

DIRECT AND INVERSE PROPORTION – PRACTICE QUESTIONS



1.

B is directly proportional to A.

When $A = 6$, $B = 72$.

(a) Find an equation for B in terms of A.

(b) Find the value of B when $A = 4.5$.

2.

D is directly proportional to C.

When $C = 5$, $D = 90$.

(a) Find an equation for D in terms of C.

(b) Find the value of D when $C = 7$.

(c) Find the value of C when $D = 126$.

3.

F is directly proportional to E^2 .

When $E = 3$, $F = 108$.

(a) Find an equation for F in terms of E.

(b) Find the value of F when $E = 2$.

(c) Find the value of E when $F = 1200$.

4.

G is directly proportional to \sqrt{H} .

When $H = 400$, $G = 60$.

(a) Find an equation for G in terms of H.

(b) Find the value of G when $H = 64$.

(c) Find the value of H when $G = 75$.

5.

Q is inversely proportional to P.

When $P = 0.5$, $Q = 16$.

(a) Find an equation for Q in terms of P.

(b) Find the value of Q when $P = 4$.

(c) Find the value of P when $Q = 1.6$.

6.

M is inversely proportional to N.

When $N = 6$, $M = 11$.

(a) Find an equation for M in terms of N.

(b) Find the value of N when $M = 132$.

(c) Find the value of M when $N = 22$.

7.

O is inversely proportional to P^3 .

When $P = 3$, $O = 2$.

(a) Find an equation for O in terms of P.

(b) Find the value of O when $P = 2$.

(c) Find the value of P when $O = 432$.

8.

T is inversely proportional to \sqrt{U} .

When $U = 16$, $T = 20$.

(a) Find an equation for T in terms of U.

(b) Find the value of U when $T = 160$.

(c) Find the value of T when $U = 64$.

9.

W is directly proportional to V^2 .

When $V = 5$, $W = 400$.

(a) Find an equation for W in terms of V.

(b) Find the value of W when $V = 1.5$.

(c) Find the value of V when $W = 6$. Give your answer to 1 decimal place.

10.

Y is inversely proportional to $\sqrt[3]{X}$.

When $X = 125$, $Y = 22$.

(a) Find an equation for Y in terms of X.

(b) Find the value of Y when $X = 1,000$.

(c) Find the value of X when $Y = 13$. Give your answer to 3 significant figures.

11.

$$e \propto r^2.$$

Complete the table.

e	750		30
r	10	4	

12.

$$L \propto \frac{1}{M}.$$

Complete the table.

L	0.5		0.15
M		0.25	20

13.

$$P \propto \frac{1}{t^2}.$$

Complete the table.

P		0.8	20
t	4		0.1

14.

The weight (in grams) of a piece of wire is directly proportional to its length (in centimetres).

A piece of wire weighs 100 grams and is 25 centimetres long.

Find the weight of a piece of wire which is 60 centimetres long.

15.

The force F (in Newtons) between two magnets is inversely proportional to the distance D (in metres) between them.

When the magnets are 0.8 m apart, the force between them is 150 Newtons.

Find the distance between the two magnets when the force between them is 220 Newtons. Give your answer to the nearest centimetre.

16.
The speed that a long distance runner runs at is inversely proportional to the time they have been running for.
After running for 2 hours, the runner is running at 3 metres per second.

Work out the speed at which the runner is running after 150 minutes.

17.
The distance, D (in kilometres), travelled by a space shuttle is directly proportional to the square of the amount of fuel carried, F (in gallons).
On Mission 1, the shuttle carried 500 gallons of fuel and travelled 6.5×10^5 kilometres.
On Mission 2, the shuttle travelled 8.8×10^6 kilometres.

Find the number of gallons of fuel carried by the shuttle on Mission 2, to the nearest gallon.