**1** $y$ is directly proportional to the square of $x$.

When $x = 3$, $y = 36$

Find the value of $y$ when $x = 5$

.....................................................

**(Total for Question 1 is 4 marks)**

**2**   $p$ is inversely proportional to $t$.

When $t = 4$, $p = 12$

Find the value of $p$ when $t = 6$

.......................................

**(Total for Question 2 is 3 marks)**

**3** $T$ is directly proportional to the cube of $r$

$T = 21.76$ when $r = 4$

(a) Find a formula for $T$ in terms of $r$

**(3)**

(b) Work out the value of $T$ when $r = 6$

**(1)**

**(Total for Question 3 is 4 marks)**

**4** $F$ is inversely proportional to the square of $v$.

Given that $F = 6.5$ when $v = 4$

find a formula for $F$ in terms of $v$.

.....................................................

**(Total for Question 4 is 3 marks)**

**5** $A$ is inversely proportional to $C^2$

$A = 40$ when $C = 1.5$

Calculate the value of $C$ when $A = 1000$

$C = $ ................................................

**(Total for Question 5 is 3 marks)**

**6** The following table gives values of $x$ and $y$ where $y$ is inversely proportional to the square of $x$.

| $x$ | 1.5 | 2 | 3 | 4 |
|-----|-----|---|---|------|
| $y$ | 16 | 9 | 4 | 2.25 |

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

......................................................

**(3)**

Given that $x > 0$

(b) find the value of $x$ when $y = 144$

......................................................

**(2)**

**(Total for Question 6 is 5 marks)**

**7** $T$ is inversely proportional to $m^2$

$T = 30$ when $m = 0.5$

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

.......................................................

**(3)**

(b) Work out the value of $T$ when $m = 0.1$

.......................................................

**(1)**

**(Total for Question 7 is 4 marks)**