

Name: Class:

Population doubling - word problems

$$\text{New population} = \text{initial population} \times 2^{\frac{t}{t_2}}$$

t = stands for time.
 t_2 = doubling time

1. The current population of an army of frogs is **100**. What will be their population after **10 years**, if it doubles every **2 years**.
2. A population of **2,000 bees** in a colony doubles every **30 days**. How many bees will be in the colony after **90 days** ?
3. The population of the city of Dallas is currently **1,000,000**. What will be the population after **100 years** if it doubles every **25 years** ?
4. If the starting population of 20 cows doubles every 4 years, how many cows will there be in 20 years?
5. A small island currently has a population of 250,000 inhabitants. If the population doubles every 10 years, what will the population be in 30 years?
6. The initial population of a bacteria culture is 4000. If the population doubles after every 5 hours, what will the population be in 60 hours?
7. If the initial population of 10 invasive weed- Water Hyacinth doubles every six days, how many invasive weed- Water Hyacinth will be there in three weeks?
8. During a pathology test in the hospital, a pathologist started with an initial population of 15 E-coli in the lab. If the population of the E. coli doubles after every 20 minutes, how many E. coli will the pathologist end up with after two hours?

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1. The current population of an army of frogs is **100**. What will be their population after **10 years**, if it doubles every **2 years**.

- ▶ $t = 10$ years
- ▶ $t_2 = 2$ year
- ▶ initial population = 100 frogs

$$\begin{aligned} \text{new population} &= 100 \times 2^{\frac{10 \text{ years}}{2 \text{ year}}} \\ &= 100 \times 2^5 \\ &= 100 \times 32 \\ &= 3,200 \end{aligned}$$

There will be **3,200** army of frogs every year.

2. There will be **16,000** bees after 90 days

3. The population of Dallas city will be **16,000,000** after 100 years.

3. there will be **640** cows in 20 years.

4. the island will have a population of **2,000,000** inhabitants in 30 years.

5. the population of the bacteria will be **1,638,000** in 60 hours.

6. the population of the bacteria will be **1,638,000** in 60 hours.

7. there will be **113** invasive weed- Water Hyacinth in three weeks.

8. the pathologist will end up with **960** E. coli