



- 1)  $M$  is directly proportional to  $L^3$ .

When  $L = 2$ ,  $M = 160$

Find the value of  $M$  when  $L = 3$



- 2)  $y$  is directly proportional to  $x$ .

When  $x = 500$ ,  $y = 10$

- Find a formula for  $y$  in terms of  $x$ .
- Calculate the value of  $y$  when  $x = 350$



- 3)  $D$  is proportional to  $S^2$ .

$D = 900$  when  $S = 20$

Calculate the value of  $D$  when  $S = 25$

- 4)  $P$  is inversely proportional to  $V$ .

When  $V = 8$ ,  $P = 6$

- Find a formula for  $P$  in terms of  $V$ .
- Calculate the value of  $P$  when  $V = 2$



- 5) The time,  $T$  seconds, for a hot sphere to cool is proportional to the square root of the surface area,  $A \text{ m}^2$ , of the sphere.

When  $A = 100$ ,  $T = 30$ .

Find the value of  $T$  when  $A = 60$ .

Give your answer correct to 3 significant figures.

- 1)  $x$  is directly proportional to  $y$ .  
When  $x = 21$ , then  $y = 3$ .
- Express  $x$  in terms of  $y$ .
  - Find the value of  $x$  when  $y$  is equal to 10.

- 2)  $a$  is inversely proportional to  $b$ .  
When  $a = 12$ , then  $b = 4$ .
- Find a formula for  $a$  in terms of  $b$ .
  - Find the value of  $a$  when  $b$  is equal to 8.
  - Find the value of  $b$  when  $a$  is equal to 4.



- 3) The variables  $u$  and  $v$  are in inverse proportion to one another.  
When  $u = 3$ , then  $v = 8$ .  
Find the value of  $u$  when  $v = 12$ .



- 4)  $p$  is directly proportional to the square of  $q$ .  
 $p = 75$  when  $q = 5$
- Express  $p$  in terms of  $q$ .
  - Work out the value of  $p$  when  $q = 7$ .
  - Work out the positive value of  $q$  when  $p = 27$ .



- 5)  $y$  is directly proportional to  $x^2$ .  
When  $x = 3$ , then  $y = 36$ .
- Express  $y$  in terms of  $x$ .

$z$  is inversely proportional to  $x$ .

When  $x = 4$ ,  $z = 2$ .

- Show that  $z = c y^n$ , where  $c$  and  $n$  are numbers and  $c > 0$ .  
You must find the values of  $c$  and  $n$ .