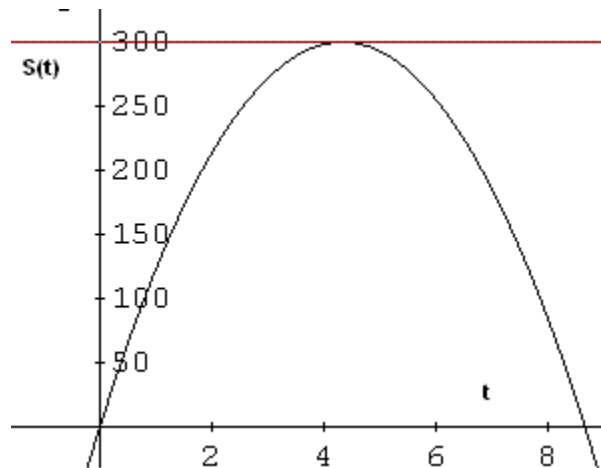
C) 1 and 3

D) 2 and 4

7. The x-intercept of $12x - 2y = 48$ is _____.

Use the diagram below to answer the next question.

A flare is shot into the air and follows the parabolic path shown below. The graph shows the relationship between the height of the flare in ft and the time in seconds.



8. The best estimate on how long the flare is in the air is

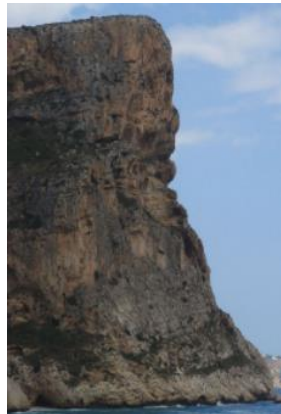
A) 300 sec

B) 9 sec

C) 100 sec

D) 4 sec

Use the following information to answer the next question.



$$y = \left(-\frac{1}{3}\right)x^2 + 2x + 18$$

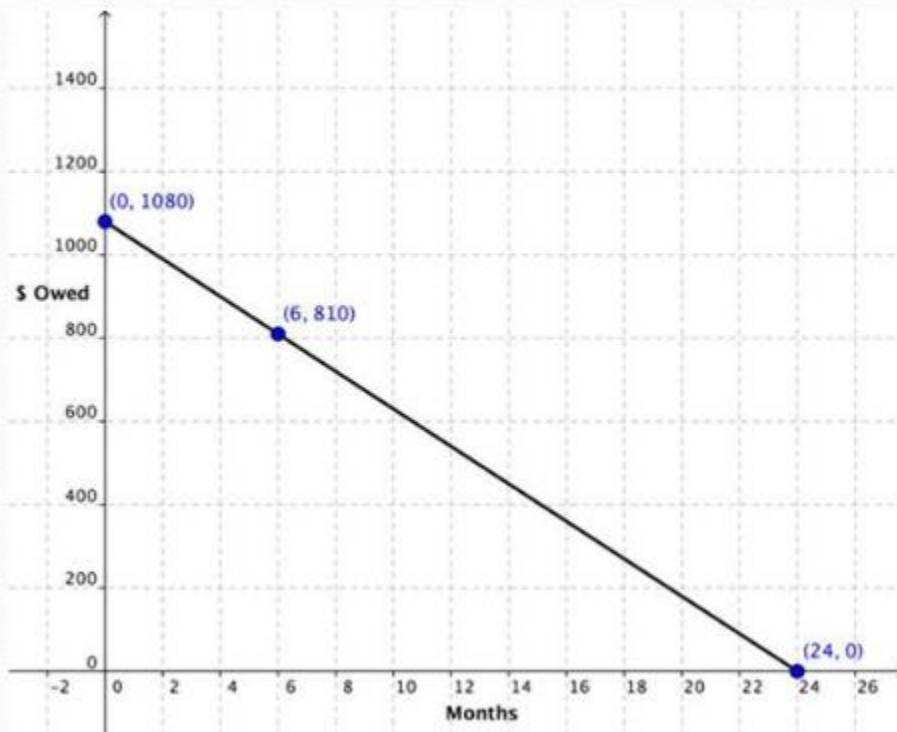
(10.9, 0)

An object is thrown up from the top of a cliff.

9. Based on the equation, the height of the cliff is _____.

Use the following information to answer the next question.

The graph below shows how a debt is paid off over time.



10. A) The intercept that indicates the total amount of the debt is the ___ intercept.
- B) The total amount of the debt is _____.
- C) The intercept that indicates how long it will take to pay off the debt is the ___ intercept.
- D) The total length of time, in months, to pay off the debt is _____.

Intercepts Practice**Solutions**

1. The x-intercept and y-intercept of $y = 3x - 9$ are

A) x-int. (0,3)

B) x-int. (0,-9)

C) x-int. (3,0)

D) x-int. (-9,0)

y-int. (0,-9)

y-int. (0,3)

y-int. (0, -9)

y-int. (3,0)

Solution

To find the x-intercept, set $y = 0$ and solve for x .

$$0 = 3x - 9$$

$$9 = 3x$$

$$x = 3$$

The x-intercept is (3,0).

To find the y-intercept, set $x = 0$ and solve for y .

$$y = 3(0) - 9$$

$$y = -9$$

The y-intercept is (0, -9).

The correct answer is C.

Use the following information to answer the next question.

Consider the following two linear equations.	
A.	$y = -4x + 8$
B.	$2y - 1 = x$

2. Which statement below is true?

- A) The x-intercept of equation A is not an integer.
- B) The y-intercept of equation A is not an integer.
- C) The x-intercept of equation B is not an integer.
- D) The y-intercept of equation B is not an integer.

Solution

Equation A

To find the x-intercept, set $y = 0$ and solve for x .

$$0 = -4x + 8$$

$$-8 = -4x$$

$$x = 2$$

The x-intercept of Equation A is $(2,0)$, which is an integer.

To find the y-intercept, set $x = 0$ and solve for y .

$$y = -4(0) + 8$$

$$y = 8$$

The y-intercept of Equation A is $(0,8)$, which is an integer.

Equation B

To find the x-intercept, set $y = 0$ and solve for x .

$$2(0) - 1 = x$$

$$-1 = x$$

The x-intercept of Equation B is (-1,0), which is an integer.

To find the y-intercept, set $x = 0$ and solve for y .

$$2y - 1 = (0)$$

$$2y = 1$$

$$y = \frac{1}{2}$$

The y-intercept of Equation B is $(0, \frac{1}{2})$, which is **not** an integer.

The correct answer is D.

3. The y-intercept of $y = 2x^2 + 6x + 3$ is 3.

Solution

Set $x = 0$ and solve for y .

$$y = 2(0)^2 + 6(0) + 3$$

$$y = 3$$

We also know that a quadratic equation written in the form $y = ax^2 + bx + c$, has a y-intercept of c . In this case, $c = 3$.

4. One x-intercept of $y = x^2 - 8x + k$ is (5,0). The value of k is 15.

Solution

Given any point in an equation, the respective coordinates can be substituted for x and y , to solve for a missing variable. In this case, substitute $x = 5$ and $y = 0$, to solve for k .

$$(0) = (5)^2 - 8(5) + k$$

$$0 = 25 - 40 + k$$

$$0 = -15 + k$$

$$k = 15$$

5. Which of the following has only a y-intercept?

A) $y = 9x - 7$

B) $-6y + 1 = 2x$

C) $y = 10$

D) $x = -5$

Solution

The first two options, A and B, are diagonal lines. They will both have an x and a y-intercept.

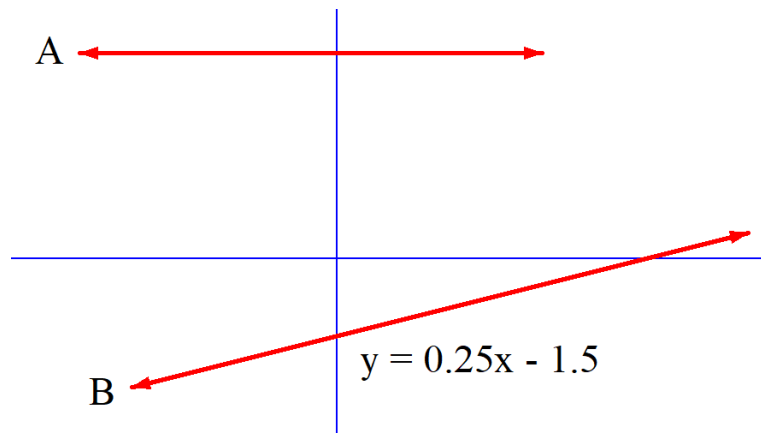
Option D is a vertical line. It only has an x-intercept of $(-5,0)$.

Option C is a horizontal line. It only has a y-intercept of $(0,10)$.

The correct answer is C.

Use the following information to answer the next question.

The graph below shows line A and line B. The equation of line B is $y = 0.25x - 1.5$



The following statements are made.

Statement 1	The equation of line A could be $y = -4$.
Statement 2	The y-intercept of line B is $(0, -1.5)$.
Statement 3	The x-intercept of line B is $(0.25, 0)$.
Statement 4	The equation of line A could be $y = 4$.

6. Which two statements are true?

A) 1 and 2

B) 3 and 4

C) 1 and 3

D) 2 and 4

Solution

Statement 1 is false. Since the horizontal line is above the origin, the value for y must be positive.

Statement 2 is **true**. When in the form, $y = mx + b$, the y-intercept is b .

Statement 3 is false. When 0 is substituted into the equation for y , the value for x is 6, not 0.25.

Statement 4 is **true**.

The correct answer is D.

7. The x-intercept of $12x - 2y = 48$ is (4,0).

Solution

Set $y = 0$ and solve for x .

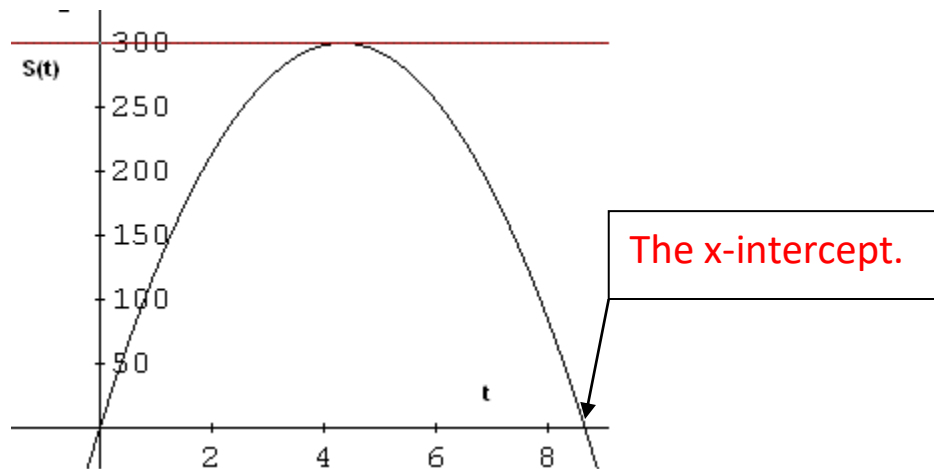
$$12x - 2(0) = 48$$

$$12x = 48$$

$$x = 4$$

Use the diagram below to answer the next question.

A flare is shot into the air and follows the parabolic path shown below. The graph shows the relationship between the height of the flare in ft and the time in seconds.



8. The best estimate on how long the flare is in the air is

A) 300 sec

B) 9 sec

C) 100 sec

D) 4 sec

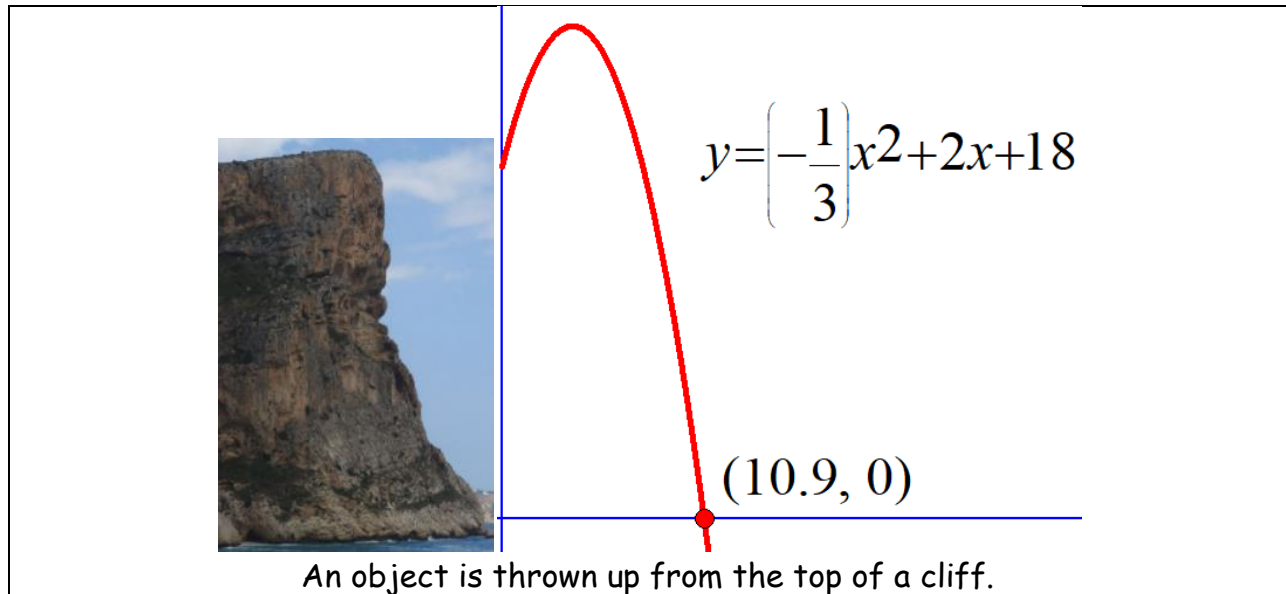
Solution

The graph goes through the origin (0,0). This point means zero time has elapsed and thus the flare has not yet risen. In other words, this is the starting point.

The other x-intercept is just past 8. Based on the scale on the x-axis, 9 seconds would be a reasonable estimation of how long the flare is in the air.

The correct answer is B.

Use the following information to answer the next question.



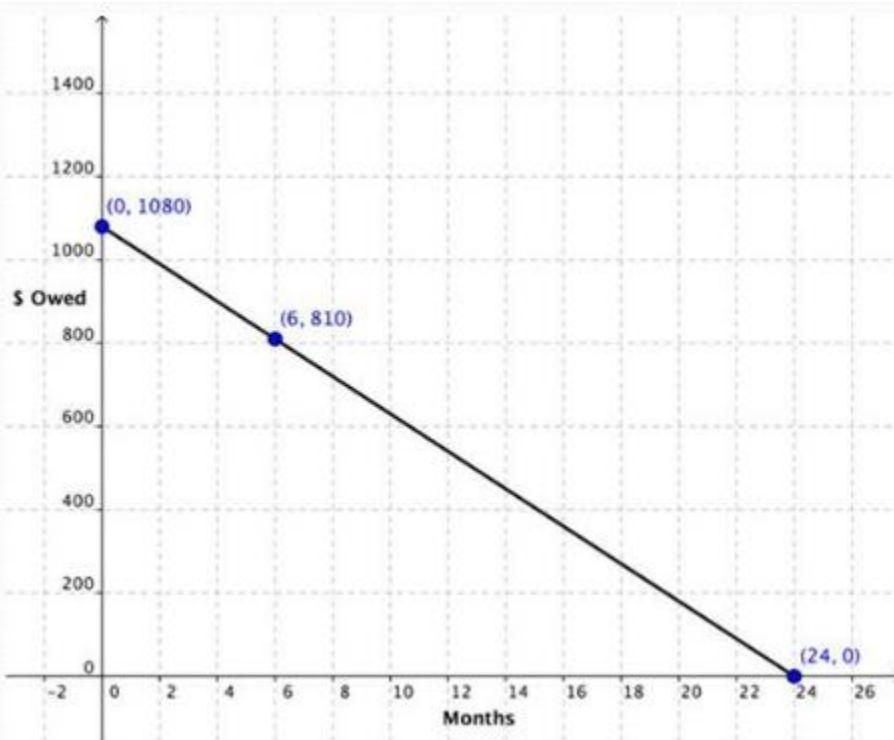
9. Based on the equation, the height of the cliff is 18.

Solution

The height of the cliff is represented by the y-intercept. In the given quadratic equation, the y-intercept is the last term, or the constant.

Use the following information to answer the next question.

The graph below shows how a debt is paid off over time.



10. A) The intercept that indicates the total amount of the debt is the y intercept.
- B) The total amount of the debt is 1080.
- C) The intercept that indicates how long it will take to pay off the debt is the x intercept.
- D) The total length of time, in months, to pay off the debt is 24.