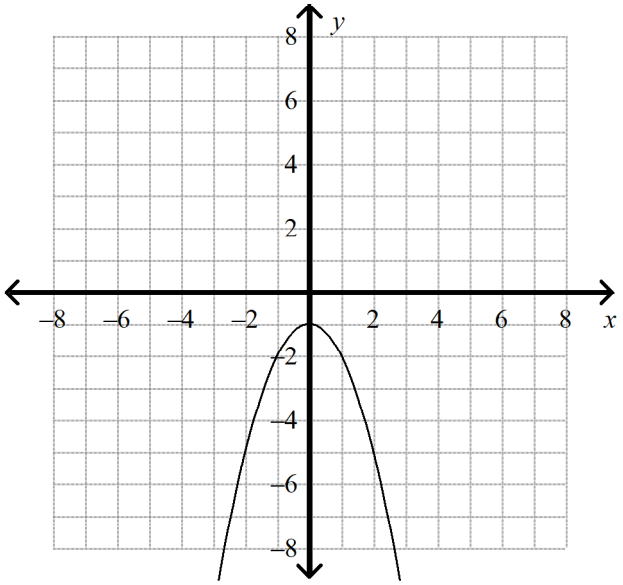
Name: _____ **Class:** _____ **Date:** _____ **ID: X**

Alg 1 Topic 8.1 to 8.3 Quest Practice

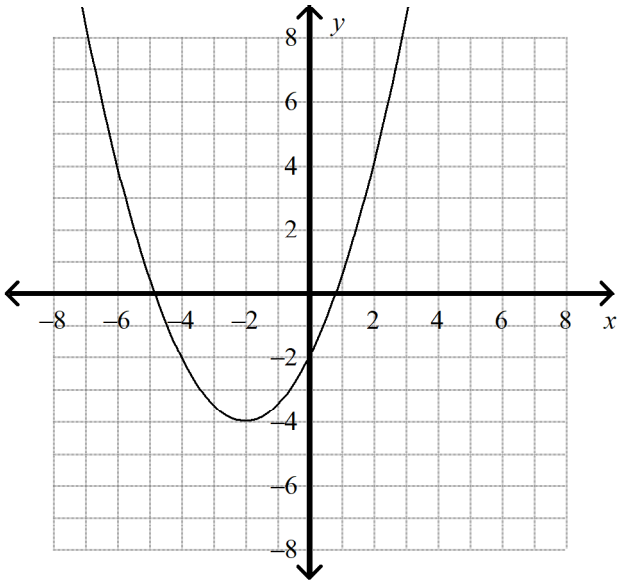
What are the coordinates of the vertex of the graph or table? Is it a maximum or minimum?

____ 1.



a. (–1, 0); maximum
b. (–1, 0); minimum
c. (0, –1); maximum
d. (0, –1); minimum

____ 2.



a. (–4, –2); minimum
b. (–2, –4); maximum
c. (–2, –4); minimum
d. (–4, –2); maximum

____ 3.

X	*Y*
0	1
–1	–2
–2	–3
–3	–2
–4	1

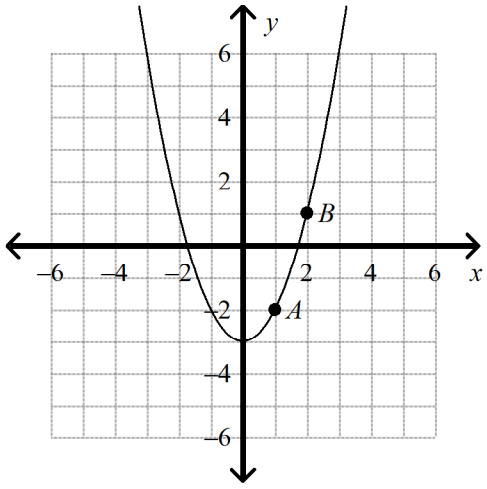
a. (–4, 1); minimum
b. (–2, –3); minimum
c. (–2, –3); maximum
d. (1, 0); maximum

Order the group of quadratic functions from widest to narrowest graph.

____ 4. $y = -4x^2$, $y = -3x^2$, $y = -5x^2$

a. $y = -3x^2$, $y = -5x^2$, $y = -4x^2$
b. $y = -5x^2$, $y = -4x^2$, $y = -3x^2$
c. $y = -3x^2$, $y = -4x^2$, $y = -5x^2$
d. $y = -4x^2$, $y = -3x^2$, $y = -5x^2$

____ 5. What is the rate of change for the interval between *A* and *B*?



a. 3
b. $\frac{1}{3}$
c. 0
d. 1

____ 6. Use the table of $f(x) = -4x^2$. Over what interval is the function increasing? Over what interval is the function decreasing?

x	$f(x)$	**(*x*, *y*)**
–2	–16	(–2, –16)
–1	–4	(–1, –4)
0	0	(0, 0)
1	–4	(1, –4)
2	–16	(2, –16)

a. decreasing over all real numbers
b. decreasing over $x < 0$ and increasing over $x > 0$
c. increasing over $x < 0$ and decreasing over $x > 0$
d. increasing over all real numbers

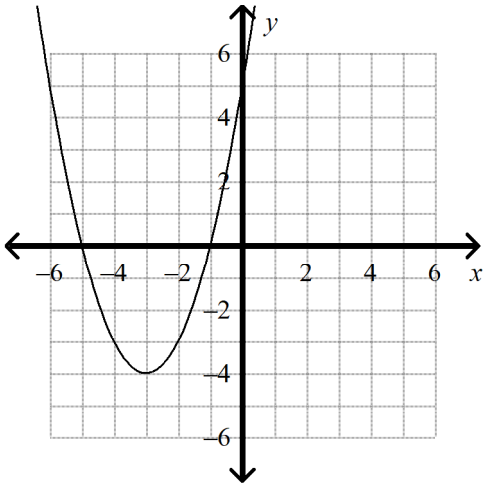
____ 7. What steps transform the graph of $y = x^2$ to $y = -(x + 3)^2 + 5$?
a. translate 3 units to the right, translate down 5 units
b. translate 3 units to the left, translate up 5 units
c. reflect across the x-axis, translate 3 units to the left, translate up 5 units
d. reflect across the x-axis, translate 3 units to the right, translate down 5 units

Name: _____ **ID: X**

Graph each function. How is each graph a translation of $f(x) = x^2$?

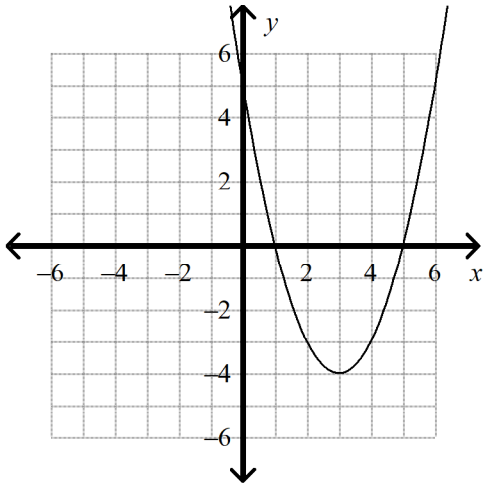
____ 8. $y = (x+3)^2 + 4$

a.



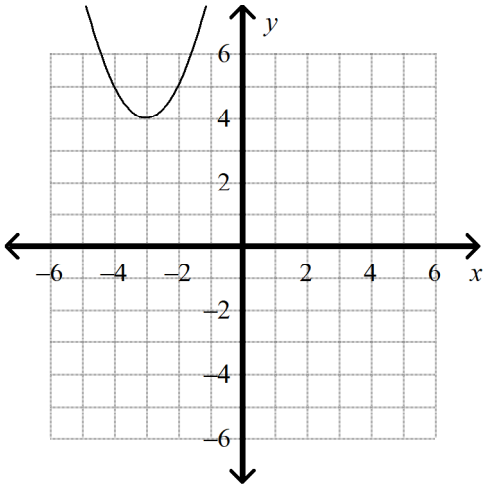
$f(x)$ translated down 4 unit(s) and translated to the left 3 unit(s)

c.



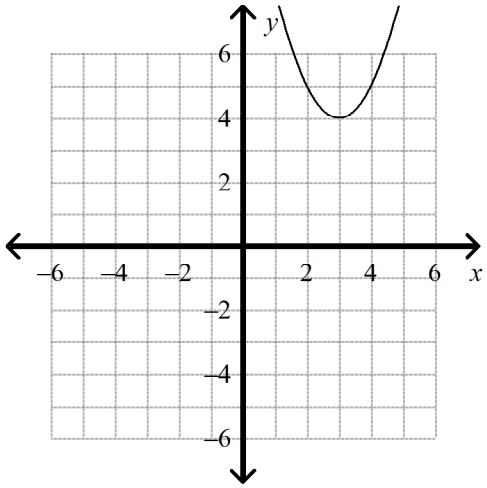
$f(x)$ translated down 4 unit(s) and translated to the right 3 unit(s)

b.



$f(x)$ translated up 4 unit(s) and translated to the left 3 unit(s).

d.



$f(x)$ translated up 4 unit(s) and translated to the right 3 unit(s)

Name: _____ **ID: X**

____ 9. Identify the vertex and the axis of symmetry of the graph of the function $y = 2(x + 2)^2 - 4$.

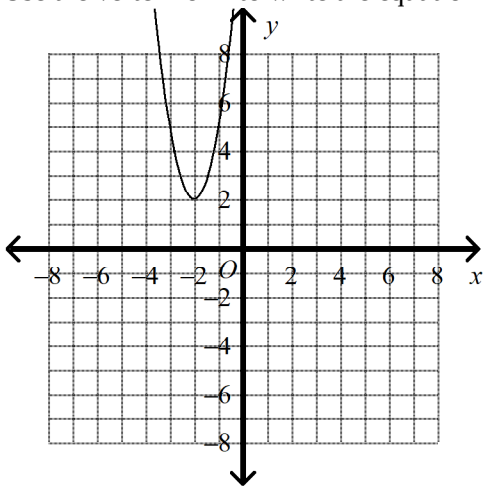
a. vertex: (–2, 4);
axis of symmetry: $x = -2$

b. vertex: (2, –4);
axis of symmetry: $x = 2$

c. vertex: (–2, –4);
axis of symmetry: $x = -2$

d. vertex: (2, 4);
axis of symmetry: $x = 2$

____ 10. Use the vertex form to write the equation of the parabola.



a. $y = 3(x - 2)^2 + 2$

b. $y = 3(x - 2)^2 - 2$

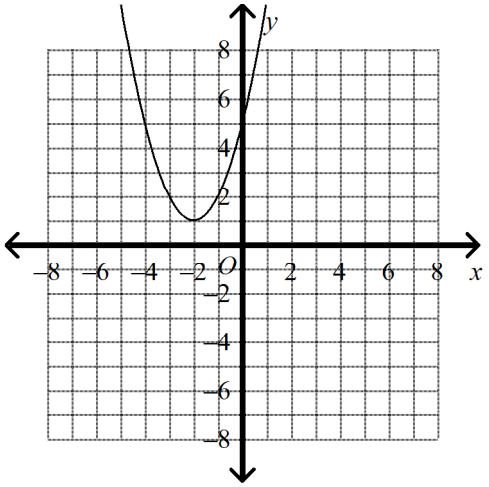
c. $y = 3(x + 2)^2 + 2$

d. $y = (x + 2)^2 + 2$

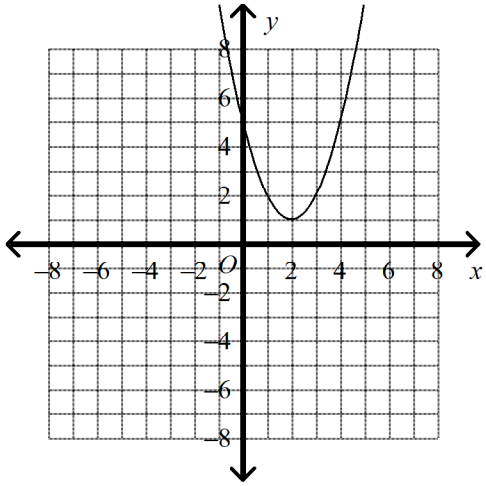
Name: _____ **ID: X**

____ 11. Which is the graph of $y = (x + 2)^2 + 1$?

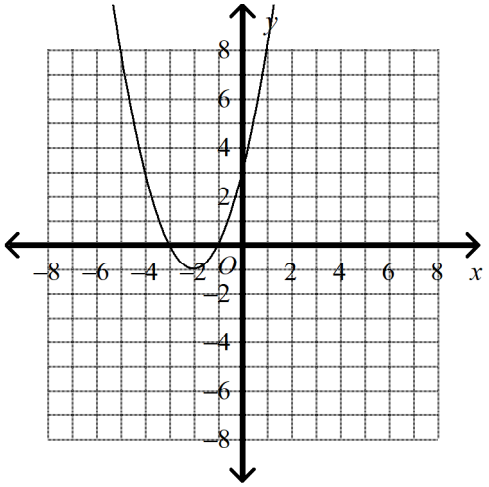
a.



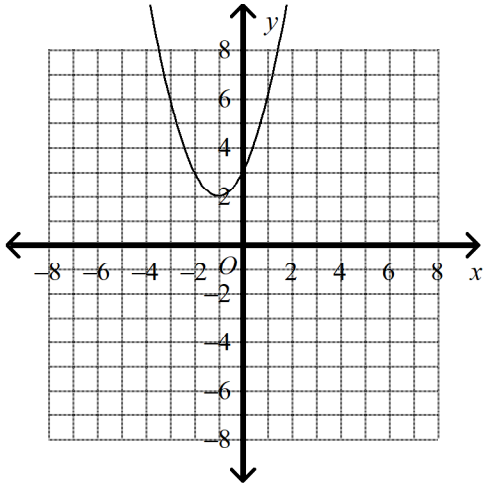
c.



b.



d.

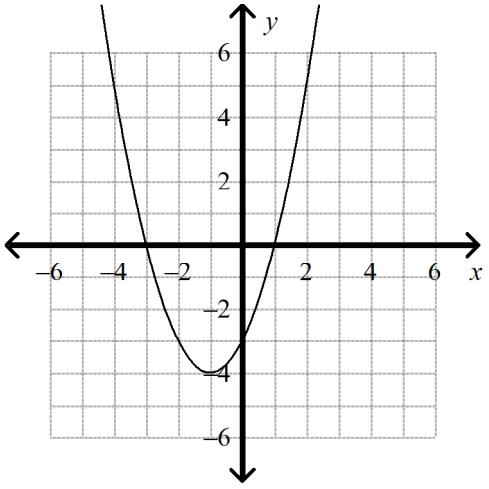


Name: _____ **ID: X**

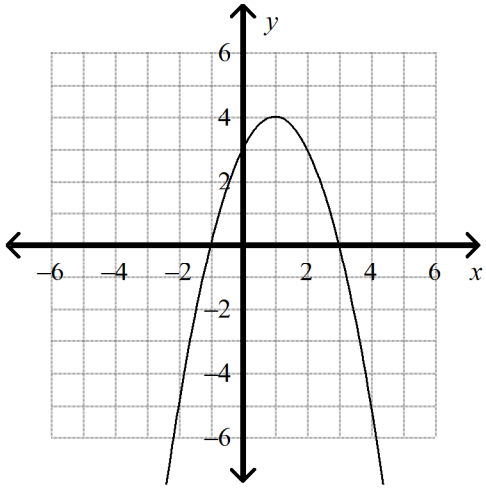
What is the graph of the equation?

____ 12. $y = -x^2 + 2x + 3$

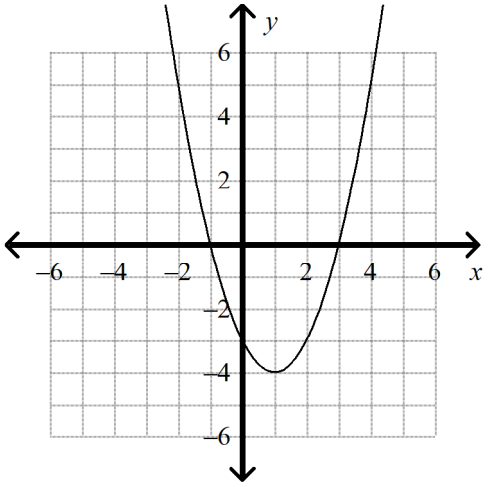
a.



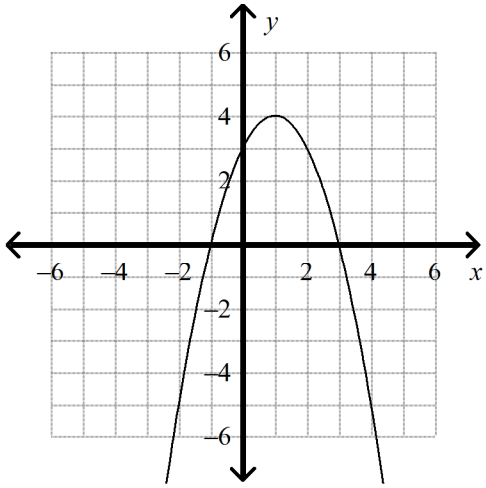
c.



b.



d.

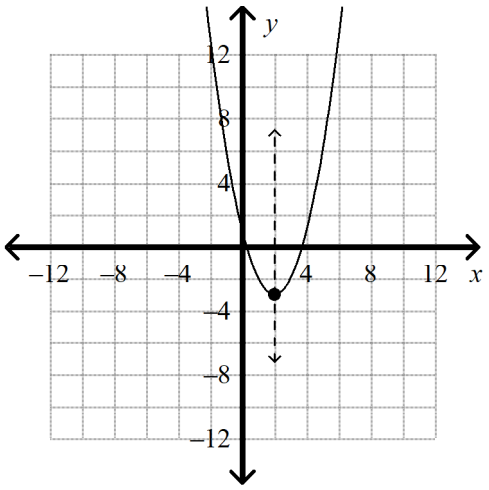


Name: _____ **ID: X**

Graph the function. Identify the vertex and axis of symmetry.

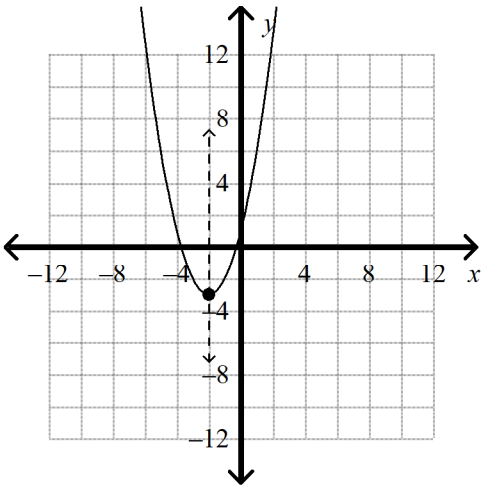
____ 13. $f(x) = x^2 + 4x + 1$

a.



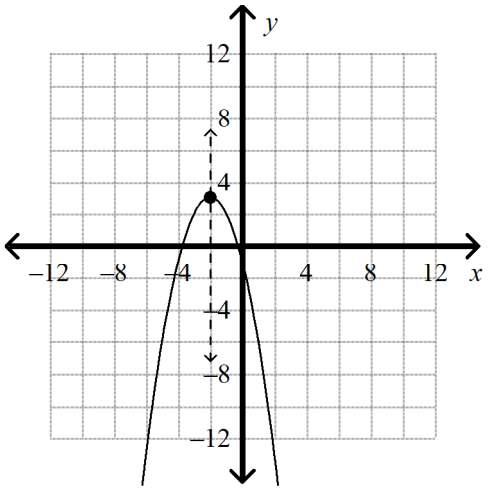
axis of symmetry: $x = 2$
vertex: (2, –3)

c.



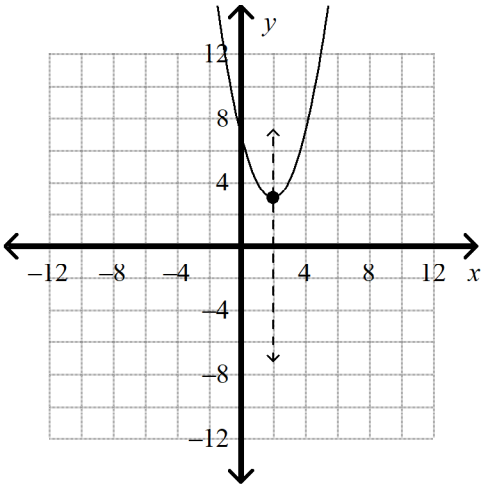
axis of symmetry: $x = -2$
vertex: (–2, –3)

b.



axis of symmetry: $x = -2$
vertex: (–2, 3)

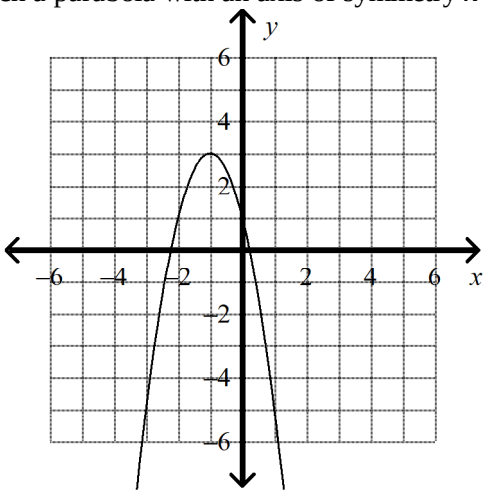
d.



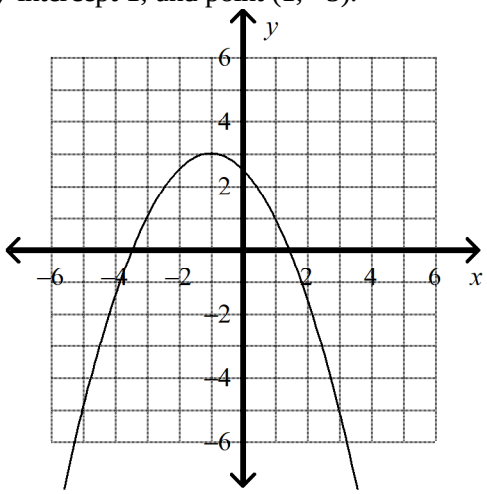
axis of symmetry: $x = 2$
vertex: (2, 3)

____ 14. Sketch a parabola with an axis of symmetry $x = -1$, y-intercept 1, and point $(1, -5)$.

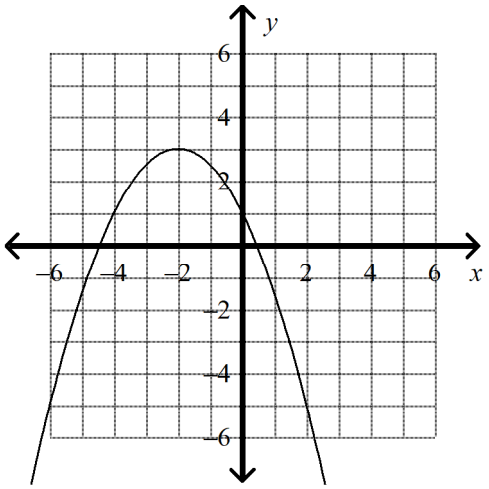
a.



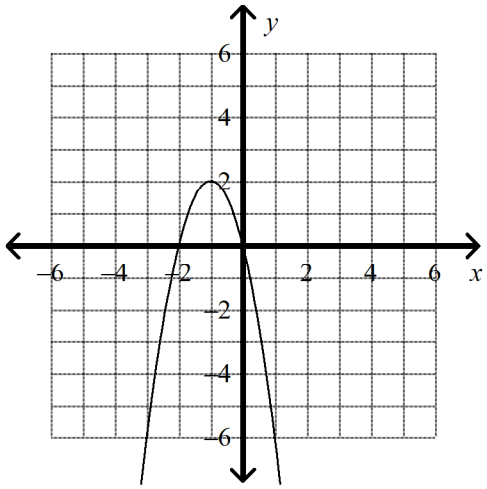
c.



b.



d.



What is the vertex form of the equation?

____ 15. $y = x^2 - 2x + 8$

a. $y = (x + 1)^2 + 7$

b. $y = (x + 1)^2 - 7$

c. $y = (x - 1)^2 + 7$

d. $y = (x - 1)^2 - 7$

Alg 1 Topic 8.1 to 8.3 Quest Practice
Answer Section

1. ANS: C PTS: 1 DIF: L3
   REF: 8-1 Key Features of a Quadratic Function
   OBJ: 8-1.1 Identify key features of the graph of a quadratic function using graphs, tables, and equations.
   NAT: HSA.CED.A.2| HSF.IF.B.4| HSF.IF.B.5| HSF.IF.C.7.a| HSF.IF.C.7.b| HSF.BF.B.3
   TOP: 8-1 Example 2 Understand the Graph of y = ax^2
   KEY: quadratic function | parabola | maximum | minimum | vertex
2. ANS: C PTS: 1 DIF: L3
   REF: 8-1 Key Features of a Quadratic Function
   OBJ: 8-1.1 Identify key features of the graph of a quadratic function using graphs, tables, and equations.
   NAT: HSA.CED.A.2| HSF.IF.B.4| HSF.IF.B.5| HSF.IF.C.7.a| HSF.IF.C.7.b| HSF.BF.B.3
   TOP: 8-1 Example 2 Understand the Graph of y = ax^2
   KEY: quadratic function | parabola | maximum | minimum | vertex
3. ANS: B PTS: 1 DIF: L3
   REF: 8-1 Key Features of a Quadratic Function
   OBJ: 8-1.1 Identify key features of the graph of a quadratic function using graphs, tables, and equations.
   NAT: HSA.CED.A.2| HSF.IF.B.4| HSF.IF.B.5| HSF.IF.C.7.a| HSF.IF.C.7.b| HSF.BF.B.3
   TOP: 8-1 Example 3 Interpret Quadratic Functions from Tables
   KEY: finding key features by hand | quadratic function | parabola | maximum | minimum | vertex
4. ANS: C PTS: 1 DIF: L3
   REF: 8-1 Key Features of a Quadratic Function
   OBJ: 8-1.1 Identify key features of the graph of a quadratic function using graphs, tables, and equations.
   NAT: HSA.CED.A.2| HSF.IF.B.4| HSF.IF.B.5| HSF.IF.C.7.a| HSF.IF.C.7.b| HSF.BF.B.3
   TOP: 8-1 Example 2 Understand the Graph of y = ax^2 KEY: quadratic function | parabola
5. ANS: A PTS: 1 DIF: L4
   REF: 8-1 Key Features of a Quadratic Function
   OBJ: 8-1.1 Identify key features of the graph of a quadratic function using graphs, tables, and equations.
   NAT: HSA.CED.A.1| HSF.IF.B.4| HSF.IF.B.6| HSF.IF.C.7| HSF.BF.B.3
   TOP: 8-1 Example 5 Compare the Rate of Change
   KEY: rate of change over a specified interval
6. ANS: C PTS: 1 DIF: L3
   REF: 8-1 Key Features of a Quadratic Function
   OBJ: 8-1.1 Identify key features of the graph of a quadratic function using graphs, tables, and equations.
   NAT: HSA.CED.A.2| HSF.IF.B.6| HSF.BF.B.3
   TOP: 8-1 Example 3 Interpret Quadratic Functions from Tables
   KEY: quadratic function
7. ANS: C PTS: 1 DIF: L3
   REF: 8-2 Quadratic Functions in Vertex Form
   OBJ: 8-2.1 Identify key features of the graph of quadratic functions written in vertex form.
   NAT: HSA.CED.A.1| HSF.IF.B.4| HSF.IF.B.6| HSF.IF.C.7| HSF.BF.B.3
   TOP: 8-2 Example 3 Understand the Graph of f(x) = a(x - h)^2 + k
   KEY: parabola | vertex of a parabola | y-intercept

8. ANS: B PTS: 1 DIF: L3
   REF: 8-2 Quadratic Functions in Vertex Form
   OBJ: 8-2.1 Identify key features of the graph of quadratic functions written in vertex form.
   NAT: HSA.CED.A.1| HSF.IF.B.4| HSF.IF.B.6| HSF.IF.C.7| HSF.BF.B.3
   TOP: 8-2 Example 3 Understand the Graph of f(x) = a(x - h)^2 + k
   KEY: graphing | quadratic functions | translations
9. ANS: C PTS: 1 DIF: L3
   REF: 8-2 Quadratic Functions in Vertex Form
   OBJ: 8-2.1 Identify key features of the graph of quadratic functions written in vertex form.
   NAT: HSA.CED.A.1| HSF.IF.B.4| HSF.IF.B.6| HSF.IF.C.7| HSF.BF.B.3
   TOP: 8-2 Example 3 Understand the Graph of f(x) = a(x - h)^2 + k
   KEY: parabola | vertex form | vertex of a parabola | axis of symmetry
10. ANS: C PTS: 1 DIF: L2
    REF: 8-2 Quadratic Functions in Vertex Form
    OBJ: 8-2.2 Graph quadratic functions in vertex form.
    NAT: HSA.CED.A.1| HSF.IF.B.4| HSF.IF.B.6| HSF.IF.C.7| HSF.BF.B.3
    TOP: 8-2 Example 5 Use Vertex Form to Solve Problems
    KEY: parabola | equation of a parabola | vertex form
11. ANS: A PTS: 1 DIF: L3
    REF: 8-2 Quadratic Functions in Vertex Form
    OBJ: 8-2.2 Graph quadratic functions in vertex form. NAT: HSF.IF.C.7| HSF.BF.B.3
    TOP: 8-2 Example 4 Graph Using Vertex Form
    KEY: parabola | vertex form of a quadratic equation | vertex | axis of symmetry
12. ANS: D & C PTS: 1 DIF: L3
    REF: 8-3 Quadratic Functions in Standard Form
    OBJ: 8-3.1 Graph quadratic functions in standard form and show intercepts, maxima, and minima.
    NAT: HSA.CED.A.2| HSF.IF.B.4| HSF.IF.B.6| HSF.IF.C.7| HSF.IF.C.8| HSF.IF.C.9| HSF.BF.A.1
    TOP: 8-3 Example 2 Graph a Quadratic Function in Standard Form
    KEY: standard form
13. ANS: C PTS: 1 DIF: L3
    REF: 8-3 Quadratic Functions in Standard Form
    OBJ: 8-3.1 Graph quadratic functions in standard form and show intercepts, maxima, and minima.
    NAT: HSA.CED.A.2| HSF.IF.B.4| HSF.IF.C.7.a| HSF.IF.C.9| HSF.BF.B.3
    TOP: 8-3 Example 2 Graph a Quadratic Function in Standard Form
    KEY: vertex | axis of symmetry
14. ANS: A PTS: 1 DIF: L4
    REF: 8-3 Quadratic Functions in Standard Form
    OBJ: 8-3.1 Graph quadratic functions in standard form and show intercepts, maxima, and minima.
    NAT: HSA.CED.A.2| HSF.IF.B.4| HSF.IF.B.6| HSF.IF.C.7| HSF.IF.C.8| HSF.IF.C.9| HSF.BF.A.1
    TOP: 8-3 Example 1 Relate c to the Graph of f(x) = ax^2 + bx + c
    KEY: standard form
15. ANS: C PTS: 1 DIF: L2
    REF: 8-3 Quadratic Functions in Standard Form
    OBJ: 8-3.3 Identify key features of parabolas.
    NAT: HSA.CED.A.2| HSF.IF.B.4| HSF.IF.B.6| HSF.IF.C.7| HSF.IF.C.8| HSF.IF.C.9| HSF.BF.A.1
    TOP: 8-3 Example 4 Analyze the Structure of Different Forms KEY: standard form | vertex form