SC Algebra 1
9.3 Writing Exponential Expressions (Day 1)

Warm Up:

Calculate the slope between the following points.

1. $(\mathbf{1}, \mathbf{-3}), (\mathbf{3}, \mathbf{-1})$
2. $(\mathbf{0}, \mathbf{4}), (\mathbf{4}, \mathbf{2})$
3. $(\mathbf{-3}, \mathbf{2}), (\mathbf{-5}, \mathbf{4})$
4. $(\mathbf{4}, \mathbf{10}), (\mathbf{6}, \mathbf{-2})$

How can I meet today's standards?

*I can **write equations for exponential functions**, given two points, a graph, or a table of values.*

Speak Like A Mathematician:

compound interest: interest calculated on the _____, which is the original _____, and on the accumulated _____ from previous periods.

KEY CONCEPT: Constructing Exponential Functions

If you are given two points, a graph, or a description of an exponential behavior, you can write an exponential function to model the data.

Given Two Points:

1) Substitute the values of each x and y into the equation, _____.
2) This will result in a _____ of equations in two _____ each with a and b as unknowns.
3) You can then solve the system using _____.

Reminder:

$$y = a(b)^x$$

Given a Graph:

1) Use _____ two points from the graph to write equations in the form _____.
2) _____ the values of x and y into the equations.
3) Solve for a and b using _____.

Given a Description:

1) Use the information to create a _____ or a _____.
2) Look for a _____ between the input and _____ values.
3) Use _____ features to write an equation in the form _____.

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Example 1: Write an Exponential Function Given Two Points

A) Write an exponential function for the graph that passes through $(1,6)$ and $(3,24)$.

B) Write an exponential function for the graph that passes through $(-3,1)$ and $(0,8)$.

C) Write an exponential function for the graph that passes through $(-1,20)$ and $(1,5)$.

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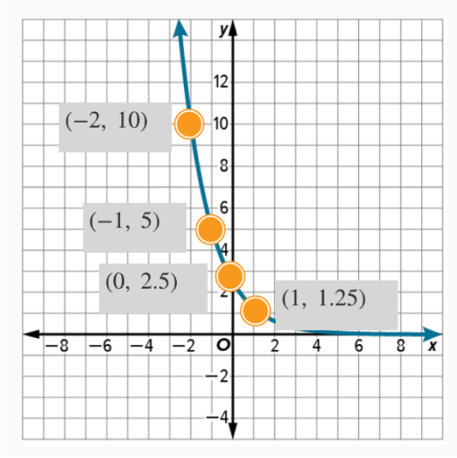
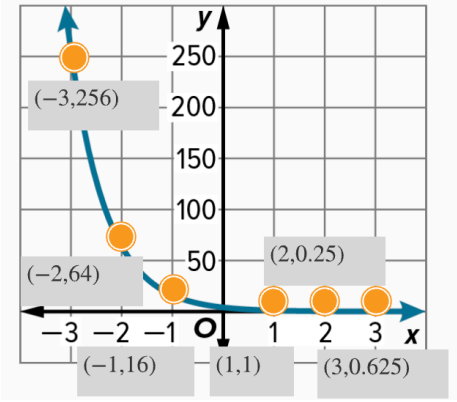
Example 2: Writing an Exponential Function Given a Graph

A) Write an exponential function for the graph.



B) Write an exponential function for the graph.



Example 3: Writing an Exponential Function Given a Description.

A radio station is giving away $1000 to the first listener who answers a question correctly. If the question goes unanswered for one hour, the prize increases by 10% until it is answered correctly. Write a function to describe this situation.