Inverse Proportion

How to . . .

h is inversely proportional to the square of *r*.

this means r^2

When $r = 5$, $h = 3.4$

Find the value of *h* when $r = 8$

Be sure to read the question. . . .

$h \propto \frac{1}{r^2}$

$h = \frac{k}{r^2}$

when $r = 5$ $h = 3.4$

$3.4 = \frac{k}{5^2}$ so $k = 3.4 \times 25 = 85$

formula $\Rightarrow$ $h = \frac{85}{r^2}$ **(3)**

so when $r = 8$ $h = \frac{85}{8^2} = 1.328125$

(to 2 decimal places) $h = 1.33$

Now have a go yourself . . .

Q1. The number of hours (*h*) needed to dig a hole is inversely proportional to the number of men (*x*). If it takes 5 men 8 hours to dig the hole, how long will it take 6 men to dig the hole? Solve this question algebraically.

Q2. The force (*F*) of attraction between two magnets is inversely proportional the square of the distance between them (*d*). When $d = 1.5$ cm $F = 32$ Newtons

a) Find a formula for *F* in terms of *d*.

b) Work out the distance when $F = 1.125$ Newtons

Exam Questions

Q1. 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

b) Calculate the value of q when t = 5

(4)

Q2. The resistance R ohms, of a particular cable is inversely proportional to the square of its radius r mm. Complete the table, giving your answers to 2 decimals places.

Radius r mm	Resistance R ohms
10	500
15	
17.5	
	250

(4)

Ready to be marked ?

Checklist

- ☐ Answers checked
- ☐ Working shown

Keywords

Things to remember …

What went well …

Teacher comment ..