Question

1. In the year 2000 the world population was about 6.08 billion and has grown to an average rate of 2% per year the table below represents the total population over a 5-year span write an equation that best fits the data round to the nearest hundredth .

Solution

This is a geometric progression with a ratio q=1.02

Then

$$Q_n = Q_1 q^{n-1},$$

where

Q_1 is the word population in 2000 year

Q_n is the word population in 2000 + (n-1) year

For 2005 year: $n = 6$

$$Q_6 = Q_1 q^5$$

$$Q_6 = Q_1 q^5 = 6.08 \cdot 10^9 \cdot 1.02^5 = 6.33 \cdot 10^9$$

Answer: $Q_{2005} = Q_{2000} \cdot 1.02^5$.