

Name _____

Date _____ Pd. _____

Notes: Exploring Quadratic Functions

Linear Term	
Non-Linear Function	
Quadratic Term	

The properties of a quadratic graph:

- o The shape of the graph is a _____.
- o The point $(0, 0)$ is the _____ of the parabola. In standard form, it is the _____ of the graph, and the _____ of the function at this point is 0.
- o The parabola is _____, and the line $x = 0$ is the _____.
- o The graph is _____ for $x < 0$ and _____ for $x > 0$.

The pattern of change of the parent quadratic function, $y = x^2$

- o Create a table of values for $f(x) = x^2$
- o The values in the table show the symmetry in the graph of the function. The y-values are _____ about the vertex, $(0, 0)$, as x increases or decreases by 1.
- o The function values are _____ for $x < 0$ and _____ for $x > 0$.
- o As x increases by 1, the change in the y-values is _____.
- o The second difference in the y-values is _____.

Name _____

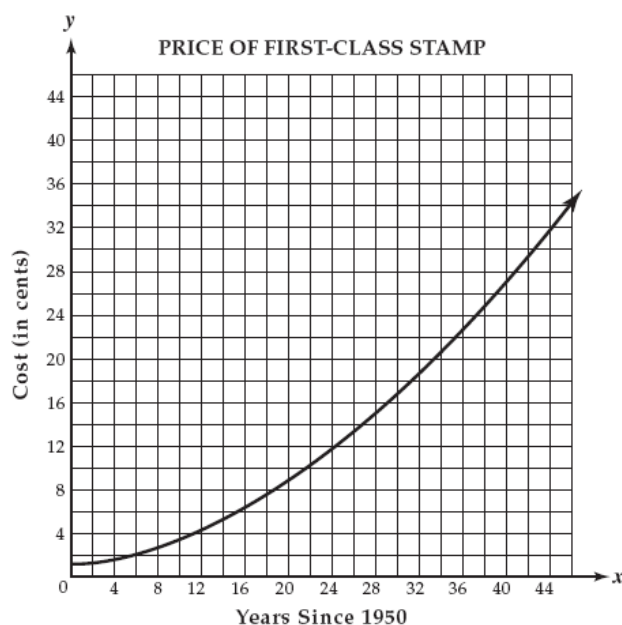
Date _____ Pd. _____

Exit Card: Exploring Quadratic Functions

Erin used the equation below to model the price (y) of postage stamps, in cents, between 1950 and 1995. In Erin's model, x represents the number of years since 1950.

$$y = 0.014x^2 + 0.09x + 1.28$$

The graph below models the price of postage stamps, in cents, between 1950 and 1995.



Complete the following in the Answer Book:

- According to the model, when was the price of a postage stamp 29¢? Use mathematics to explain how you determined your answer. Use words, symbols, or both in your explanation.
- According to the model, what was the cost of postage stamps in 1970? Express your answer to the nearest cent. Use mathematics to explain how you determined your answer. Use words, symbols, or both in your explanation.

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Homework

Listing characteristics of the Quadratic Function

Describe the properties of the graph $y = x^2$:

- o The shape of the graph is a _____.
- o The point $(0, 0)$ is the _____ of the standard parabola. It is the _____ of the graph, and the minimum value of the function is 0.
- o The parabola is _____, and the line $x = 0$ is the axis of symmetry.
- o The graph is _____ for $x < 0$ and _____ for $x > 0$.

The pattern of change of the parent quadratic function, $y = x^2$

- o The values in the table show the symmetry in the graph of the function. The y-values are _____ about the vertex as x increases or decreases by 1.
- o The function values are _____ for $x < 0$ and _____ for $x > 0$.
- o As x increases by 1, the change in the y-values is _____.
- o The second difference in the y-values is _____.