Write your name here

Surname	Other Names

Mathematics

November 2017 Paper 2 (Calculator Allowed)
Part 1 (First half of the paper)
Edexcel Higher Tier

Time: 45 minutes

Q	Topic	Max Mark	My Marks
1	Solving Equations	3	
2	Percentage Change, Profit	3	
3	Circumference of a Circle	3	
4	Writing Ratio, Probability	3	
5	Transformations	2	
6	Indices	4	
7	Pythagoras, Trigonometry (SOHACHTOA)	5	
8	Use of a Calculator	3	
9	Inverse Proportion	3	
10	Distance Time Graph, Compound Measures	3	
11	Area of a Sector, Pie Charts	3	
12	Angles in Polygons	3	
	Total	38	

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Solve $5x - 6 = 3(x - 1)$

$x =$ .....

(Total for Question 1 is 3 marks)

2 Emily buys a pack of 12 bottles of water.
The pack costs £5.64

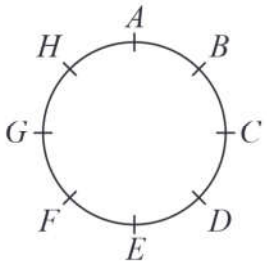
Emily sells all 12 bottles for 50p each.

Work out Emily's percentage profit.
Give your answer correct to 1 decimal place.

..... %

(Total for Question 2 is 3 marks)

3 Hasmeet walks once round a circle with diameter 80 metres.



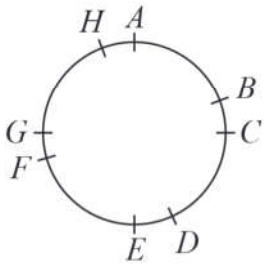
There are 8 points equally spaced on the circumference of the circle.

(a) Find the distance Hasmeet walks between one point and the next point.

.....m

(2)

Four of the points are moved, as shown in the diagram below.



Hasmeet walks once round the circle again.

(b) Has the mean distance that Hasmeet walks between one point and the next point changed? You must give a reason for your answer.

.....

.....

(1)

(Total for Question 3 is 3 marks)

4 There are only blue cubes, yellow cubes and green cubes in a bag.

There are

twice as many blue cubes as yellow cubes
and four times as many green cubes as blue cubes.

Hannah takes at random a cube from the bag.

Work out the probability that Hannah takes a yellow cube.

.....

(Total for Question 4 is 3 marks)

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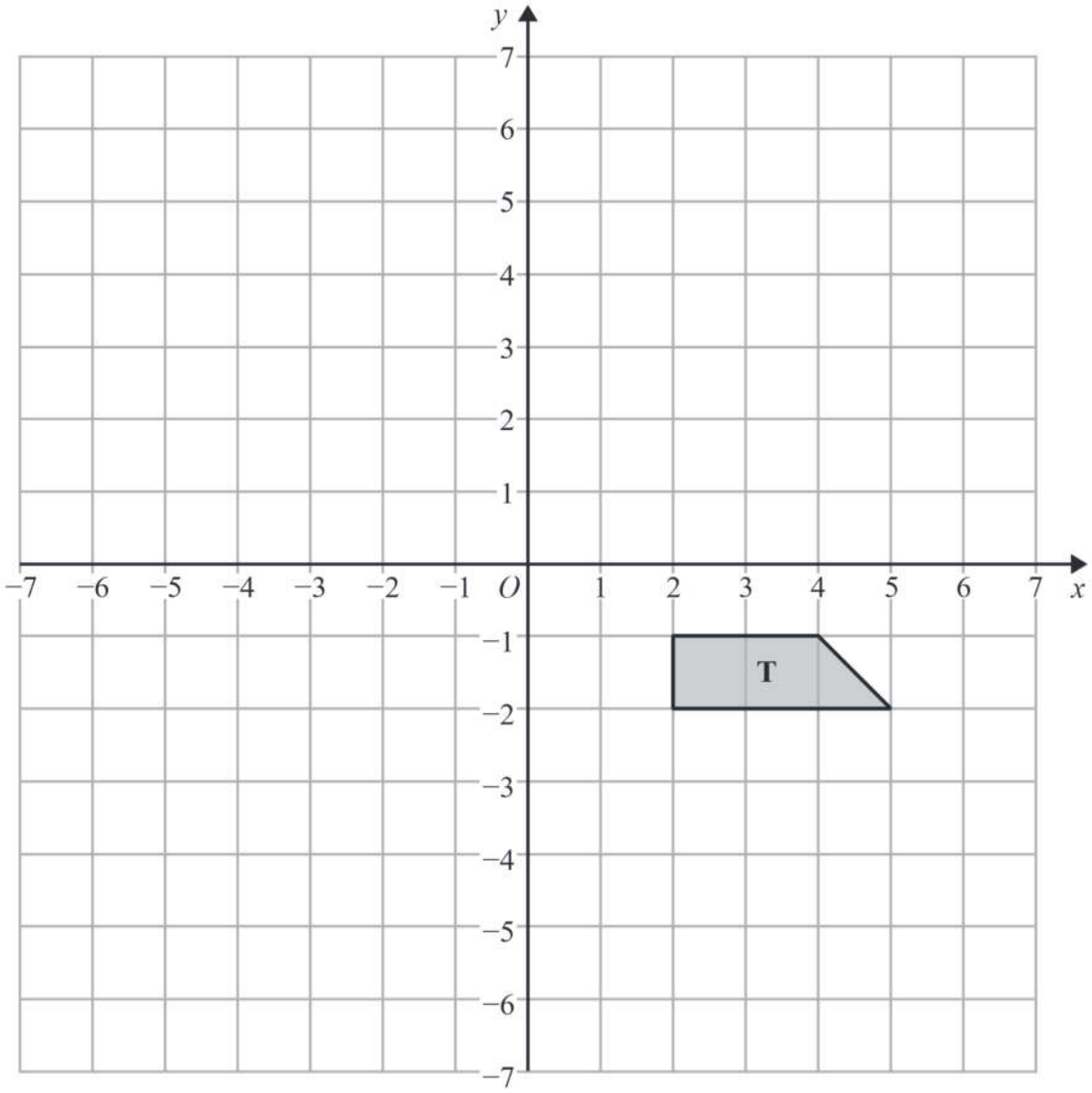
5



(a) Rotate trapezium **T** 180° about the origin.
Label the new trapezium **A**.

(1)

(b) Translate trapezium **T** by the vector $\begin{pmatrix} -1 \\ -3 \end{pmatrix}$
Label the new trapezium **B**.

(1)

(Total for Question 5 is 2 marks)

6 $p^3 \times p^x = p^9$

(a) Find the value of x.

$x =$ .....

(1)

$(7^2)^y = 7^{10}$

(b) Find the value of y.

$y =$ .....

(1)

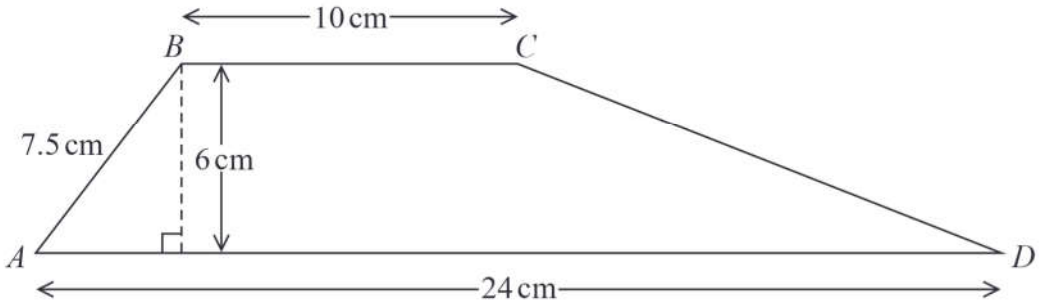
$100^a \times 1000^b$ can be written in the form 10^w

(c) Show that $w = 2a + 3b$

(2)

(Total for Question 6 is 4 marks)

7 *ABCD* is a trapezium.



Work out the size of angle *CDA*.
Give your answer correct to 1 decimal place.

.....°

(Total for Question 7 is 5 marks)

8 Use your calculator to work out $\sqrt{\dfrac{\sin 25° + \sin 40°}{\cos 25° - \cos 40°}}$

(a) Write down all the figures on your calculator display.

.....

(2)

(b) Write your answer to part (a) correct to 2 decimal places.

.....

(1)

(Total for Question 8 is 3 marks)

9 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.

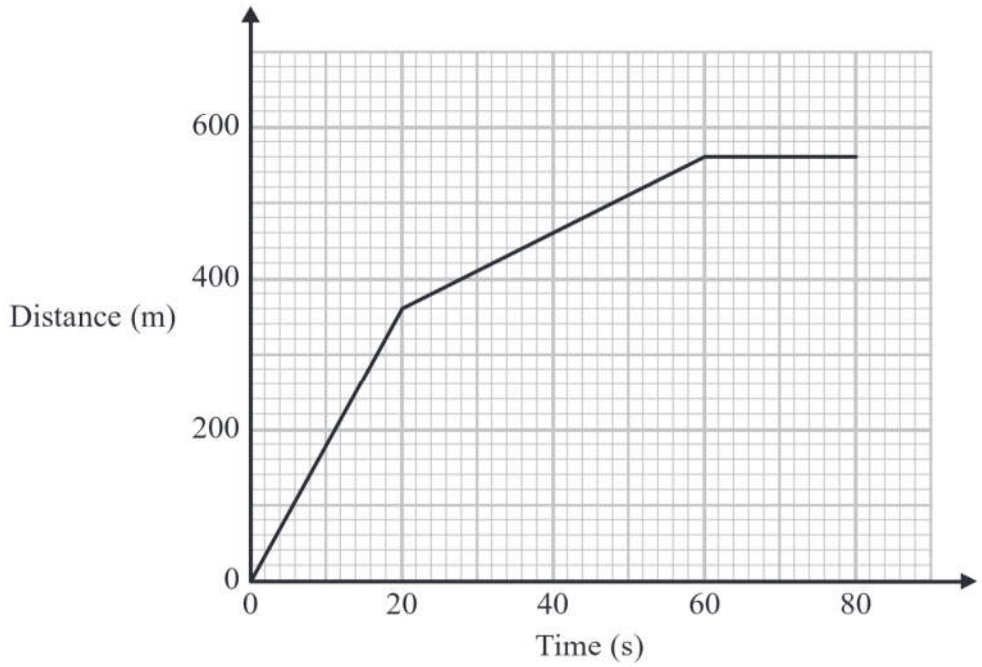
Each cleaner is paid £8.20 for each hour or part of an hour they work.

How much will each cleaner be paid today?

£ .....

(Total for Question 9 is 3 marks)

10 Here is part of a distance-time graph for a car's journey.



(a) Between which two times does the car travel at its greatest speed?
Give a reason for your answer.

.....

.....

(2)

(b) Work out this greatest speed.

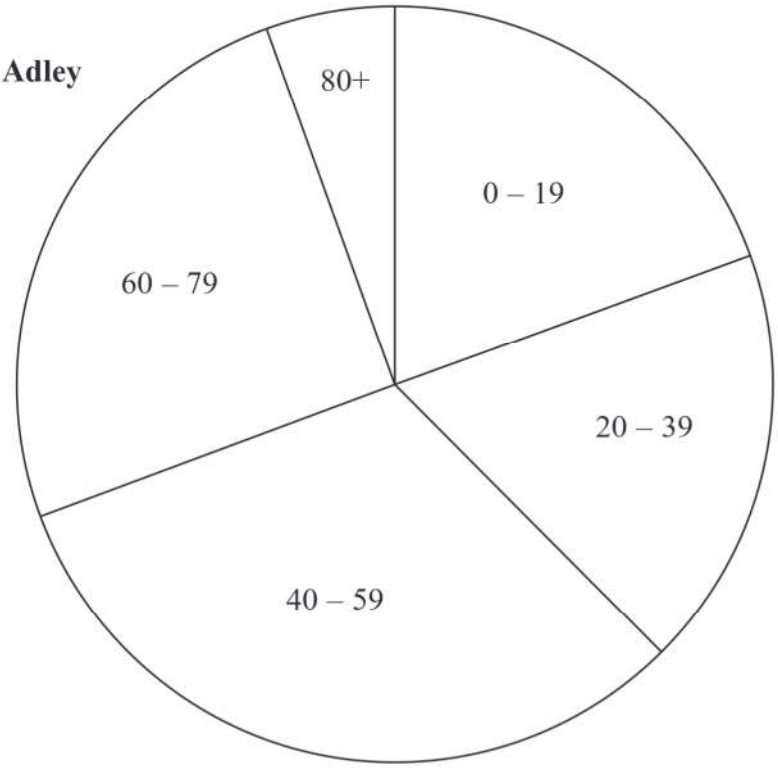
..... m/s

(1)

(Total for Question 10 is 3 marks)

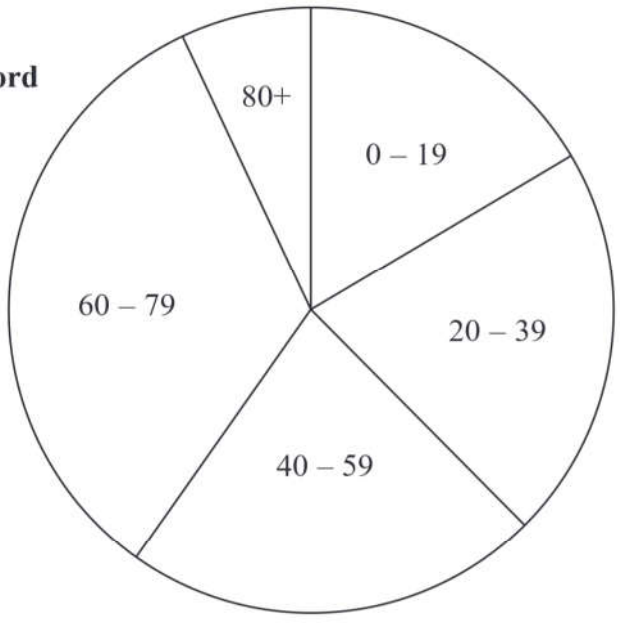
11 The pie charts give information about the ages, in years, of people living in two towns, Adley and Bridford.

Adley



Diagrams accurately drawn

Bridford



The ratio of the number of people living in Adley to the number of people living in Bridford is given by the ratio of the areas of the pie charts.

What proportion of the total number of people living in these two towns live in Adley **and** are aged 0 – 19?
Give your answer correct to 3 significant figures.

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(Total for Question 11 is 3 marks)

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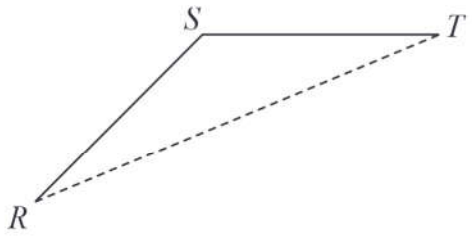
12



RS and *ST* are 2 sides of a regular 12-sided polygon.
RT is a diagonal of the polygon.

Work out the size of angle *STR*.
You must show your working.

.....°

(Total for Question 12 is 3 marks)