

## GCSE QUESTIONS WITH CLUES

### Q1. CALCULATOR ALLOWED

Derek buys a house for £150 000

He sells the house for £154 500

(a) Work out Derek's percentage profit.

$$\frac{\text{Percentage Change}}{\text{Change}} = \frac{\text{Change}}{\text{Original}} \times 100\%$$

.....  
 Derek invests £154 500 for 2 years at 4% per year compound interest.

$$\leftarrow 100\% + 4\% = 104\% = \frac{104}{100} = 1.04$$

(3)

(b) Work out the value of the investment at the end of 2 years.

$$\text{New Amount} = \text{Original} \times \frac{\text{Percentage Multiplier}}{\text{time}}$$

.....  
(3)

(Total for Question is 6 marks)

### Q2. CALCULATOR ALLOWED

Sakira invested £3550 in a savings account for 3 years.

She was paid 2.6% per annum compound interest for each of the first 2 years.

She was paid  $R\%$  interest for the third year.

Sakira had £3819.21 in her savings account at the end of the 3 years.

Work out the value of  $R$ . Give your answer correct to 1 decimal place.

$$\text{New Amount} = \text{Original} \times \frac{\text{Percentage Multiplier}}{\text{time}}$$

End of 2 years:

End of final year:

.....  
(Total for question = 3 marks)

**Q3. CALCULATOR ALLOWED**

Katy invests £2000 in a savings account for 3 years.

The account pays compound interest at an annual rate of

- 2.5% for the first year  $100\% + 2.5\% = 102.5\% = 1.025$
- $x\%$  for the second year
- $x\%$  for the third year

There is a total amount of £2124.46 in the savings account at the end of 3 years.

(a) Work out the rate of interest in the second year.

Year 3:  $2124.56 = \frac{x(100+x)^2}{100}$

New Amount = Original  $\times$  Percentage Multiplier<sup>time</sup>

Year 1:

(4)

Katy goes to work by train. The cost of her weekly train ticket increases by 12.5% to £225

(b) Work out the cost of her weekly train ticket before this increase.

*Reverse Percentages*

Original Cost  $\xrightarrow{\times 1.125}$  225

£.....

(2)

(Total for question = 6 marks)

**Q4. CALCULATOR ALLOWED**

This notice was in a car magazine.

Most new cars lose more than half of their value in the first three years

Paul bought a new car. The value of the car was £15 000

In the first year, the value of the car depreciated by 23%.  $100\% - 23\% = 77\%$

After the first year, the value of the car depreciated by 18% each year.  $100\% - 18\% = 82\%$

Work out if Paul's car lost more than half of its value by the end of three years.

*End of Y1:*

*End of Y3:*

(Total for question = 4 marks)

**Q5. CALCULATOR ALLOWED**

The value of a van depreciates at the rate of 20% per year.

Gary buys a new van for £27 500

After  $n$  years the value of the van is £11 264

$$100\% - 20 = 80\% \\ = 0.8$$

Find the value of  $n$ .

$$\begin{array}{l} \text{New} \\ \text{Amount} \end{array} = \text{Original} \times \begin{array}{l} \text{Percentage} \\ \text{Multiplier} \end{array}^{\text{time}}$$

$$11264 = 27500 \times 0.8^n$$

.....  
(Total for Question is 2 marks)

**Q6. CALCULATOR ALLOWED**

Helen invested £6000 for  $n$  years in a savings account.

She got 3% compound interest each year.

$$100\% + 3\% = 103\% = 1.03$$

At the end of  $n$  years Helen had £7379.24 in her savings account.

Work out the value of  $n$ .

You must show your working.

$$\begin{array}{l} \text{New} \\ \text{Amount} \end{array} = \text{Original} \times \begin{array}{l} \text{Percentage} \\ \text{Multiplier} \end{array}^{\text{time}}$$

$$7379.24 = 6000 \times 1.03^n$$

.....  
(Total for question = 2 marks)