EXAM PAPERS PRACTICE

Direct & Inverse Proportion

Question Paper 2

Question 1

y varies inversely as the square of *x*.
y = 1.5 when *x* = 8.

Find *y* when *x* = 5.

[3]

Question 2

The braking distance, *d*, of a car is directly proportional to the square of its speed, *v*.
When *d* = 5, *v* = 10.
Find *d* when *v* = 70.

[3]

Question 3

A spray can is used to paint a wall.
The thickness of the paint on the wall is t. The distance of the spray can from the wall is d.
t is inversely proportional to the square of d.

$t = 0.2$ when $d = 8$.
Find t when $d = 10$.   [3]

Question 4

The quantity p varies inversely as the square of $(q + 2)$.

$p = 5$ when $q = 3$.

Find p when $q = 8$.   [3]

M is proportional to the cube of r.
When $r = 3$, $M = 21.6$.
When $r = 5$, find the value of M. [3]

Question 6

The quantity y varies as the cube of $(x + 2)$.
$y = 32$ when $x = 0$. [3]
Find y when $x = 1$.

The force of attraction (F) between two objects is inversely proportional to the square of the distance (d) between them.
When $d = 4$, $F = 30$.
Calculate F when $d = 8$. [3]

Question 8

The air resistance (R) to a car is proportional to the square of its speed (v).
When $R = 1800$, $v = 30$.
Calculate R when $v = 40$. [3]

When cars go round a bend there is a force, F, between the tyres and the ground.
F varies directly as the square of the speed, v.
When $v = 40$, $F = 18$.
Find F when $v = 32$. [3]

Question 10

y is directly proportional to the positive square root of x.
When $x = 9$, $y = 12$.

Find y when $x = \dfrac{1}{4}$.

[3]

Question 11

V is directly proportional to the cube of $(r + 1)$.
When $r = 1$, $V = 24$.

Work out the value of V when $r = 2$.

[3]

Question 12

y is directly proportional to the square of (*x* − 1).
y = 63 when *x* = 4.

Find the value of *y* when *x* = 6.

[3]

Question 13

y is inversely proportional to $(x + 2)^2$.
When *x* = 1, *y* = 2.

Find *y* in terms of *x*.

[2]

Question 14

p is inversely proportional to the square of $(q + 4)$.
$p = 2$ when $q = 2$.

[3]

Find the value of p when $q = -2$.

Question 15

The number of hot drinks sold in a café decreases as the weather becomes warmer.

What type of correlation does this statement show?

[1]

Question 16

x varies directly as the cube root of *y*.
x = 6 when *y* = 8.

Find the value of *x* when *y* = 64.

[3]

Question 17

y varies directly with $\sqrt{x + 5}$.

y = 4 when *x* = –1.

Find *y* when *x* = 11.

[3]

Question 18

The cost of a circular patio, $\$ C$, varies as the square of the radius, r metres.

$C = 202.80$ when $r = 2.6$.

Calculate the cost of a circular patio with $r = 1.8$.   [3]

Question 19

y varies inversely as $(x + 5)$.

$y = 6$ when $x = 3$.

Find y when $x = 7$.   [3]

Question 20

w varies inversely as the square root of x.
When $x = 4$, $w = 4$.

Find w when $x = 25$.   [3]

Question 21

y varies as the cube root of $(x + 3)$.
When $x = 5$, $y = 1$.

Find the value of *y* when $x = 340$. [3]

Question 22

The speed, *v*, of a wave is inversely proportional to the square root of the depth, *d*, of the water.

$v = 30$ when $d = 400$.

[3]
Find *v* when $d = 25$.

Question 23

m varies directly as the cube of x.
$m = 200$ when $x = 2$.

Find m when $x = 0.4$. [3]

Question 24

y is inversely proportional to x^3.
$y = 5$ when $x = 2$.

Find y when $x = 4$. [3]

Question 25

The mass, m, of a sphere varies directly with the **cube** of its radius, r.
$m = 160$ when $r = 2$.

Find m when $r = 5$.   [3]

Question 26

The electrical resistance, R, of a length of cylindrical wire varies inversely as the square of the diameter, d, of the wire.
$R = 10$ when $d = 2$.

Find R when $d = 4$.

[3]

Question 27

The mass, m, of an object varies directly as the **cube** of its length, l.

$m = 250$ when $l = 5$.

Find m when $l = 7$.

[3]

Question 28

y varies inversely as the square root of x.
When $x = 9$, $y = 6$.

Find y when $x = 36$.

[3]

Question 29

y is **inversely** proportional to x^2.
When $x = 4$, $y = 3$.

[3]

Find y when $x = 5$.

Question 30

y varies directly as the square of $(x - 3)$.
$y = 16$ when $x = 1$.

[3]

Find y when $x = 10$.