

## Variation Worksheet.

1. The cost ( $C$ ) of buying new tyres varies with the number of tyres ( $t$ ) bought.

a) Find a formula connecting  $C$  and  $t$ .

(Start with  $C \propto t$  and introduce the letter  $k$ )

b) Given that the cost of 2 tyres is £70, find the cost of 5 tyres.

(Find the value of  $k$  first, then use the formula you have to find  $C$  when  $t = 5$ )

2. The weight ( $W$ ) of a metal pipe varies with the length ( $p$ ) of the pipe.

a) Find a formula connecting  $W$  and  $p$ .

(Start with  $W \propto p$  and introduce the letter  $k$ ).

b) Given that the weight  $W$  is 300 grams when the length  $p = 5\text{cm}$ , find the weight of a piece of pipe 9cm long.

(Find the value of  $k$  first, then use the formula you have to find  $W$  when  $p = 9$ )

3. The volume ( $V$  litres) of water in a bath varies with the time ( $t$  minutes) the tap is open.

a) Find a formula connecting  $V$  and  $t$ .

b) Given that the volume ( $V$ ) is 60 litres when the tap has been open for ( $t=$ ) 15 minutes, find the volume of water after the tap has been open for 25 minutes.

4. When the burner in a hot air balloon is lit, the balloon begins to rise. The height ( $H$  metres) of the balloon varies with the time ( $t$  minutes) after it has been lit.

a) Find a formula connecting  $H$  and  $t$ .

b) After ( $t=$ ) 10 minutes, the balloon has risen to a height of ( $H=$ ) 1200 metres. Find the height of the balloon after 15 minutes. (Find  $k$  first)

**Variation Answers.**

1a)  $C = kt$       b)  $k = 135 \rightarrow C = \text{£}175$

2a)  $W = kp$       b)  $k = 60 \rightarrow W = 540\text{g}$

3a)  $V = kt$       b)  $k = 4 \rightarrow V = 100\text{l}$

4a)  $H = kt$       b)  $k = 120 \rightarrow H = 1800\text{m}$