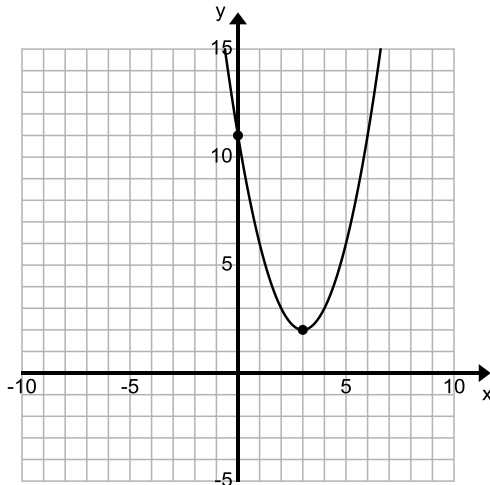


Quadratic Functions and Equations

Name _____

Multiple Choice & Numeric Response. Record the answer for each question on the answer sheet. 1 mark each.

1. Which set of data is correct for this graph?



	Axis of Symmetry	Vertex	Domain	Range
A.	$x = 3$	$(3, 2)$	$x \geq 3$	$y \in R$
B.	$x = 3$	$(3, 2)$	$x \in R$	$y \geq 2$
C.	$x = 2$	$(2, 3)$	$x \in R$	$y \geq 3$
D.	$x = 2$	$(2, 3)$	$x \geq 2$	$y \in R$

2. Which set of data is correct for the quadratic function: $y = -(x + 20)^2 + 14$?

	Direction parabola opens	Vertex	Axis of Symmetry
A.	upward	$(14, -20)$	$x = 14$
B.	upward	$(14, 20)$	$x = 14$
C.	downward	$(-20, 14)$	$x = -20$
D.	downward	$(20, 14)$	$x = 20$

3. Which set of data is correct for the quadratic function: $f(x) = -3(x + 2)(x - 3)$?

	x-intercepts	y-intercept	Axis of Symmetry
A.	$(-2, 0), (3, 0)$	$(0, 18)$	$x = 0.5$
B.	$(-2, 0), (3, 0)$	$(0, -18)$	$x = -2.5$
C.	$(2, 0), (-3, 0)$	$(0, 18)$	$x = -0.5$
D.	$(2, 0), (3, 0)$	$(0, -18)$	$x = 2.5$

NUMERIC RESPONSE 1

The x-intercepts of a quadratic function are $(5,0)$ and $(10,0)$. The equation for the axis of symmetry is written: $x = h$. The value of h , rounded to the nearest tenth is _____.

Record your answer to one decimal place on the answer sheet.

4. What is the y-intercept for $y = 3x^2 + 2x - 5$?

- A. $(0, 5)$
- B. $(0, 3)$
- C. $(0, 2)$
- D. $(0, -5)$

5. Given: $f(x) = x^2 + 7x + 10$. What are the x- and y-intercepts for this function?

- A. $(2,0)$ $(5,0)$ and $(0,10)$
- B. $(2,0)$ $(5,0)$ and $(0, -10)$
- C. $(-5,0)$ $(-2,0)$ and $(0,10)$
- D. $(-5,0)$ $(-2,0)$ and $(0, -10)$

6. Travis dives from a 6.0 m platform. He reaches a maximum height of 6.15 m after 0.20 s. How long does it take him to reach the water, if his height is given by the equation:
 $h(t) = -3.75(t - 0.2)^2 + 6.15$?
- A. 1.04 s
 - B. 1.08 s
 - C. 1.44 s
 - D. 1.48 s

NUMERIC RESPONSE 2

A quadratic function has x-intercepts of (-3,0) and (5,0). This function passes through the point $P(3, -9)$. The factored format of a quadratic equation is: $y = a(x - r)(x - s)$. The value of a that satisfies this quadratic function, to the nearest hundredth is _____.

Record your answer to two decimal places on the answer sheet.

7. Which relation is the factored form of $f(x) = x^2 + 2x - 8$?
- A. $f(x) = (x + 2)(x - 4)$
 - B. $f(x) = (x - 2)(x + 4)$
 - C. $f(x) = (x - 1)(x + 8)$
 - D. $f(x) = 2(x + 2)(x - 2)$
8. Solve $m^2 = 10m - 16$
- A. $m = -4$ and $m = 4$
 - B. $m = 4$ and $m = 4$
 - C. $m = -8$ and $m = -2$
 - D. $m = 8$ and $m = 2$

Quadratic Functions and Equations Summative Assessment

Multiple Choice: Shade the letter that corresponds to your answer.

1.	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
2.	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
3.	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
4.	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
5.	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
6.	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
7.	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
8.	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>

Numeric Response: Record your numeric response answers in the space provided.

NR 1.	
NR 2.	

Standard Format: $y = ax^2 + bx + c$

Factored Format: $y = a(x - r)(x - s)$

Vertex Format: $y = a(x - h)^2 + k$

Quadratic Formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Written Response – Show all your work

1. Find the properties of the quadratic function: $y = x^2 - 4x - 12$.

[5]

- To earn full marks you need to use algebraic methods.
- If you use a graph, sketch your graph and state your window.

y-intercept	
x-intercept(s)	
Axis of symmetry	
Vertex	
Domain	
Range	

2. The quadratic function $y = a(x + 3)^2 + 12$ passes through the point $P (1,20)$. Determine the value of a that satisfies this function.

[2]

3. Rachel took a series of photos at 0.25 s intervals of a friend throwing a horseshoe. The table of values shows the height of the horseshoe at each time.

<i>Time (s)</i>	<i>Height (ft)</i>
<i>0.00</i>	<i>1.5</i>
<i>0.25</i>	<i>4.5</i>
<i>0.50</i>	<i>6.0</i>
<i>0.75</i>	<i>6.0</i>
<i>1.00</i>	<i>4.5</i>
<i>1.25</i>	<i>1.5</i>

By entering the values in L₁/A and L₂/B of your calculator and doing a 'QuadReg' , determine the following:

- a) Find the equation.

[3]

- b) Find the maximum height of the throw.

- c) Find when the horseshoe hits the ground.

4. A movie theatre sells tickets for \$15. At this price, the theatre sells 200 tickets for every show. The owners know from past years that they will sell 8 more tickets per show for each price decrease of \$0.50.

- a) Write the equation of a function that can be used to model the owners' revenue.

[3]

- b) What lower price would let the owners earn the same amount of money they earn now at \$3000?

- c) What should the owners charge per ticket to earn the maximum amount of money?

5. A ball is thrown into the air from a bridge that is 15 m above a river. The function that models the height, $h(t)$ in metres, of the ball over time, t in seconds, is
- $$h(t) = -4.9t^2 + 9.0t + 15$$

a) Set a window and sketch the path of the ball.

[5]



b) What TWO times is the ball 17 m above the water?

c) When does the ball hit the water?

d) How high does the ball go?

6. Solve the equations following by factoring, using the quadratic formula or by graphing. If you solve by graphing, include a sketch. Round your answers to two decimal places if necessary.

a) $x^2 + 2x - 24 = 0$

b) $x^2 + 5x = 6$

[6]

c) $5x^2 + 12x = x^2 + x - 6$

7. Given: $x^2 - 2x - 9 = 0$ Solve using the quadratic formula. State the solution as exact values in simplest form.

[2]