I.G.C.S.E. Percentages

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Question 1

Work out

a. 20% of $40 **b.** 6% of $900 **c.** 71% of 180 g

d. 5.5% of $2.45 **e.** 3.3% of $4.52 **f.** $4\frac{1}{2}\%$ of $56

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Solution to question 1

a. 20% of \$40 $\Rightarrow \frac{20}{100} \times \frac{40}{1} = \$8$

b. 6% of \$900 $\Rightarrow \frac{6}{100} \times \frac{900}{1} = \$54$

c. 71% of 180 g $\Rightarrow \frac{71}{100} \times \frac{180}{1} = \frac{1278}{10} = 127.8$ g

$$\begin{array}{r} 18 \\ \times\ 71 \\ \hline 18 \\ +1260 \\ \hline 1278 \end{array}$$

d. 5.5% of \$2.45 $\Rightarrow \frac{5.5}{100} \times \frac{2.45}{1} = \frac{13.475}{100} = \$0.13$

$$\begin{array}{r} 2.45 \\ \times\ 5.5 \\ \hline 1225 \\ +12250 \\ \hline 13.475 \end{array}$$

3 digits after the decimal point in the question and 3 digits after the decimal point in the answer

e. 3.3% of \$4.52 $\Rightarrow \frac{3.3}{100} \times \frac{4.52}{1} = \frac{14.916}{100} = \$0.15$

$$\begin{array}{r} 4.52 \\ \times\ 3.3 \\ \hline 1356 \\ +13560 \\ \hline 14.916 \end{array}$$

3 digit after the decimal point in the question and 3 digits after the decimal point in the answer

f. $4\frac{1}{2}$% of \$56 $\Rightarrow \frac{4.5}{100} \times \frac{56}{1} = \frac{252}{100} = \$2.52$

$$\begin{array}{r} 56 \\ \times\ 4.5 \\ \hline 280 \\ +2240 \\ \hline 252.0 \end{array}$$

1 digit after the decimal point in the question and 1 digit after the decimal point in the answer

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Question 2

a. Increase a price of $80.45 by 12%.

b. Reduce a price of $9.99 by 22%.

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Solution to question 2

a. Increase is $\frac{12}{100} \times \frac{80.45}{1} = \frac{965.4}{100} = \$9.65$

The new price is \$80.45 + \$9.65 = \$90.10

$$\begin{array}{r} 80.45 \\ \times \quad 12 \\ \hline 16090 \\ +80450 \\ \hline 965.40 \end{array} \qquad \begin{array}{r} 80.45 \\ +\ 9.65 \\ \hline 90.10 \end{array}$$

b. Reduction is $\frac{22}{100} \times \frac{9.99}{1} = \frac{219.78}{100} = \$2.20$

The new price is \$9.99 - \$2.20 = \$7.79

$$\begin{array}{r} 9.99 \\ \times \quad 22 \\ \hline 1998 \\ +\ 19980 \\ \hline 219.78 \end{array} \qquad \begin{array}{r} 9.99 \\ -\ 2.20 \\ \hline 7.79 \end{array}$$

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Question 3

In a sale a shop reduces the prices of its computer by 25%. Find the sale price of a computer, which previous cost $3200.

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Solution to question 3

First find 25% of $3200

$$\frac{25}{100} \times \frac{3200}{1} = \$800$$

The sale price is $3200 - $800 = $2400

$$\begin{array}{r} 32 \\ \times\ 25 \\ \hline 160 \\ +\ 640 \\ \hline 800 \end{array} \qquad \begin{array}{r} 3200 \\ -\ 800 \\ \hline 2400 \end{array}$$

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Question 4

The population of a small town in the Andes increased by 28% between 1955 and 1995. If there were 3500 in 1955, what was the 1995 population?

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Solution to question 4

The population of a small town in the Andes increased by 28% between 1955 and 1995. If there were 3500 in 1955, what was the 1995 population?

First find 28% of 3500

$$\frac{28}{100} \times \frac{3500}{1} = 980$$

The population in 1995 is

3500 + 980 = 4480

$$\begin{array}{r} 35 \\ \times\ 28 \\ \hline 280 \\ +\ 700 \\ \hline 980 \end{array} \qquad \begin{array}{r} 3500 \\ +\ 980 \\ \hline 4480 \end{array}$$

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Question 5

Find the total bill

2 pens at $3.70
50 drawing pins at 10c for 10
5 pencils at 25c each
35 rulers at $1.50c for 5
VAT at 17.5% is added to the total cost.

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Solution to question 5

Writing the bill into a table.

Item	Quantity	Price per unit		Total
Pens	2	\$3.70	2×3.70	7.40
Drawing Pins	50	\$0.10 per 10	5×0.10	0.50
Pencils	5	\$0.25	5×0.25	1.25
Rulers	35	\$1.50 per 5	7×1.50	10.50
Sub Total				**\$19.65**
VAT(17.5%)				3.44
Total				**\$23.09**

Note: 17.5% of \$19.65 $\Rightarrow \frac{17.5}{100}\times\frac{19.65}{1}=\frac{343.875}{100}=\$3.44$

$$\begin{array}{rr} & 19.65 \\ \times & 17.5 \\ \hline & 9825 \\ & 137550 \\ + & 196500 \\ \hline & 343.875 \end{array}$$

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Question 6

a. Find the simple interest on $1200 for 5 years at 3.5% per annum.

b. How much will the money be worth after 10 years?

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Solution to question 6

a. Using the simple interest formula $I = \frac{P \times R \times T}{100}$ where I is interest, P is principal (money invested), R is rate per annum (per year) and T is time in years.

Interest after 5 years $I = \frac{1200 \times 3.5 \times 5}{100} = \$210$

b. After 10 years the money will be worth $\$1200 + 2 \times \$210 = \$1620$

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