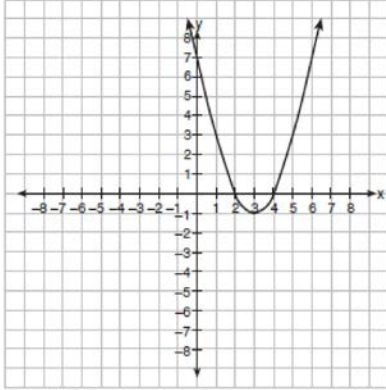


F.IF.B.4: Graphing Quadratic Functions 2a

- 1 Which is an equation of the line of symmetry for the parabola in the accompanying diagram?



- 1) $x = 2$
2) $x = 4$
3) $x = 3$
4) $y = 3$
- 2 Which is the equation of the axis of symmetry of the graph of the equation $y = x^2 - 3x - 6$?
- 1) $x = 3$
2) $x = \frac{3}{2}$
3) $y = 3$
4) $y = \frac{3}{2}$
- 3 What are the coordinates of the turning point of the parabola whose equation is $y = -x^2 + 4x + 1$?
- 1) $(-2, -11)$
2) $(-2, -3)$
3) $(2, 5)$
4) $(2, 13)$
- 4 What is the minimum point of the graph of the equation $y = 2x^2 + 8x + 9$?
- 1) $(2, 33)$
2) $(2, 17)$
3) $(-2, -15)$
4) $(-2, 1)$
- 5 What is the turning point, or vertex, of the parabola whose equation is $y = 3x^2 + 6x - 1$?
- 1) $(1, 8)$
2) $(-1, -4)$
3) $(-3, 8)$
4) $(3, 44)$
- 6 If the equation of the axis of symmetry of a parabola is $x = 2$, at which pair of points could the parabola intersect the x -axis?
- 1) $(3, 0)$ and $(5, 0)$
2) $(3, 0)$ and $(2, 0)$
3) $(3, 0)$ and $(1, 0)$
4) $(-3, 0)$ and $(-1, 0)$
- 7 For which quadratic equation is the axis of symmetry $x = 3$?
- 1) $y = -x^2 + 3x + 5$
2) $y = -x^2 + 6x + 2$
3) $y = x^2 + 6x + 3$
4) $y = x^2 + x + 3$

8 An equation of a parabola that has $x = -2$ as its axis of symmetry is

- 1) $y = x^2 - 4x + 1$
- 2) $y = x^2 - 2x + 3$
- 3) $y = 2x^2 + 8x - 3$
- 4) $y = 2x^2 + 4x - 7$

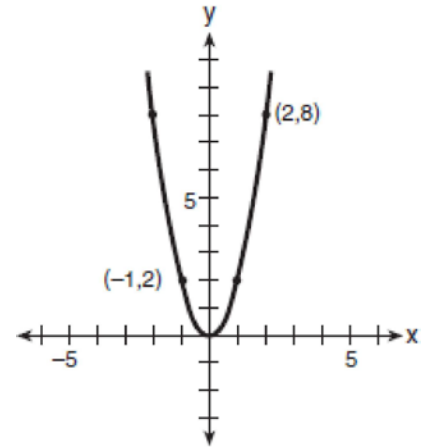
9 What is the equation of a parabola that goes through points $(0, 1)$, $(-1, 6)$, and $(2, 3)$?

- 1) $y = x^2 + 1$
- 2) $y = 2x^2 + 1$
- 3) $y = x^2 - 3x + 1$
- 4) $y = 2x^2 - 3x + 1$

10 Point $A(1, 0)$ is a point on the graph of the equation $y = x^2 - 4x + 3$. When point A is reflected across the axis of symmetry, what are the coordinates of its image, point A' ?

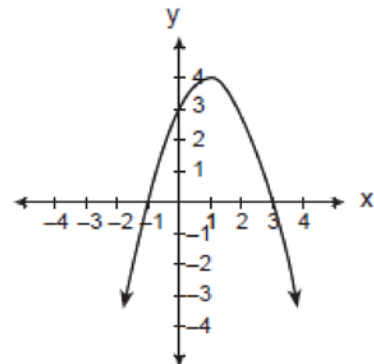
- 1) $(-1, 2)$
- 2) $(0, 3)$
- 3) $(2, -1)$
- 4) $(3, 0)$

11 Which quadratic function is shown in the accompanying graph?



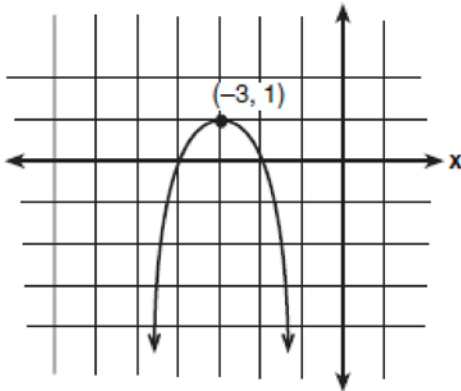
- 1) $y = -2x^2$
- 2) $y = 2x^2$
- 3) $y = -\frac{1}{2}x^2$
- 4) $y = \frac{1}{2}x^2$

12 Which is an equation of the parabola shown in the accompanying diagram?



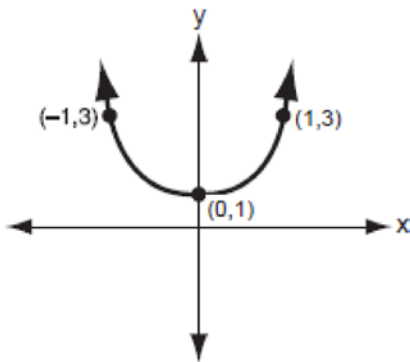
- 1) $y = -x^2 + 2x + 3$
- 2) $y = -x^2 - 2x + 3$
- 3) $y = x^2 + 2x + 3$
- 4) $y = x^2 - 2x + 3$

13 Which equation represents the parabola shown in the accompanying graph?



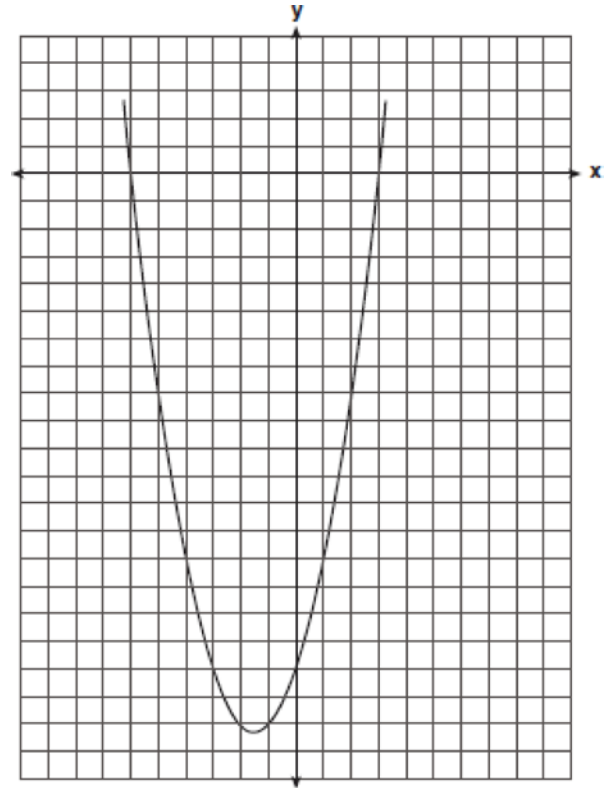
- 1) $f(x) = (x + 1)^2 - 3$
- 2) $f(x) = -(x - 3)^2 + 1$
- 3) $f(x) = -(x + 3)^2 + 1$
- 4) $f(x) = -(x - 3)^2 - 3$

14 Which equation is represented by the accompanying graph?



- 1) $y = 2x^2 + 1$
- 2) $y = 2(x^2 + 1)$
- 3) $y = x^2$
- 4) $y = 2x^2$

15 The graph of a quadratic equation is shown in the accompanying diagram. The scale on the axes is a unit scale. Write an equation of this graph in standard form.



F.IF.B.4: Graphing Quadratic Functions 2a Answer Section

1 ANS: 3 REF: 010606a

2 ANS: 2

$$x = \frac{-b}{2a} = \frac{-(-3)}{2(1)} = \frac{3}{2}$$

REF: 061012b

3 ANS: 3

$$x = \frac{-b}{2a} = \frac{-(4)}{2(-1)} = 2$$

$$y = -(2)^2 + 4(2) + 1 = 5$$

REF: 080902b

4 ANS: 4

$$x = \frac{-b}{2a} = \frac{-(8)}{2(2)} = -2$$

$$y = 2(-2)^2 + 8(-2) + 9 = 1$$

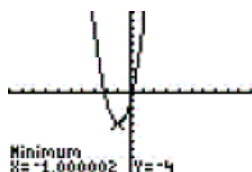


REF: 080603b

5 ANS: 2

$$x = \frac{-b}{2a} = \frac{-(6)}{2(3)} = -1$$

$$y = 3(-1)^2 + 6(-1) - 1 = -4$$



REF: 080501b

6 ANS: 3

The axis of symmetry of a parabola intersecting the x -axis at two points goes through the midpoint of the line segment connecting those two points. The midpoint of $(3,0)$ and $(1,0)$ is $(2,0)$.

REF: 080912b

7 ANS: 2

$$x = \frac{-b}{2a} = \frac{-(6)}{2(-1)} = 3$$

REF: 060514b

8 ANS: 3 REF: 011004b

9 ANS: 4

X	Y1
0	6
1	1
2	0
3	10
4	21
5	36

$\bar{X} = -1$

. You can also use a graphing calculator's STAT function, input the three ordered pairs, and

L1	L2	L3	Z
0	1		
-1			
2			

QuadReg
 $y = ax^2 + bx + c$
 $a = 2$
 $b = -3$
 $c = 1$

L2(4) =

calculate the quadratic regression line of best fit.

REF: 060209b

10 ANS: 4

The axis of symmetry of $y = x^2 - 4x + 3$ is: $x = \frac{-b}{2a} = \frac{-(-4)}{2(1)} = 2$. The reflection of point A(1,0) over the line $x = 2$ is point A'(3,0).

REF: 060908b

11 ANS: 2

Since the parabola is cupped up, $a > 0$, eliminating (1) and (3). The point (2, 8) satisfies only $y = 2x^2$. You can also use a graphing calculator's STAT function, input at least three ordered pairs, and calculate the quadratic

L1	L2	L3	Z
-1	2		
0	0		
1	2		
2	8		

QuadReg
 $y = ax^2 + bx + c$
 $a = 2$
 $b = 0$
 $c = 0$

L2(5) =

regression line of best fit.

REF: 060404b

12 ANS: 1

Since the parabola is cupped down, $a < 0$, eliminating (3) and (4). Based upon the graph, the axis of symmetry is x

$$x = \frac{-b}{2a}$$

$$= 1. \quad x = \frac{-(2)}{2(-1)}$$

$$x = 1$$

REF: 080017a

13 ANS: 3

When the equation of a quadratic is in vertex form, $y = a(x - h)^2 + k$, (h, k) is the vertex.

REF: 010303b

14 ANS: 1

REF: 010801b

15 ANS:

$$y = (x + 6)(x - 3)$$

$y = x^2 + 3x - 18$. $a > 0$, the y -intercept is -18 , and the roots are -6 and 3 . $y = x^2 + 6x - 3x - 18$. You can

$$y = x^2 + 3x - 18$$

also use a graphing calculator's STAT function, input at least three ordered pairs, and calculate the quadratic

L1	L2	L3	Z
-6	0		
0	-18		
3	0		

QuadReg
 $y = ax^2 + bx + c$
 $a = 1$
 $b = 3$
 $c = -18$

regression line of best fit. $L2(4) =$

REF: 010328a