

**2.4 Modeling Quadratic Functions using Regression CYU DAY FOUR**

Use when you get it right all by yourself  
*S* Use when you did it all by yourself, but made a silly mistake  
*H* Use when you could do it alone with a little help from teacher or peer  
*G* Use when you completed the problem in a group  
*X* Use when a question was attempted but wrong (get help)  
*N* Use when a question was not even attempted

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Quadratic Regression	1, 3, 10 - 13	6, 7	8, 9
Maximum/Minimum	2	6	
Writing a Best Fit Model	1, 3, 10 - 13	6, 7	5, 8, 9
Prediction		4, 7	

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

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

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

- Which of the following is best modeled by a **quadratic** function?
  - Relationship between circumference and diameter.
  - Relationship between area of a square and side length.
  - Relationship between diagonal of a square and side length.
  - Relationship between volume of a cube and side length.

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

- 12
- 20
- 44
- 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

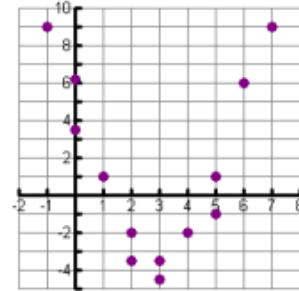
8. Which is the quadratic equation the best fits the scatterplot?

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

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

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

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



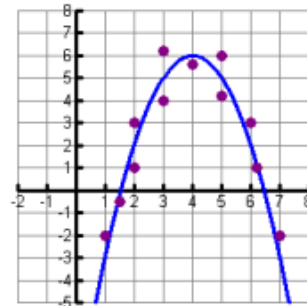
9. Which is the quadratic equation the best fits the scatterplot?

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

**CYU Reflection:** *How far can you go: basic, intermediate, or advanced?*

**Rate your mastery level!**

How confident are you with the skills this CYU covered? Circle the score you would give yourself.

