

Quadratic Regression Practice Worksheet

Name _____ Date _____

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

1. Find the quadratic equation for the relationship of the horizontal distance and the height of the ball. Round to 3 decimal places.
2. Using this function what is the approximate maximum height of the ball?

| Distance(feet), x | Height (feet), f(x) |
|----------------------|------------------------|
| 0 | 4 |
| 2 | 8.4 |
| 6 | 12.1 |
| 9 | 14.2 |
| 12 | 13.2 |
| 13 | 10.5 |
| 15 | 9.8 |

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

3. Find the best-fitting quadratic model for the data. Round to 3 decimal places.
4. Using this model, what will be the estimated population in 2020?

| Years Since 1970, x | Population (In thousands), y |
|---------------------------|------------------------------------|
| 0 | 489 |
| 10 | 801 |
| 20 | 1,202 |
| 30 | 1,998 |
| 40 | 2,959 |

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

| | | | | | |
|---|----|---|----|----|---|
| x | -2 | 0 | 2 | 4 | 6 |
| y | -8 | 0 | 12 | 28 | |

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

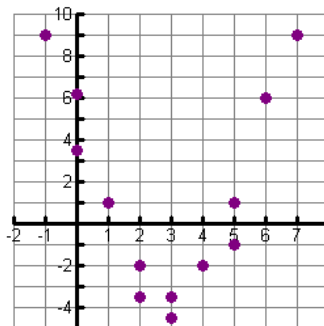
8. Which is the quadratic equation the best fits the scatterplot?

A. $f(x) = (x - 3)^2 - 4$

B. $f(x) = (x + 3)^2 + 4$

C. $f(x) = (x - 4)^2 - 3$

D. $f(x) = (x + 4)^2 + 3$



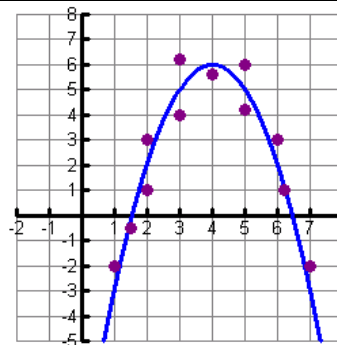
9. Which is the quadratic equation the best fits the scatterplot?

A. $f(x) = x^2 - 8x + 22$

B. $f(x) = -x^2 - 8x - 10$

C. $f(x) = -x^2 + 8x - 32$

D. $f(x) = -x^2 + 8x - 10$



Write a quadratic equation that fits each set of points.

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

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

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

13.

| | | | | | |
|----------|-----------|-----------|-----------|----------|-----------|
| x | -1 | 0 | 1 | 2 | 3 |
| y | 35 | 22 | 11 | 2 | -5 |