

## Calculation of Bacterial Growth

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**Calculate the Generation time  $G$  using the following equation:  $G = t/n$**

't' = time

'n' = the number of generations.

Please express your answer in minutes. Please show your work.

1. A culture of bacteria divides 10 times in 5 hours.
2. A culture of bacteria divides 100 times in 4 hours.
3. A culture of bacteria divides 4 times in 40 minutes.
4. A culture of bacteria divides 20 times in 2800 minutes.

Calculate the answers to the following questions using the following equation:

$$N(t) = N_0 \times 2^n$$

N = Number of bacteria

N(t) = Number of bacteria at time t

N<sub>0</sub> = Number of bacteria at time 0 – ie at the start

2 – refers to the doubling rate

n = the number of generations = Time period/generation time

Please show your work. Please put numbers of 4 digits or more into scientific notation. (Example: 1,560 = 1.56 x 10<sup>3</sup>) Include only 2 digits to the right of the decimal place.

1. If you start with a population of 10 bacteria, and the Generation time is 30 min, how many bacteria will you have after 4 hours?
2. If you start with a population of 1 bacterium, how many generations does it take to get 120 bacteria?
3. If you start with a population of 1 bacterium, and the Generation time is 10 min, how many bacteria will you have after 10 hours?