

## General Proportion

1. The variable  $v$  varies with the square of  $t$ . When  $t = 2$ ,  $v = 20$ .

(a) Find a formula for  $v$  in terms of  $t$ .

$$v = 5t^2$$

(b) Find  $v$  when  $t = \frac{1}{2}$ .

$$\frac{5}{4}$$

(c) Find  $t$  when  $v = 500$ .

$$10$$

2. The variable  $E$  varies inversely with the square root of  $l$ . When  $l = 9$ ,  $E = 4$ .

(a) Find a formula for  $E$  in terms of  $l$ .

$$E = \frac{12}{\sqrt{l}}$$

(b) Find  $E$  when  $l = \frac{4}{9}$ .

$$18$$

(c) Find  $l$  when  $E = 5$ .

$$\frac{144}{25}$$

3. The variable  $P$  varies with the cube root of  $f$ . When  $f = 27$ ,  $P = 7$ .

(a) Find a formula for  $P$  in terms of  $f$ .

$$P = \frac{7}{3} \sqrt[3]{f}$$

(b) Find  $P$  when  $f = \frac{8}{27}$ .

$$\frac{14}{9}$$

(c) Find  $f$  when  $P = 14$ .

$$216$$

4. The variable  $F$  varies directly  $m$ . When  $m = 5$ ,  $F = 9$ .

(a) Find a formula for  $F$  in terms of  $m$ .

$$F = \frac{9}{5}m$$

(b) Find  $F$  when  $m = 6$ .

$$\frac{54}{5}$$

(c) Find  $m$  when  $F = 17$ .

$$\frac{85}{9}$$

5. The variable  $T$  varies inversely with the cube root of  $h$ . When  $h = 125$ ,  $T = 100$ .

(a) Find a formula for  $T$  in terms of  $h$ .

$$T = \frac{500}{\sqrt[3]{h}}$$

(b) Find a formula for  $h$  in terms of  $T$ .

$$h = \frac{125\,000\,000}{T^3}$$

(c) Find  $T$  when  $h = 8$ .

$$250$$

(d) Find  $h$  when  $T = 5$ .

$$1\,000\,000$$

6. The variable  $\Phi$  varies with the cube of  $\lambda$ . Copy and complete the following table (hint: you may need to find the relationship first).

$\lambda$	2	3	10
$\Phi$	56		875

$$5, 189, 7000$$

7. The variable  $\Psi$  varies inversely with the square root of  $\tau$ . Copy and complete the following table (hint: you may need to find the relationship first).

$\tau$	16	25	
$\Psi$	50		$\frac{100}{3}$ 20

$$36, 100, 40$$