

GCSE QUESTIONS

Q1. NON-CALCULATOR

y is directly proportional to $\sqrt[3]{x}$

$$y = 1\frac{1}{6} \text{ when } x = 8$$

Find the value of y when $x = 64$

.....
(Total for question = 3 marks)

Q2. NON-CALCULATOR

y is inversely proportional to x
When $x = 1.5$, $y = 36$

Find the value of y when $x = 6$

.....
(Total for question = 3 marks)

Q3. NON-CALCULATOR

The table shows a set of values for x and y .

x	1	2	3	4
y	9	$2\frac{1}{4}$	1	$\frac{9}{16}$

y is inversely proportional to the square of x .

(a) Find an equation for y in terms of x .

.....
(2)

(b) Find the positive value of x when $y = 16$

.....
(2)

(Total for question = 4 marks)

Q4. NON-CALCULATOR

P is inversely proportional to the square root of m .

$P = 10$ when $m = \frac{1}{4}$

Work out the value of m when $P = 2$

.....
(Total for question = 3 marks)

Q5. NON-CALCULATOR

h is inversely proportional to p

p is directly proportional to \sqrt{t}

Given that $h = 10$ and $t = 144$ when $p = 6$, find a formula for h in terms of t

.....
(Total for question = 4 marks)

Q6. NON-CALCULATOR

y is inversely proportional to d^2

When $d = 10$, $y = 4$

d is directly proportional to x^2

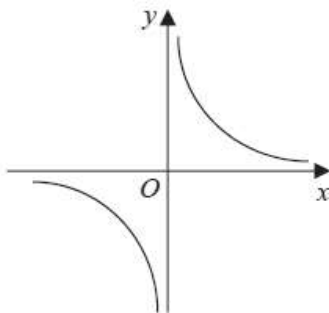
When $x = 2$, $d = 24$

Find a formula for y in terms of x . Give your answer in its simplest form.

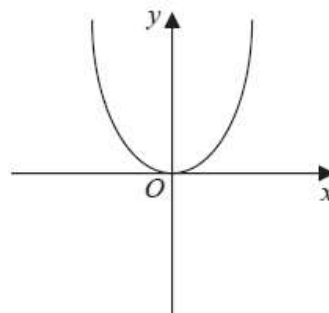
.....
(Total for question = 5 marks)

Q7. NON-CALCULATOR

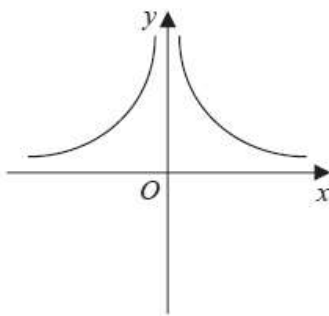
These graphs show four different proportionality relationships between y and x .



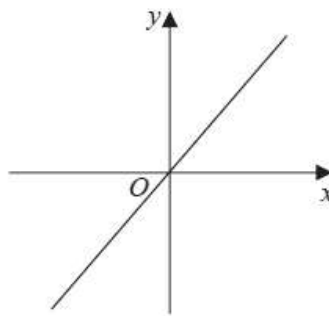
Graph A



Graph B



Graph C



Graph D

Match each graph with a statement in the table below.

Proportionality relationship	Graph letter
y is directly proportional to x	
y is inversely proportional to x	
y is proportional to the square of x	
y is inversely proportional to the square of x	

(Total for question is 2 marks)

Q8. CALCULATOR ALLOWED

The table shows pairs of values of x and y

x	5	6
y	400	576

(i) Tick the correct statement below.

$y \propto x$

$y \propto x^2$

$y \propto x^3$

(ii) Write a formula for y in terms of x

.....
(Total for question = 4 marks)

Q9. CALCULATOR ALLOWED

D is directly proportional to the cube of n .

Mary says that when n is doubled, the value of D is multiplied by 6

Mary is wrong. Explain why.

.....
.....
.....

(1)
(Total for question = 1 mark)

Q10. CALCULATOR ALLOWED

A pendulum of length L cm has time period T seconds. T is directly proportional to the square root of L .

The length of the pendulum is increased by 40%. Work out the percentage increase in the time period.

..... %
(Total for question is 3 marks)

Q11. CALCULATOR ALLOWED

d is inversely proportional to c

When $c = 280$, $d = 25$

Find the value of d when $c = 350$

$d = \dots\dots\dots$

(Total for question = 3 marks)

Q12. CALCULATOR ALLOWED

At a depth of x metres, the temperature of the water in an ocean is T °C.

At depths below 900 metres, T is inversely proportional to x .

T is given by

$$T = \frac{4500}{x}$$

- (a) Work out the difference in the temperature of the water at a depth of 1200 metres and the temperature of the water at a depth of 2500 metres.

$\dots\dots\dots$ °C

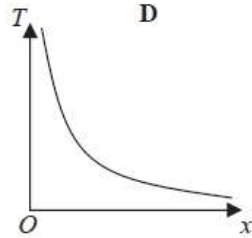
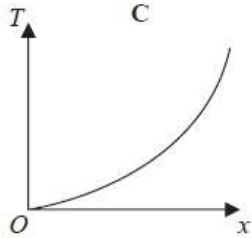
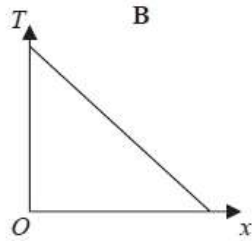
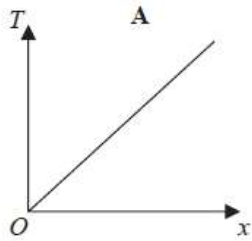
(3)

Below are four graphs. One of the graphs could show that T is inversely proportional to x .

- (b) Write down the letter of this graph.

$\dots\dots\dots$

(1)



(Total for question = 4 marks)

Q13. CALCULATOR ALLOWED

y is inversely proportional to the square of x .

$y = 8$ when $x = 2.5$

Find the negative value of x when $y = \frac{8}{9}$

.....
(Total for question = 3 marks)

Q14. CALCULATOR ALLOWED

T is inversely proportional to the cube of u . When $u = 5$, $T = 0.0096$

Find the value of u when $T = 0.15$

.....
(Total for question = 3 marks)

Q15. CALCULATOR ALLOWED

y is inversely proportional to x^3

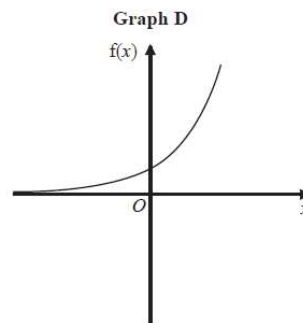
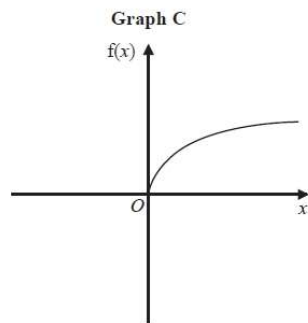
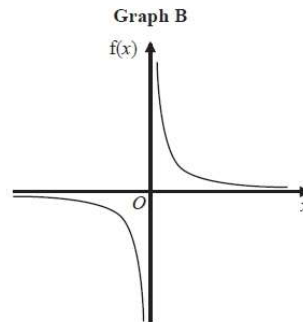
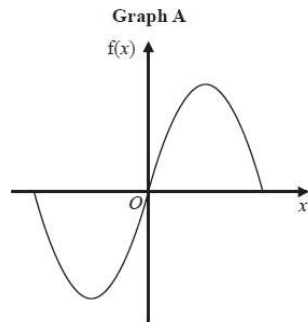
$y = 44$ when $x = a$

Show that $y = 5.5$ when $x = 2a$

(Total for question = 3 marks)

Q16. CALCULATOR ALLOWED

Below are four graphs.



The graphs represent four different types of function f .

Match each description of the function in the table to the letter of its graph.

Description of function	Graph
$f(x)$ is inversely proportional to x	
$f(x)$ is a trigonometrical function	
$f(x)$ is an exponential function	
$f(x)$ is directly proportional to \sqrt{x}	

(Total for question = 2 marks)