
Population Growth

Suppose that a single zombie bites one person. Now there are 2 zombies. 30 minutes later they each bite another person. Now there are 4 zombies. 30 minutes later each of the 4 zombies bite another person. Now there are 8 zombies. So basically, the number of zombies double every 30 minutes.

So if the number of zombies double every 30 minutes, how long do you think it would take before there would be 1000 zombies? To calculate how long it would actually take for a single zombie to multiply to form a population of 1000 zombies, finish filling in the number of zombies at each time in the table.

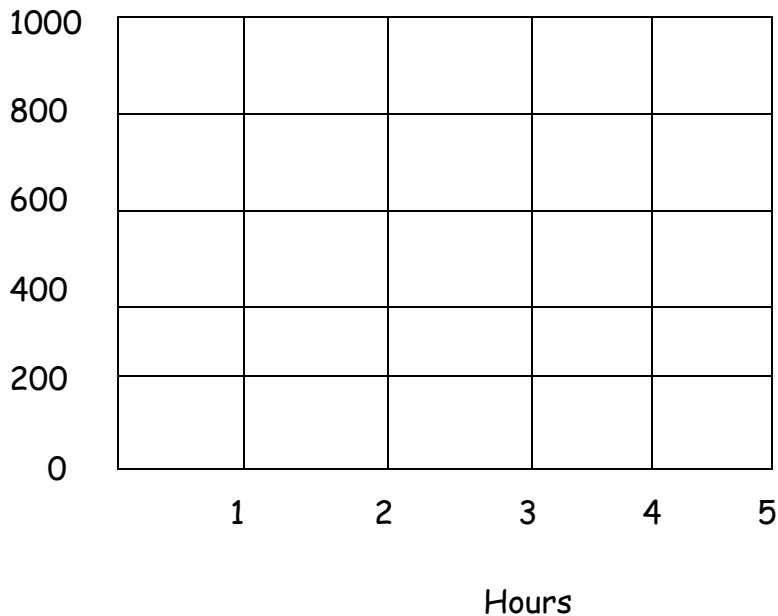
# of Zombies	Time
1	At the beginning
2	After 30 minutes
4	After 1 hour
8	After 1 hour and 30 minutes
	After 2 hours
	After 2 hours and 30 minutes
	After 3 hours
	After 3 hours and 30 minutes
	After 4 hours
	After 4 hours and 30 minutes
	After 5 hours

1. How long would it take for the population of zombies to increase from 1 zombie to 500 zombies? _____
2. How long would it take for the population of zombies to increase from 500 zombies to 1000 zombies? _____

Notice that, when a population doubles every 30 minutes, the number of bacteria in the population increases faster and faster as the population gets larger. This kind of population growth is called **exponential** growth.

To see what exponential growth looks like in a graph, use the data from the table on the previous page to plot the number of zombies at each time in this graph.

of Zombies



3. Why does the slope of this exponential growth curve get much steeper in the fourth and fifth hours of population growth? _____

If exponential growth continued for 10 hours, the original single zombie would increase to a population of over one million zombies. This illustrates how exponential growth can result in very rapid increase of population size.

4. In the real world, no population of zombies or any other biological organism can keep increasing exponentially forever. Why not?
