

Why?

**Essential Questions**

1. How do quadratic functions model real-world problems and their solutions?
2. How do linear and non-linear functions compare?

**Enduring Understanding**

Non-linear functions have non-constant rates of change.

The characteristics of non-linear functions and their representations are useful in solving real-world problems.

**Expectations**

Analyze a wide variety of patterns and functional relationships using the language of mathematics and appropriate technology.

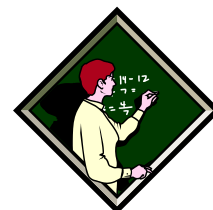
Model and interpret real-world situations using the language of mathematics and appropriate technology.

Apply the basic concepts of statistics and probability to predict possible outcomes of real-world situations, using technology as needed.

What?

**MCPS Indicators and Standards**

- 1.1.1.2 recognize and describe exponential functions that are expressed numerically, algebraically, and/or graphically.
- 1.1.2.3 describe the effect of a change in the parameters  $a$  and  $b$  on the graph of  $f(x) = a(b)^x$ .
- 1.1.2.4 represent exponential functions numerically, algebraically, and/or graphically.
- 1.1.4.2 identify the properties of an exponential function.
- 1.2.4.2 solve a real-world problem involving an exponential function.
- 1.1.4 describe the graph of a non-linear function and discuss its appearance in terms of the basic concepts of maxima and minima, zeros (roots), rate of change, domain and range, and continuity.
- 3.2.2 interpret data and/or make predictions by finding and using a line of best fit and by using a given curve of best fit.

**Algebra**