Solve problems with repeated percentage change

Maths

Mr Clasper

Solve problems with repeated percentage change

1. Find the integer value of each exponent to make each statement correct.

$40\,000 \times 1.03^{a} = 43\,709.08$

$70\,000 \times 0.8^{b} = 22\,937.6$

$234 \times 0.63^{c} = 92.8746$

2. The population of Britain was approximately 66 000 000 in 2019. If the population increases at a rate of 1% per year, how many years would it take to reach a population of 67 999 866?

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3. Alan has invested £5000 in a company which guarantees a profit of 5% every year. After how many years will it take Alan to make a profit of more than £500?

4. A car is valued at £4000 and depreciates in value by 11% every year. After how many years will the value of the car be less than half of the original value?

5. A college has 18 students who study maths and 20 students who study English.

The number of students studying maths increases by 15% each year.

The number of students studying English increases by 10% each year.

After how many years will the college have more students studying maths?

Answers

Solve problems with repeated percentage change

1. Find the integer value of each exponent to make each statement correct.

$40\,000 \times 1.03^{a} = 43\,709.08$ a = 3

$70\,000 \times 0.8^{b} = 22\,937.6$ b = 5

$234 \times 0.63^{c} = 92.8746$ c = 2

2. The population of Britain was approximately 66 000 000 in 2019. If the population increases at a rate of 1% per year, how many years would it take to reach a population of 67 999 866?

3 years

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3. Alan has invested £5000 in a company which guarantees a profit of 5% every year. After how many years will it take Alan to make a profit of more than £500?

2 years

4. A car is valued at £4000 and depreciates in value by 11% every year. After how many years will the value of the car be less than half of the original value?

6 years

5. A college has 18 students who study maths and 20 students who study English.

The number of students studying maths increases by 15% each year.

The number of students studying English increases by 10% each year.

After how many years will the college have more students studying maths?

3 years

Maths (after 3 years) – 27.375...
English (after 3 years) – 26.62