

Lesson 2

Proportionality : GCSE

2.1 Direct and Inverse Proportion Exercise

Question 1

$$y = 10\sqrt{x}$$

- (i) Tick which applies ☐ y is directly proportional to the square root of x
 ☐ y is inversely proportional to the square root of x
- (ii) What is the constant of the proportionality ?
- (iii) When $x = 81$, what is y ?
- (iv) When $x = 121$, what is y ?
- (v) If the value of x was increased, would the value of y increase or decrease ?

Question 2

$$y = \frac{16}{\sqrt{x}}$$

- (i) Tick which applies ☐ y is directly proportional to the square root of x
 ☐ y is inversely proportional to the square root of x
- (ii) What is the constant of the proportionality ?
- (iii) When $x = 16$, what is y ?
- (iv) When $x = 64$, what is y ?
- (v) If the value of x was increased, would the value of y increase or decrease ?

Question 3

$$y = \frac{2}{3}x^2$$

- (i) Tick which applies
- ☐ y is directly proportional to the square of x
☐ y is inversely proportional to the square of x
- (ii) What is the constant of the proportionality ?
- (iii) When $x = 3$, what is y ?
- (iv) When $x = 6$, what is y ?
- (v) If the value of x was increased, would the value of y increase or decrease ?

Question 4

$$y = 12 \times \frac{1}{x^2}$$

- (i) Tick which applies
- ☐ y is directly proportional to the square of x
☐ y is inversely proportional to the square of x
- (ii) What is the constant of the proportionality ?
- (iii) When $x = 1$, what is y ?
- (iv) When $x = 2$, what is y ?
- (iv) If the value of x was increased, would the value of y increase or decrease ?

Question 5

$$y = 9x$$

- (i) Tick which applies

☐ y is directly proportional to x
☐ y is inversely proportional to x
- (ii) What is the constant of the proportionality ?
- (iii) When $x = 5$, what is y ?
- (iv) When $x = 14$, what is y ?
- (v) When $y = 45$, what is x ?

Question 6

$$y = \frac{24}{x}$$

- (i) Tick which applies ☐ y is directly proportional to x
 ☐ y is inversely proportional to x
- (ii) What is the constant of the proportionality ?
- (iii) When $x = 8$, what is y ?
- (iv) When $x = 48$, what is y ?
- (v) When $y = 6$, what is x ?

Question 7

Write down the equation described by,

y is directly proportional to the square root of x

The constant of the proportionality is 7

Question 8

Write down the equation described by,

y is inversely proportional to the square of x

The constant of the proportionality is 18

Question 9

$$y = \frac{4m^2x}{\sqrt{z}}$$

- (i) Tick which applies
- ☐ y is directly proportional to square of m
 - ☐ y is inversely proportional to square of m
 - ☐ y is directly proportional to x
 - ☐ y is inversely proportional to x
 - ☐ y is directly proportional to the square root of z
 - ☐ y is inversely proportional to the square root of z
- (ii) What is the constant of the proportionality ?
- (iii) When $m = 5$, $x = 7$, and $z = 100$ what is y ?

Question 10

$$y = \frac{10 \sqrt{c} w}{z^2}$$

- (i) Tick which applies
- ☐ y is directly proportional to square root of c
 - ☐ y is inversely proportional to square root of c
 - ☐ y is directly proportional to w
 - ☐ y is inversely proportional to w
 - ☐ y is directly proportional to the square of z
 - ☐ y is inversely proportional to the square of z
- (ii) What is the constant of the proportionality ?
- (iii) When $c = 9$, $w = 100$, and $z = 5$ what is y ?

Question 11

Write down the one equation described by,

y is directly proportional to the square of v

y is inversely proportional to n

y is directly proportional to the square root of a

The constant of the proportionality is 7

Question 12

Write down the equation described by,

y is directly proportional to the cube of x

The constant of the proportionality is 5

When x is 3, what is y ?

Question 13

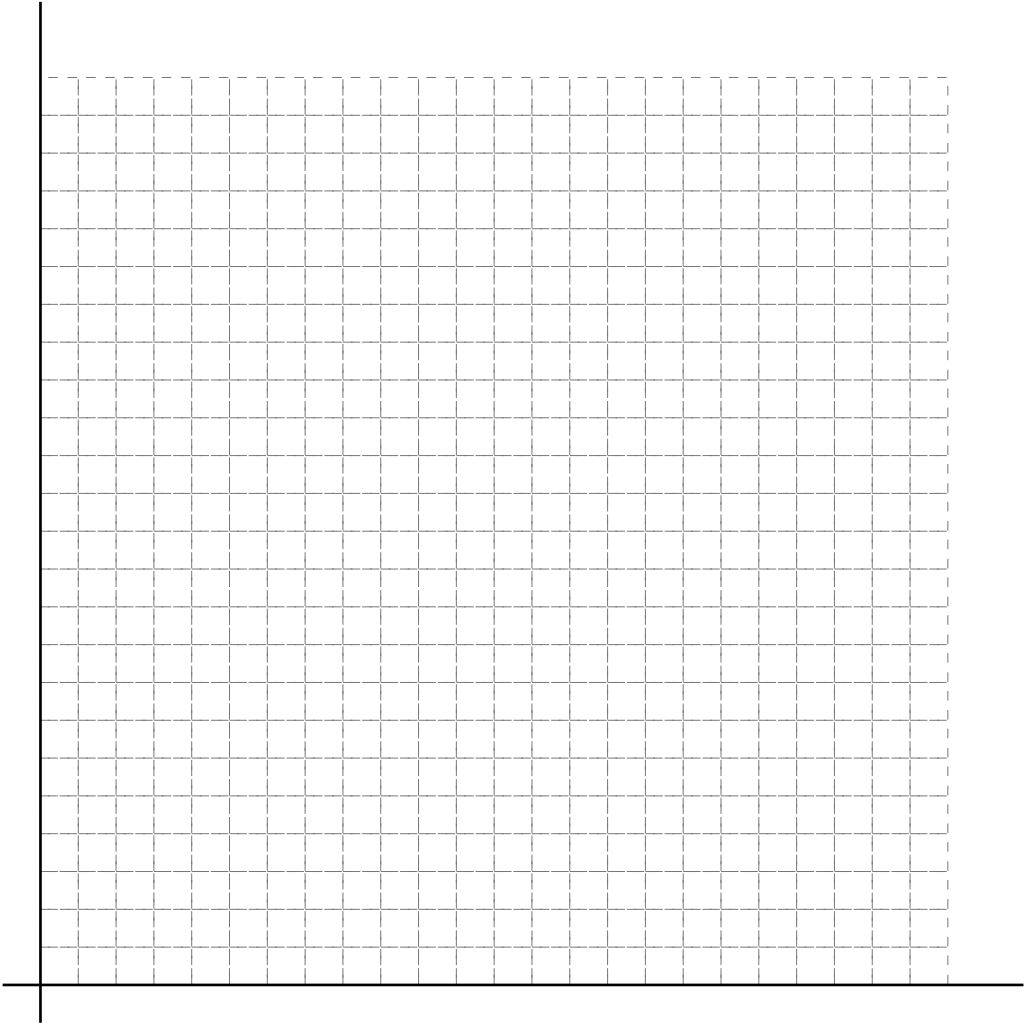
This question is about plotting a graph of inverse proportion for the equation

$$y = \frac{12}{x}$$

Complete the following table,

x	0.5	1	2	3	4	6	8	12	24
y						2			

Plot the graph of the equation.



Inverse proportion is sometimes described as "more is less".
Explain this.