Autumn 2017 Paper 1 Q16

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

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

Find the value of y when $x = 64$

.....

(Total for Question 1 is 3 marks)

Autumn 2017 Paper 2 Q9

2 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 2 is 3 marks)

Summer 2017 Paper 1 Q13

3 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 3 is 4 marks)

Summer 2018 Paper 1 Q14

4 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 4 is 5 marks)

Summer 2019 Paper 1 Q20

5 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 5 is 4 marks)

Summer 2019 Paper 3 Q9

6 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 6 is 3 marks)

Summer 2020 Paper 1 Q18

7 x is proportional to $\sqrt{y}$ where $y > 0$

y is increased by 44%

Work out the percentage increase in x.

.....%

(Total for Question 7 is 3 marks)

Summer 2021 Paper 3 Q4

8 A water tank is empty.
Anil needs to fill the tank with 2400 litres of water.

Company **A** supplies water at a rate of 8 litres in 1 minute 40 seconds.
Company **B** supplies water at a rate of 2.2 gallons per minute.

1 gallon = 4.54 litres

Company **A** would take more time to fill the tank than Company **B** would take to fill the tank.

How much more time?
Give your answer in minutes correct to the nearest minute.

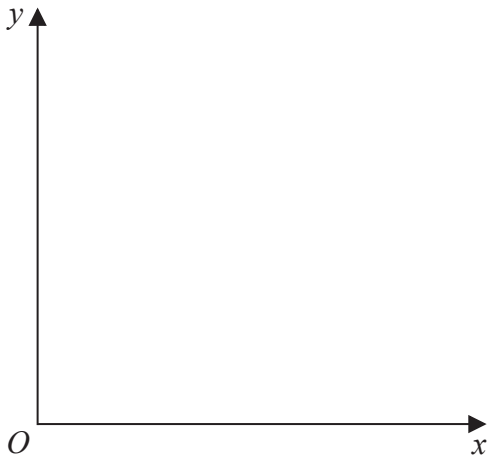
..... minutes

(Total for Question 8 is 4 marks)

Summer 2021 Paper 3 Q8

9 (a) Using the axes below, sketch a graph to represent the statement

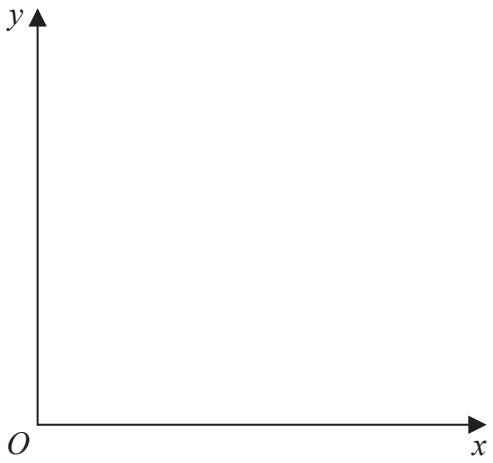
y is directly proportional to x



(1)

(b) Using the axes below, sketch a graph to represent the statement

y is inversely proportional to x



(1)

(Total for Question 9 is 2 marks)

Summer 2021 Paper 3 Q9

10 On Monday, 12 people took 5 hours to clean a number of cars.
On Tuesday, 15 people cleaned the same number of cars.

Assuming that all the people worked at the same rate,

(a) work out how many hours the 15 people took to clean the cars.

..... hours

(2)

The assumption is wrong.

(b) How might this affect the time taken for the 15 people to clean the cars?

.....

.....

.....

(1)

(Total for Question 10 is 3 marks)

Summer 2021 Paper 3 Q17

11 x is directly proportional to the square of y.
y is directly proportional to the cube of z.

$z = 2$ when $x = 32$

Find a formula for x in terms of z.

.....

(Total for Question 11 is 4 marks)

Autumn 2018 Paper 1 Q4

12 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 12 is 3 marks)

Autumn 2018 Paper 3 Q14

13 y is inversely proportional to x^3

$y = 44$ when $x = a$

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

(Total for Question 13 is 3 marks)

Autumn 2019 Paper 3 Q16

14 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 14 is 3 marks)

Autumn 2022 Paper 1 Q13

15 p is inversely proportional to t

Complete the table of values.

t	100	25		2
p	1		5	

(Total for Question 15 is 3 marks)

Summer 2022 Paper 1 Q17

16 y is directly proportional to the square root of t.
$y = 15$ when $t = 9$

t is inversely proportional to the cube of x.
$t = 8$ when $x = 2$

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

.....

(Total for Question 16 is 4 marks)

Summer 2022 Paper 2 Q11

17 Kieron has 13 workers he can use for a job.

He knows that 6 workers would take $14\frac{1}{2}$ days to complete this job.

Show that Kieron has enough workers to finish this job in less than 7 days.

(Total for Question 17 is 3 marks)