

Number - Proportion Inverse

q is inversely proportional to the square of t .

When $t = 4$, $q = 8.5$

(a) Find a formula for q in terms of t .

(3)

(b) Calculate the value of q when $t = 5$

(1)

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q is inversely proportional to the square of t .

When $t = 4$, $q = 8.5$

(a) Find a formula for q in terms of t .

$$q = \frac{k}{t^2} \quad \text{for some constant } k$$

Substitute $t = 4$, $q = 8.5$

$$8.5 = \frac{k}{4^2}$$

$$8.5 = \frac{k}{16}$$

$$8.5 \times 16 = k$$

$$136 = k$$

$$\underline{q = \frac{136}{t^2}} \quad (3)$$

(b) Calculate the value of q when $t = 5$

$$\text{When } t = 5, \quad q = \frac{136}{5^2}$$

$$q = \frac{136}{25}$$

$$\underline{q = 5.44}$$

(1)