YOUR TURN

If we start with 30 alien amoebas and each amoeba splits into 1.15 amoebas every minute, how many amoebas will there be in an hour and a half? Write the equation first and then your solution.

Here's how I'd like for you to remember this formula:

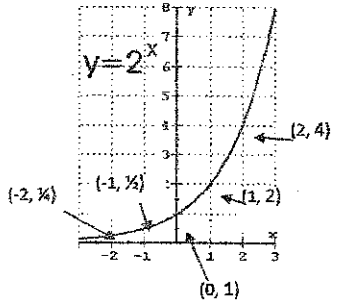
Number of amoebas = (initial population) • (split factor)$^{\text{Number of splits}}$

Graphs of Exponential Functions $h(t) = 2^t$

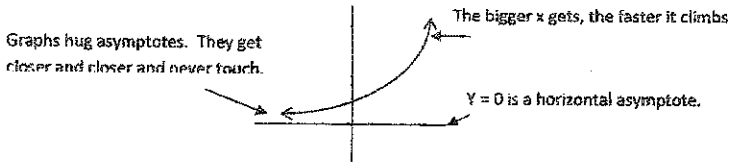
Let's graph it! To make it easier, let's graph $y = 2^x$, since we're use to graphing (x,y).

Well, when we have no idea what something looks like, we have to plot points:

X	$Y = 2^x$
~~-2~~	~~$2^{-2} = \frac{1}{4}$~~
-1	$2^{-1} = \frac{1}{2}$
0	$2^0 = 1$
1	$2^1 = 2$
2	$2^2 = 4$



This is the basic shape of the graph of an exponential function: $y = a^x$ where $a > 1$
This function is an illustration of "exponential growth".



Adapted from a lesson created by Lauren Brooks, Enloe High School, WCPSS 2012 Teacher of the Year.

More Alien Monster and Amoeba Encounters

For each alien encounter below, write the explicit equation in function notation and then solve.

1. An alien amoeba colony is growing exponentially and had a population of 10,000 when it was first observed. Six hours later, the population was 80,000. What was the population two hours after it was first observed? What will be the population in 10 hours? in 24 hours?

2. The population of the alien city, found on the dark side of the moon, has grown at a rate of 3.2% each year for the last 10 years. If the population 10 years ago was 25,000, what is the population today? When do you think they will tell the human population of it's existence?

3. In 2010, the population of a monster city, called Halloween Town, was 50 monsters. Since then the population has increased at a constant rate of 25% each year. Assuming this rate of increase stays constant, what will the monster population of Halloween Town be in 4 years? In 20 years?

4. A population of alien bacteria grows by 35% every hour. If the population begins with 100 alien specimens, how many are there after 6 hours? How many will there be in 18 hours?

5. The population in the town of Alien Acres is presently 42,500. The town has been growing at a steady rate of 2.7%. Find the number of years ago that the population was 30,000.