

<p>Question 1</p> <p>E. Coli is a very strong bacteria used in many scientific studies. How many bacterium do you have after 3 hours in ideal conditions?</p> <p>You must create an equation for full credit</p>	<p>Question 2</p> <p>Tony Hawk is draining a pool so he can use it as a halfpipe. How much water did it start with?</p> <p>After 10 hours, there are 13,000 gallons left.</p>
<p>Question 3</p> <p>Maya has invested \$1000 in an account that gives interest. How much does she have now?</p>	<p>Question 4</p> <p>Radioactive Polonium (Po-210) was used by the Russian government to poison a dissident in 2018. You started with 40 grams of Po-210 in your lab. How much is there now?</p>

Facts

- E.Coli reproduces very quickly. In ideal conditions, the number of bacterium double every 20 minutes.
- At the start of your experiment, the sample you started with contained 200 individual bacteria.

Facts

- After 24 hours, there are 10,200 gallons left in the pool.
- It is draining at a constant rate.

Facts

- It has been 9 years since she invested her money.
- Maya's return from the bank is 8% annually. How could you make this into a *constant multiplier*? (Hint: it's not x8)

Facts

- 966 days have passed since you started your polonium experiment.
- Po-210 has a half-life of 138 days. This means half of your sample decays every 138 days.

Question 1

E.Coli is a very strong bacteria used in many scientific studies. How many bacterium do you have after 3 hours in ideal conditions?

You must create an equation for full credit

Facts

- E.Coli reproduces very quickly. In ideal conditions, the number of bacterium double every 20 minutes.
- At the start of your experiment, the sample you started with contained 200 individual bacteria.

$$y = 200(2)^x$$

$$y = 102400$$

Question 2

Tony Hawk is draining a pool so he can use it as a halfpipe. How much water did it start with?

After 10 hours, there are 13,000 gallons left.

Facts

- After 24 hours, there are 10,200 gallons left in the pool.
- It is draining at a constant rate.

$$14 \left(\begin{matrix} 10, 13,000 \\ 24, 10,200 \end{matrix} \right) \rightarrow 2800$$

$$y = -200x + 15,000$$

starting

Question 3

Maya has invested \$1000 in an account that gives interest. How much does she have now?

Facts

- It has been 9 years since she invested her money.
- Maya's return from the bank is 8% annually. How could you make this into a constant multiplier? (Hint: it's not x8)

$$y = 1000(1.08)^x$$

$$y = 1999.00$$

Question 4

Radioactive Polonium (Po-210) was used by the Russian government to poison a dissident in 2018. (Russia is seriously evil, you guys). You started with 40 grams of Po-210 in your lab. How much is there now?

Facts

- 966 days have passed since you started your polonium experiment.
- Po-210 has a half-life of 138 days. This means half of your sample decays every 138 days.

$$y = \left(40 \times \frac{1}{2}\right)^7$$

$$y = 0.31 \text{ g}$$