N205 Direct and inverse proportion 1

Q1.

x is directly proportional to y. x is given by x=1.5y

(a) Find x when y=9

(1)

(b) Find y when x=27

(1)

(Total for question = 2 marks)

Q2.

a is inversely proportional to b. a is given by a = $\frac{24}{b}$

(a) Find a when b=2.5

(1)

(b) Find b when a=3

(1)

(Total for question = 2 marks)

Q3.

D is indirectly proportional to E. D is given by D = $\frac{21}{E}$

(a) Find D when E = 105

(1)

(b) Find E when D = 1.5

(1)

(Total for question = 2 marks)

Q4.

At a depth of x metres, the temperature of the water in an ocean is T ºC.
At depths below 900 metres, T is inversely proportional to x.

T is given by

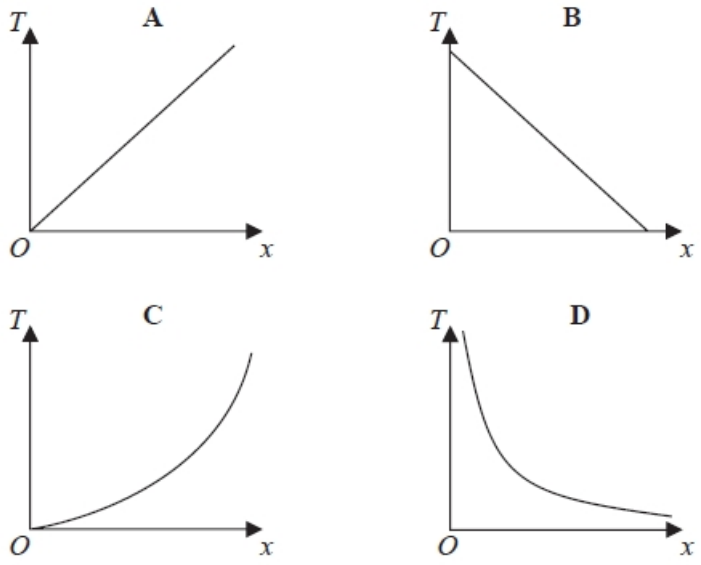
$$T = \frac{4500}{x}$$

(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.

..... ºC

(3)

Here are four graphs.



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

(b) Write down the letter of this graph.

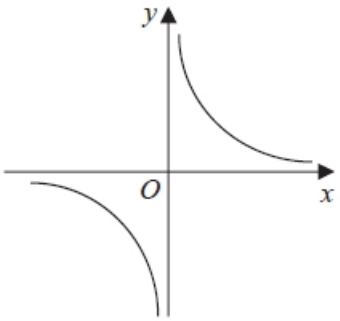
.....

(1)

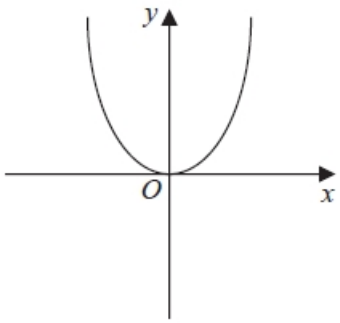
(Total for question = 4 marks)

Q5.

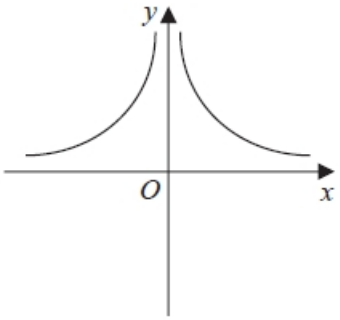
These graphs show four different proportionality relationships between y and x.



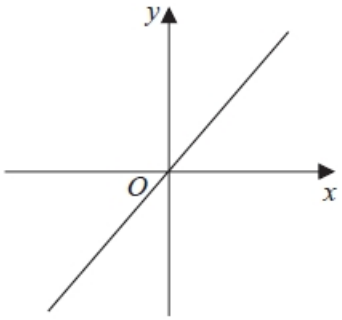
Graph A



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)

Q6.

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)

Q7.

It would take 120 minutes to fill a swimming pool using water from 5 taps.

(a) How many minutes will it take to fill the pool if only 3 of the taps are used?

..... minutes

(2)

(b) State one assumption you made in working out your answer to part (a).

.....

.....

(1)

(Total for question = 3 marks)

Q8.

Yesterday it took 5 cleaners $4\frac{1}{2}$ hours to clean all the rooms in a hotel.
There are only 3 cleaners to clean all the rooms in the hotel today.
Each cleaner is paid £8.20 for each hour or part of an hour they work.
How much will each cleaner be paid today?

£ .....

(Total for question = 3 marks)

Q9.

A company orders a number of bottles from a factory.

The 8 machines in the factory could make all the bottles in 5 days.
All the machines work at the same rate.

For 2 days, only 4 machines are used to make the bottles.
From the 3rd day, all 8 machines are used to make the bottles.

Work out the total number of days taken to make all the bottles.

..... days

(Total for question = 3 marks)

Q10.

A company has to make a large number of boxes.

The company has 6 machines.
All the machines work at the same rate.
When all the machines are working, they can make all the boxes in 9 days.

The table gives the number of machines working each day.

	day 1	day 2	day 3	all other days
Number of machines working	3	4	5	6

Work out the total number of days taken to make all the boxes.

.....

(Total for question = 3 marks)