

ARITHMETIC (Q 1, PAPER 1)

2006

- 1 (a) €320 is $\frac{4}{9}$ of a prize fund. Find the total prize fund.
- (b) Aoife pays a fixed monthly charge of €15 for her mobile phone. This charge includes 100 free text messages and 50 minutes free call time each month. Further call time costs 28 cent per minute and additional text messages cost 11 cent each. In one month Aoife sends 140 text messages and her call time is 2 hours.
- (i) Find the total cost of her fixed charge, text messages and call time.
- (ii) VAT is added to this cost at the rate of 21%.
Find the amount paid, including VAT.
- (c) The standard rate of income tax is 20% and the higher rate is 42%.
Colm has weekly tax credits of €50 and a standard-rate cut-off point of €240. Until recently, Colm had a gross weekly income of €900.
- (i) Calculate the tax Colm paid each week.
- (ii) After getting a pay rise, Colm's weekly after-tax income increased by €20.30. Calculate the increase in Colm's gross weekly income.

SOLUTION

1 (a)

If one quantity is **DIRECTLY PROPORTIONAL** to another, then if you multiply or divide one quantity by a number you must do the same to the other quantity.

€320 is $\frac{4}{9}$ of a prize fund. Find the total prize fund.

$$\frac{4}{9} \text{ of prize} = \text{€}320$$

$$\frac{1}{9} \text{ of prize} = \frac{\text{€}320}{4} = \text{€}80$$

$$\frac{9}{9} \text{ of prize} = \text{€}80 \times 9 = \text{€}720$$

1 (b) Fixed monthly charge: €15 (Includes 100 text messages and 50 minutes call time)

Call time: 28 c per minute

Text message: 11 c each

Aoife sends 140 text messages and has a call time of 2 hours.

(i) She has to pay for 40 text messages and 1 hour and 10 minutes (70 minutes) call time.

$$\text{Total cost: } \text{€}15 + (40 \times 11\text{c} + 70 \times 28\text{c}) = \text{€}15 + \text{€}24 = \text{€}39$$

(ii) VAT is add at 21%: Multiply previous answer by 1.21

$$\text{Amount paid} = \text{€}39 \times 1.21 = \text{€}47.19$$

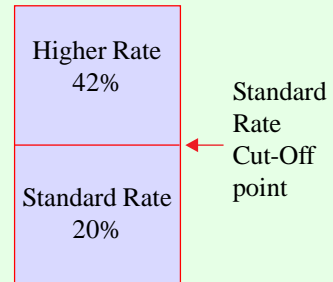
1 (c)

$$\begin{aligned} \text{Net Tax} &= \text{Gross Tax} - \text{Tax Credits} \\ \text{Take home pay} &= \text{Gross Income} - \text{Net Tax} \end{aligned}$$

Gross Income: €900

(i) Gross Tax

$$\begin{aligned} \text{€240 at 20\%: } & \text{€240} \times 0.2 & = & \text{€48} \\ \text{€660 at 42\%: } & \text{€660} \times 0.42 & = & \text{€277.20} \\ \hline \text{Total Gross Tax} & & = & \text{€325.20} \end{aligned}$$



(ii) After tax rate = 100% - 42% = 58%

$$\begin{aligned} 58\% & = \text{€20.30} \\ 1\% & = \frac{\text{€20.30}}{58} \\ 100\% & = \frac{\text{€20.30}}{58} \times 100 = \text{€35} \end{aligned}$$