ARITHMETIC (Q 1, PAPER 1)

1998

1 (a) When a cyclist had travelled a distance of 12.6 km he had completed $\frac{3}{7}$ of his journey. What was the length of the journey?

(b) (i) At what rate of interest will IR£2000 amount to IR£2065 after one year?

(ii) Divide 357 grammes in the ratio $\frac{1}{2}:\frac{1}{4}:1$.

(c) A supplier agrees to buy 300 computer parts for 1060 Deutschmarks (DM) each. He plans to sell them for a total of IR£138,000.

(i) Calculate the percentage profit (on the cost price) he will make if the exchange rate is IR£1 = DM 2.65?

(ii) By how much will the percentage profit (on the cost price) change if the exchange rate becomes IR£1 = DM 2.50? Give your answer correct to one place of decimals.

SOLUTION

1 (a)

$\frac{3}{7}$ = 12.6 km

$\frac{1}{7}$ = $\frac{12.6}{3} = 4.2$ km

$\frac{7}{7}$ = $4.2 \times 7 = 29.4$ km

1 (b) (i)

R = ?
P = £2,000
A = £2,065
n = 1

$$A = P\left(1+\frac{R}{100}\right)^n$$ 3

$$2065 = 2000\left(1+\frac{R}{100}\right)^1 \Rightarrow \frac{2065}{2000} = \left(1+\frac{R}{100}\right)$$

$$\Rightarrow 1.0325 = 1+\frac{R}{100} \Rightarrow 0.0325 = \frac{R}{100}$$

$$\therefore R = 100 \times 0.0325 = 3.25\%$$

1 (b) (ii)

Multiply across by 4: Ratio 2:1:4
2 + 1 + 4 = 7

First part: $\frac{2}{7} \times 357 = 102$ g

Second part: $\frac{1}{7} \times 357 = 51$ g

Third part: $\frac{4}{7} \times 357 = 204$ g

1 (c) (i)

Cost price: $300 \times 1060 \text{ DM} = 318,000 \text{ DM}$

2.65 DM = £1

1 DM = $£\frac{1}{2.65}$

318,000 DM = $£\frac{1}{2.65} \times 318000 = £120,000$

Cost price: £120,000

Selling price: £138,000

Profit = $£138,000 - £120,000 = £18,000$

Profit = Selling Price – Cost Price
Loss = Cost Price – Selling Price

$\%\ \text{Profit} = \frac{£18,000}{£120,000} \times 100\% = 15\%$

$\%\ \text{Profit} = \frac{\text{Profit}}{\text{Cost Price}} \times 100;$ 1

1 (c) (ii)

Cost price: $300 \times 1060 \text{ DM} = 318,000 \text{ DM}$

2.50 DM = £1

1 DM = $£\frac{1}{2.50}$

318,000 DM = $£\frac{1}{2.50} \times 318000 = £127,200$

Cost price: £127,200

Selling price: £138,000

Profit = $£138,000 - £127,200 = £10,800$

Profit = Selling Price – Cost Price
Loss = Cost Price – Selling Price

$\%\ \text{Profit} = \frac{£10,800}{£127,200} \times 100\% = 8.5\%$

$\%\ \text{Profit} = \frac{\text{Profit}}{\text{Cost Price}} \times 100;$ 1

Change in % profit = $15\% - 8.5\% = 6.5\%$