Warm Up

11/25

x	y
0	11.76
1	20
2	34
3	57.8
4	98.26

20/1.7 = 11.76

÷1.7

×1.7

×1.7

×1.7

What is the growth factor?

GF = 1.7

Can you write the equation for the data in the table?

We need factor and a y-int to write an exponential equation

~~y = 1.7x + 11.76~~ linear

Let's use an equation

We know: $y = a(1.7)^x$

y-int

(2, 34)
x y

$34 = a(1.7)^2$

$\frac{34}{(1.7)^2} = \frac{a(1.7)^2}{(1.7)^2}$

$11.76 = a$

$y = 11.76(1.7)^x$

$y = 11.76(1.7)^x$

Refresher:

Exponential Equation

$$y = ab^x$$

y-intercept

Growth Factor

Don't depend on where the term is in the equation when identifying the Growth Factor and y-Intercept.

$y = 5(2)^x$

$y = 2^x \cdot 5$

$y = 2^x(5)$

$y = 5(2^x)$

$y = (5) \cdot 2^x$

These are all the same!

Growth Factor is always the # with the exponent

The same is true for a linear equation.

$y = 5x - 7$

$y = -7 + 5x$

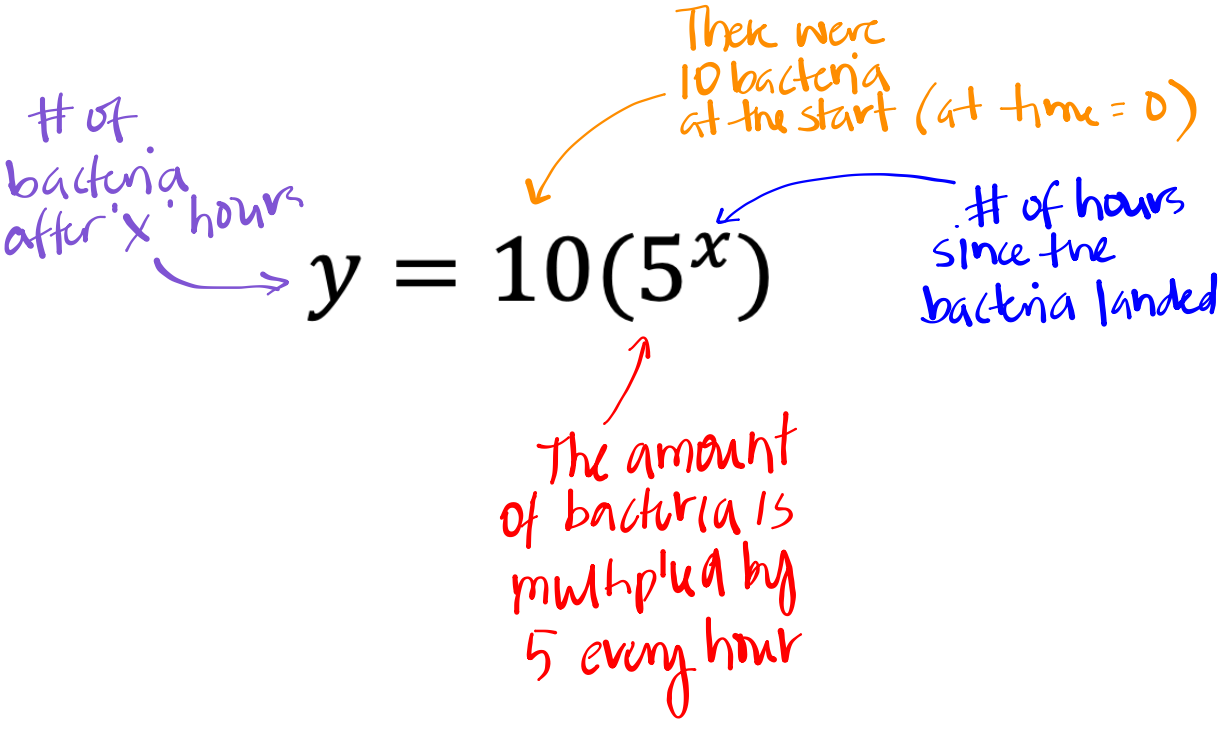
These are the same!

These are all linear equations even though written in different orders.

The slope is always the coefficient in front of the "x".

How to label parts of the equation:

(Bacteria growing on your teeth every hour)



2.3 Studying Snake Populations

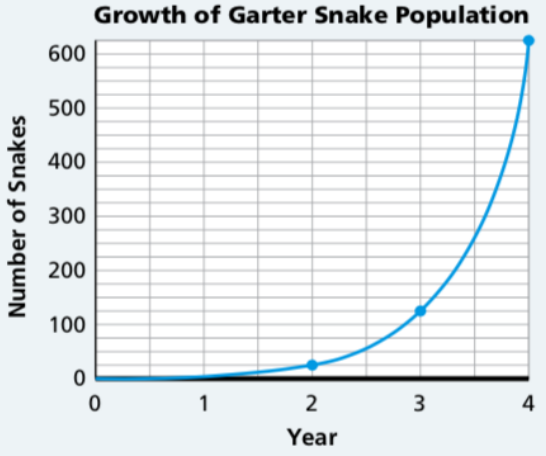
Interpreting Graphs of Exponential Functions

Garter snakes were introduced to a new area 4 years ago. The population is growing exponentially. The relationship between the number of snakes and the year is modeled with an exponential function.

relationship

Problem 2.3

A The graph shows the growth of the garter snake population.



1. Find the snake population for years 2, 3, and 4.
2. Use the pattern in your answers from part (1) to estimate the population in Year 1. Explain your reasoning.
3. Explain how you can find the y-intercept for the graph.

B Explain how to find the growth factor for the population.

C Write an equation relating time t in years and population p. Explain what information the numbers in the equation represent.

D In what year is the population likely to reach 1,500?

E Amy and Chuck were discussing whether this relationship represented an exponential function. Who is correct? Explain why.

Amy's claim It is not a function. When the independent variable is 4, it looks like there is more than one dependent value associated with it.

OR

Chuck's claim It is a function. The scale used for the graph makes it difficult to read the values when the independent variable is 4.

Homework

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