STAAR Algebra 1 EOC

Reporting Category 4

Assessment Items

Includes 25 Multiple Choice and 1 Open Ended Questions

- **Domain and Range of Quadratic Functions**
- **Graphing Quadratic Functions and Identifying Key Features**
- **Quadratic Transformations**
- **Solving Quadratic Equations**
- **Writing Quadratic Equations**
- **Describing Relationships Between Linear Factors and Zeros**
- **Writing Quadratic Functions to Fit Data**

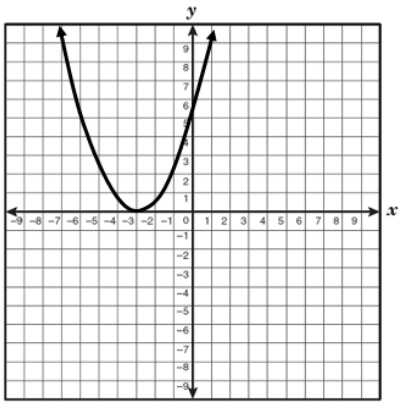
Math on the Spot!

Algebra 1

Reporting Category #4 *TEK A.6 A (R)*

1. Which graph shows a function with a range of all real numbers greater or equal to -3?

A



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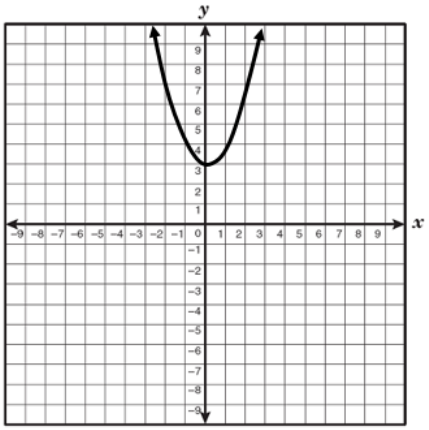

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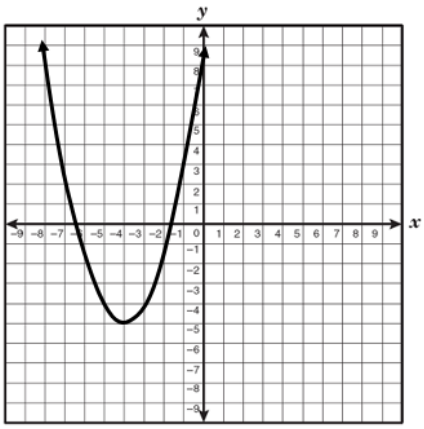
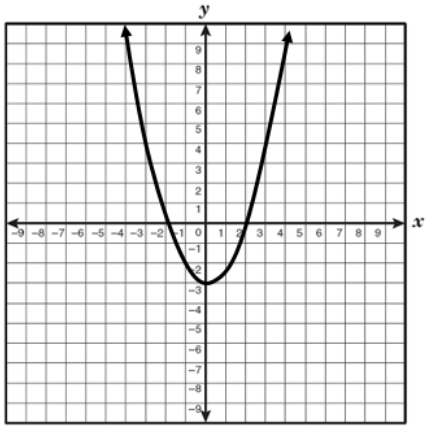


D



2. Which statement about the function $y = -x^2 - 2x - 1$ is true?

A The range is the set of all real numbers.

B The domain is the set of all real numbers.

C The range is the set of all real numbers less than -1.

D The domain is the set of all real numbers less than -1.

3. A quadratic function has a vertex of (-2, 5) and passes through the points (-4, -3) and (1, -13). What is the range of this function?

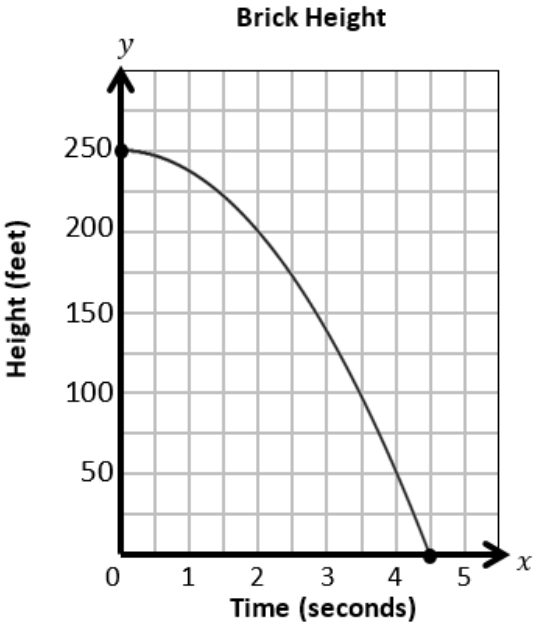
A $y \leq 5$

B $y < 5$

C $y \geq 5$

D $y > 5$

4. The graph shows the height of a brick in feet after it is dropped off the edge of a building.



What is the domain of the function for this situation?

A $0 \leq x \leq 250$

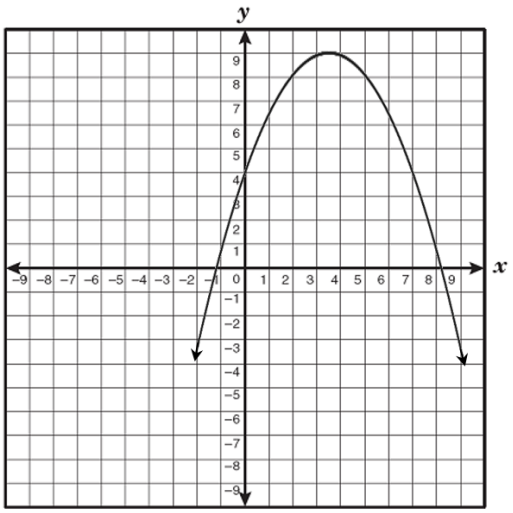
B $x \leq 250$

C $0 \leq x \leq 4.5$

D $x \leq 4.5$

5. Which graph shows a minimum value of 4?

A



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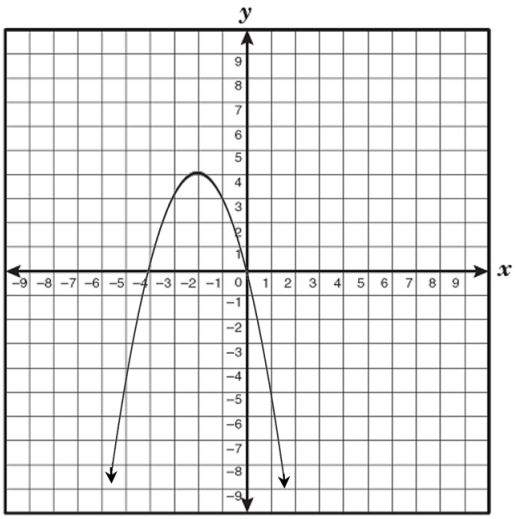

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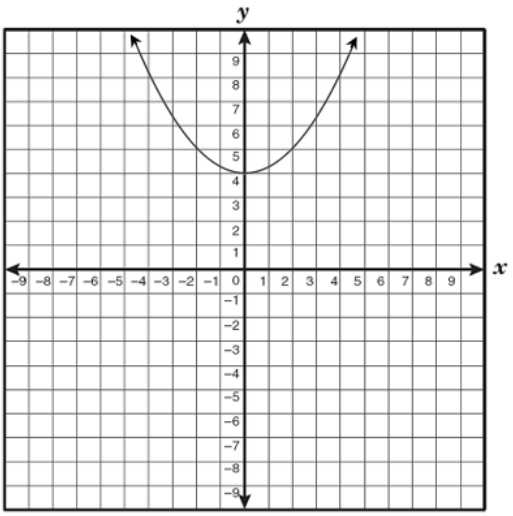

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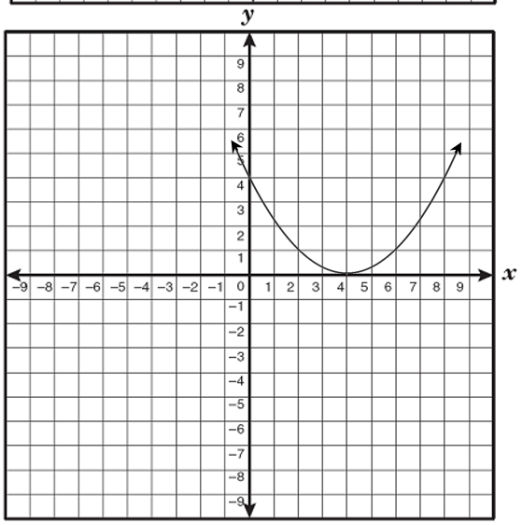


6. What is the vertex of the graph $y = 2x^2 - 6x + 1$?

A $(\frac{3}{2}, -\frac{7}{2})$

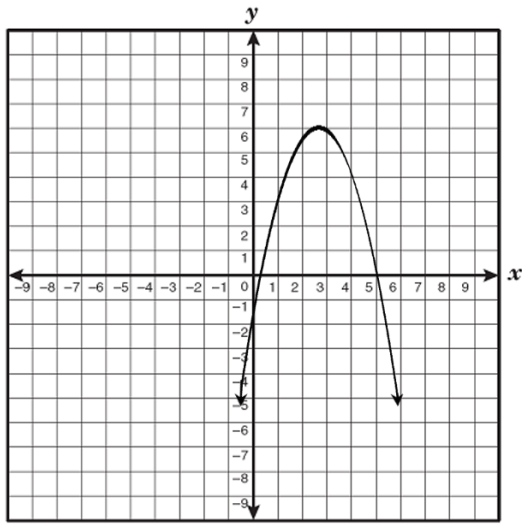
B $(0, 1)$

C $(\frac{1}{5}, \frac{14}{5})$

D $(-\frac{3}{2}, \frac{7}{2})$

7. Which graph shows a function with zeros of $\frac{1}{3}$ and 5?

A



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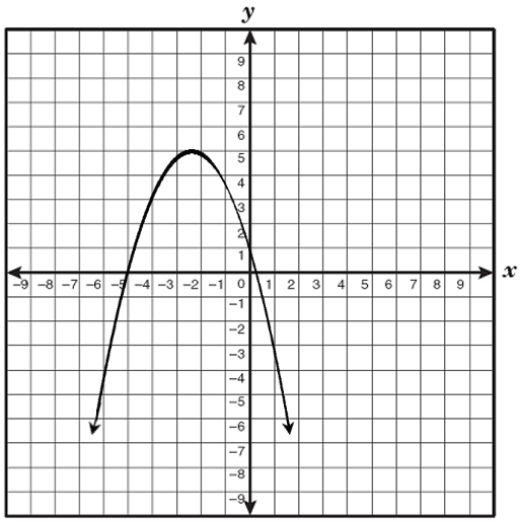

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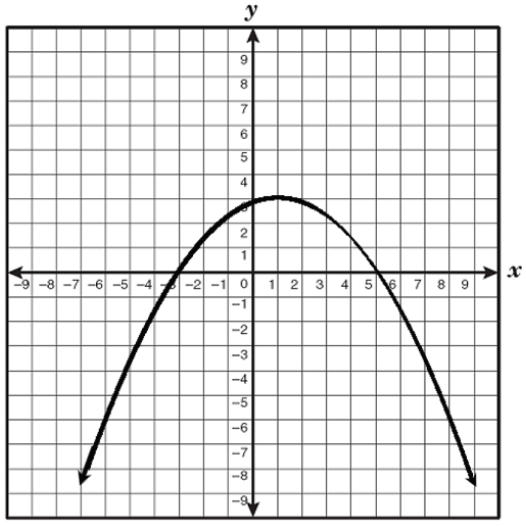

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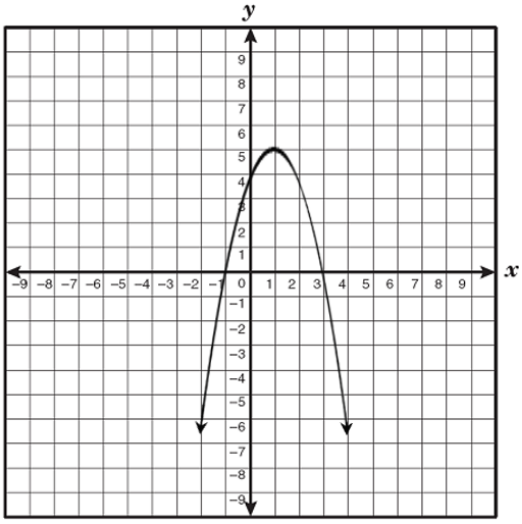
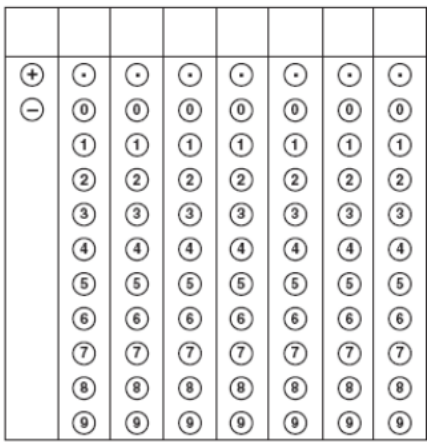
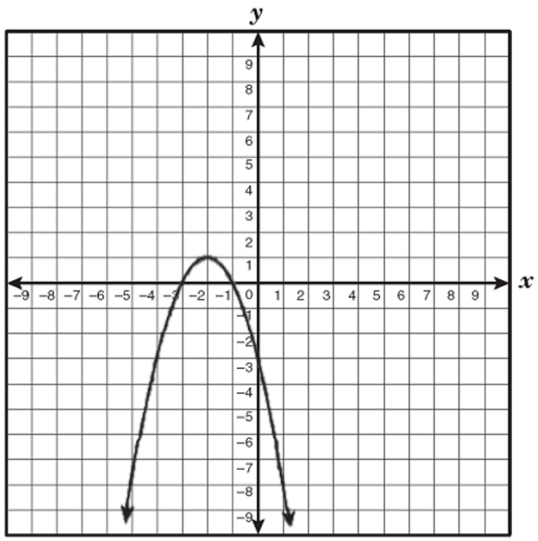


8. A town launches fireworks from a boat on the river to celebrate New Year's Day. The height of the fireworks above ground in meters can be represented by the function $f(t) = -4.9t^2 + 39.2t + 1.6$. If t represents the time in seconds, what is the maximum height the fireworks will reach?

Record your answer and fill in the bubbles on your answer document.



9. What is the equation for the axis of symmetry for the function graphed below?



A $x = 1$

B $x = -2$

C $y = 1$

D $y = -2$

10. Quadratic function $f(x) = x^2$ is graphed on a coordinate plane. The graph of a new quadratic is formed by changing the vertex to (3, 0). Which function could represent the new quadratic?

A $g(x) = x^2 - 3$

B $g(x) = (x - 3)^2$

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

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

11. Which two transformations can be used to obtain the graph of $h(x) = -x^2 - d$ from the function $f(x) = x^2$?

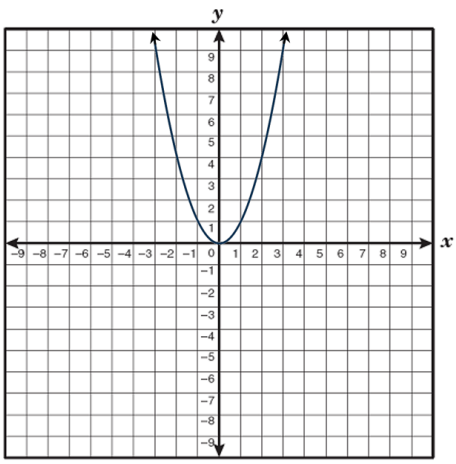
A A reflection across the *x*-axis followed by a translation up *d* units.

B A reflection across the *x*-axis followed by a translation down *d* units.

C A reflection across the *y*-axis followed by a translation to the right *d* units.

D A reflection across the *y*-axis followed by a translation to the left *d* units.

12. The graph of $f(x) = x^2$ is shown on the grid.



Which statement about the relationship between the graph of *f* and the graph of $g(x) = \frac{1}{3}x^2$ is true?

A The graph of *g* is $\frac{1}{3}$ units to the left of graph *f*.

B The graph of *g* is $\frac{1}{3}$ units to the right of graph *f*.

C The graph of *g* is wider than the graph of *f*.

D The graph of *g* is narrower than the graph of *f.*

13. How does the graph of $n(x) = (\frac{1}{4}x)^2$ differ from the graph of $m(x) = x^2$?

A $n(x)$ is compressed horizontally by a factor of 4.

B $n(x)$ is compressed horizontally by a factor of $\frac{1}{4}$.

C $n(x)$ is stretched horizontally by a factor of 4.

D $n(x)$ is stretched horizontally by a factor of $\frac{1}{4}$.

14. The graph of $y = x^2$ is stretched vertically by a factor of 0.5. Which of these equations could represent the new graph?

A $y = (0.5x)^2$

B $y = 0.5x^2$

C $y = (2x)^2$

D $y = 2x^2$

15. Which statement about the quadratic equation below is true?

$$2x^2 - 15x + 18 = 0$$

A The equation has no real solutions.

B The equation has an infinite number of solutions.

C The equation has $x = \frac{3}{2}$ and $x = 6$ as its only solutions.

D The equation has $x = 6$ as its only solution.

16. What are the solutions to $(x + 2)^2 - 4 = 30$?

A $x = 36$

B $x = \pm\sqrt{34}$

C $x = -2 \pm \sqrt{26}$

D $x = -2 \pm \sqrt{34}$

17. The area of a rectangle can be found by using $A = 24w + w^2$, where *w* represents the width. What is the width of the rectangle when the area is 3456 in.^{2} ?

A 36 in.

B 48 in.

C 72 in.

D 96 in.

18. What are the solutions to the equation $3x^2 = -2x + 4$?

A $x = \frac{-2+\sqrt{44}}{6}$ and $x = \frac{-2-\sqrt{44}}{6}$

B $x = \frac{2+\sqrt{44}}{6}$ and $x = \frac{2-\sqrt{44}}{6}$

C $x = \frac{-2+\sqrt{52}}{6}$ and $x = \frac{-2-\sqrt{52}}{6}$

D $x = \frac{2+\sqrt{52}}{6}$ and $x = \frac{2-\sqrt{52}}{6}$

19. Which equation is equivalent to $y = 3(x - 2)^2 + 5$?

A $y = 3x^2 + 12x + 5$

B $y = 3x^2 + 9$

C $y = 9x^2 - 36x + 41$

D $y = 3x^2 - 12x + 17$

20. Which function's graph has a vertex at (-1, -3) and contains the point (2, 15)?

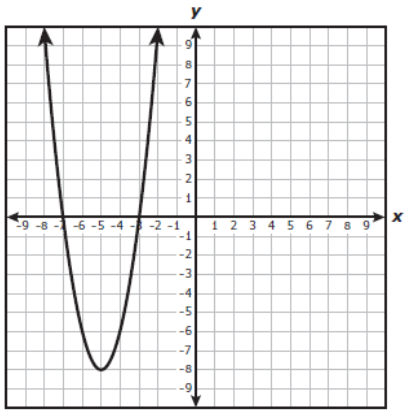
A $y = 2x^2 - 4x - 1$

B $y = 2x^2 + 4x - 1$

C $y = 2(x - 1)^2 - 3$

D $y = 2(x + 1)^2 + 3$

21. Which equation can be represented by the graph below?



A $y = x^2 + 15x + 22$

B $y = 3x^2 + 30x + 63$

C $y = x^2 + 10x + 21$

D $y = 2x^2 + 20x + 42$

22. Which function has a graph with *x*-intercepts of (-2, 0) and (7, 0)?

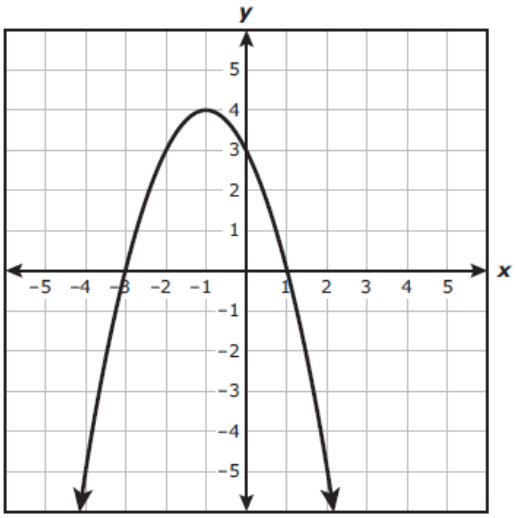
A $f(x) = x^2 - 5x - 14$

B $f(x) = x^2 + 5x - 14$

C $f(x) = x^2 + 2x - 7$

D $f(x) = -x^2 - 2x + 7$

23. Which statement about the graph below is true?



A The zeros are -3 and 1, because $y = -(x - 3)(x + 1)$.

B The zeros are -3 and 1, because $y = -(x + 3)(x - 1)$.

C The zeros are -1 and 3, because $y = -(x - 1)(x + 3)$.

D The zeros are -1 and 3, because $y = -(x + 1)(x - 3)$.

24. The table of values for quadratic function *g* is shown below.

x	*g(x)*
-2	30
-1	16
0	6
1	0
2	-2
3	0
4	6

Which statement about function *g* is true?

A The zeros are 3 and 6, because $y = (x - 3)(x - 6)$.

B The zeros are 1 and 6, because $y = (x - 1)(x - 6)$.

C The zeros are -1 and -3, because $y = 2(x + 1)(x + 3)$.

D The zeros are 1 and 3, because $y = 2(x - 1)(x - 3)$.

25. The table shows the height of a football from the ground as it is kicked across a field.

Time (*seconds*)	0	1	2	3	4
Height Above Ground (*feet*)	5.8	50.9	74	75.1	54.2

Which function best models the data?

A $y = -10x^2 + 23x + 2$

B $y = -14.7x^2 + 1.6x + 5$

C $y = -11x^2 + 56.1x + 5.8$

D $y = 12.1x^2 + 27.8 + 0.4$

26. The table shows the height of a diver after *x* seconds.

Time (*seconds*)	0	0.5	1	1.5	2
Height (*feet*)	15	15.1	13.5	10.1	5

Based on this data, which is closest the time the diver will hit the water?

A 2.4 seconds

B 1.8 seconds

C 3.2 seconds

D 1.5 seconds

Reporting Category #4 Answer Key:

Texas TEK	Question	Answer
A.6 A (R)	1	D
A.6 A (R)	2	B
A.6 A (R)	3	A
A.6 A (R)	4	C
A.7 A (R)	5	B
A.7 A (R)	6	A
A.7 A (R)	7	A
A.7 A (R)	8	80
A.7 A (R)	9	B
A.7 C (R)	10	B
A.7 C (R)	11	B
A.7 C (R)	12	C
A.7 C (R)	13	C
A.7 C (R)	14	B
A.8 A (R)	15	C
A.8 A (R)	16	D
A.8 A (R)	17	B

Texas TEK	Question	Answer
A.8 A (R)	18	C
A.6 B (S)	19	D
A.6 B (S)	20	B
A.6 C (S)	21	D
A.6 C (S)	22	A
A.7 B (S)	23	B
A.7 B (S)	24	D
A.8 B (S)	25	C
A.8 B (S)	26	A

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