

Quadratic Regression Practice Worksheet

Name Key Date \_\_\_\_\_

Amery recorded the distance and height of a basketball when shooting a free throw.

0	0
2	8.4
6	7.2
9	14.2
12	13
13	10.5
15	7.6

1. Find the quadratic equation for the relationship of the horizontal distance and the height of the ball. Round to 3 decimal places.

$$y = -0.118x^2 + 2.112x + 4.215$$

2. Using this function what is the approximate maximum height of the ball?

max height = 13.68 feet

This table shows the population of a city every ten years since 1970.

0	0
10	801
20	207
30	1,998
40	0

3. Find the best-fitting quadratic model for the data. Round to 3 decimal places.

$$y = 1.209x^2 + 12.999x + 504.25$$

4. Using this model, what will be the estimated population in 2020?

(50, 4177.4) so 4,177,400 people

5. Which of the following is best modeled by a **quadratic** function?

- A. Relationship between circumference and diameter.
- B. Relationship between area of a square and side length.
- C. Relationship between diagonal of a square and side length.
- D. Relationship between volume of a cube and side length.

6. If  $y$  is a quadratic function of  $x$ , which value completes the table?

- A. 12
- B. 20
- C. 44
- D. 48

	-2	0	2	4	6
	-8	0	12	28	48

$$y = 0.5x^2 + 5x$$

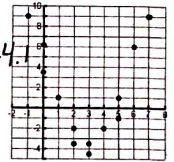
7. The graph of a quadratic function having the form  $f(x) = ax^2 + bx + c$  passes through the points (0, -8), (3, 10), and (6, 34). What is the value of the function when  $x = -3$ ?

- A. -32
- B. -26
- C. -20
- D. 10

8. Which is the quadratic equation the best fits the scatterplot?

- A.  $f(x) = (x-3)^2 - 4$
- B.  $f(x) = (x+3)^2 + 4$
- C.  $f(x) = (x-4)^2 - 3$
- D.  $f(x) = (x+4)^2 + 3$

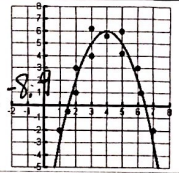
$$y = 0.8x^2 - 4.9x + 4.1$$



9. Which is the quadratic equation the best fits the scatterplot?

- A.  $f(x) = x^2 - 8x + 22$
- B.  $f(x) = -x^2 - 8x - 10$
- C.  $f(x) = -x^2 + 8x - 32$
- D.  $f(x) = -x^2 + 8x - 10$

$$y = 0.9x^2 + 7.3x - 8.4$$



Write a quadratic equation that fits each set of points.

10. (0, -8), (2, 0), and (-3, -5)

$$y = x^2 + 2x - 8$$

11. (-1, -16), (2, 5), and (5, 8)

$$y = -x^2 + 8x - 7$$

12. (1, 4), (-2, 13), and (0, 3)

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

- 13.

	-1	0	1	2	3
	35	22	11	2	-5

$$y = x^2 - 12x + 22$$