

For each scenario:

a) write an exponential equation

b) attempt to use your equation to answer the question. (Does your answer make sense?)

1. Kelvin observes a bacteria sample and notices that grows by 12.5% every hour. If the sample started with 80 bacterium, how many will there be after 5 hours?
2. After 7 hours, Kelvin introduces an antibacteric to the sample. He observes the sample reducing by 36% every minute. After how many minutes will the sample be smaller than the original 80 bacterium?

1a. $y = a \cdot b^x$

total bacteria \rightarrow y
 starting bacteria \rightarrow a
 growth rate \rightarrow b
 # of hours \rightarrow x

$(1 + \%)$

$y = 80(1.125)^x$

1b. 12.5% growth

$y = 80(1.125)^5$

$.125$
 $1 + .125$
 $b = 1.125$

$y \approx 144$ bacterium

2a. $y = 80(1.125)^7$

$y \approx 183$ bacterium after 7 hours

36% decay

$y = 183(.64)^x$

$.36$
 $1 - .36$
 $b = .64$

2b. GUESS & CHECK

after 1 minute

$y = 183(.64)^1$

$y = 117.12 > 80$

after 2 minutes

$y = 183(.64)^2$

$y = 74.96 < 80$

After 2 minutes.