# Direct and Inverse Proportion Revision

**(a)**

$y$ is directly proportional to $x$. When $x = 8, y = 40$. Find a formula for $y$ in terms of $x$.

$$y = 5x$$

**(b)**

$F$ is inversely proportional to $t$. When $F = 2.5, t = 4$. Find a formula for $F$ in terms of $t$.

$$F = \frac{10}{t}$$

**(c)**

$p$ is directly proportional to the square of $q$. When $q = 3$, $p = 90$. Find a formula linking $p$ and $q$.

$$p = 10q^2$$

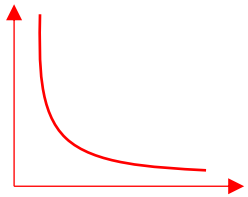
**(d)**

$y$ is directly proportional to $x^3$. When $x = 5, y = 2500$. Find a formula for $y$ in terms of $x$.

$$y = 20x^3$$

**(e)**

Sketch the graph showing $y$ is inversely proportional to $x$.



**(f)**

$y$ is directly proportional to $\sqrt{x}$. When $x = 4, y = 0.5$. Find the value of $y$ when $x = 64$.

$$y = 0.25\sqrt{x}$$
$$y = 2$$

**(g)**

$d$ is inversely proportional to $w^2$. When $w = 0.5, d = 12$. Find a formula for $d$ in terms of $w$.

$$d = \frac{3}{w^2}$$

**(h)**

$T$ is inversely proportional to $\sqrt{L}$. When $L = 16, T = 25$. Find the value of $L$ when $T = 10$.

$$T = \frac{k}{\sqrt{L}}$$
$$L = 100$$

**(i)**

The distance $d$ travelled by a ball is proportional to the square of the time taken, $t$. After 4 seconds the ball has travelled 40 m.

(i) Find a formula linking $d$ and t.

(ii) Find the distance travelled after 7 seconds.

$$d = 2.5t^2$$
$$d = 122.5\ m$$

**(j)**

| $x$ | 1 | 2 | 5 | 10 | 20 |
|---|---|---|---|---|---|
| $y$ | 100 | 25 | 4 | 1 | 0.25 |

(i) Find a formula for $y$ in terms of $x$.

(ii) Complete the table.

$$y = \frac{100}{x^2}$$