

Centre No					
Candidate No					

Paper reference							
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Surname	Initial(s)
Signature	

Paper References(s)

5504/04

Edexcel GCSE

Mathematics A – 1387

Paper 4 (Calculator)

Intermediate Tier

Tuesday 9 November 2004 – Morning
Time: 2 hours

Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator.
 Tracing paper may be used.

Items included with question papers

Nil

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initials and signature. Check that you have the correct question paper.

Answer **ALL** the questions in the spaces provided in this question paper.

You must NOT write on the formulae page or any blank pages. Anything you write on these pages will gain NO credit.

If you need more space to complete your answer to any question, use additional answer sheets.

Information for Candidates

The total mark for this paper is 100. This paper has 24 questions. There are 3 blank pages.

The marks for individual questions and parts of questions are shown in round brackets: e.g. (2).

Calculators may be used.

If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Advice to Candidates

Show all stages in any calculations.

Work steadily through the paper. Do not spend too long on one question.

If you cannot answer a question, leave it and attempt the next one.

Return at the end to those you have left out.

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N17482A

Turn over

Answer ALL TWENTY FOUR questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1. Fred went on holiday to France.
He changed £475 to Euros.
£1 = 1.57 Euros.

(a) Change £475 to Euros.

..... Euros
(2)

In France, Fred went to a festival.
There were 650 people at the festival.
16% of the people at the festival were British.

(b) Work out 16% of 650

.....
(2)
(Total 4 marks)

2. (a) Solve $x + 2x = 12$

$x = \dots\dots\dots$
(1)

(b) Solve $2y - 1 = 13$

$y = \dots\dots\dots$
(2)
(Total 3 marks)

3.

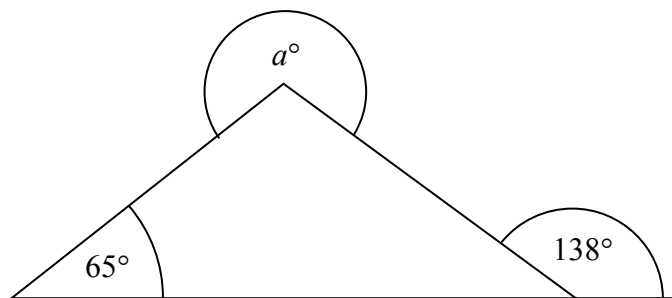


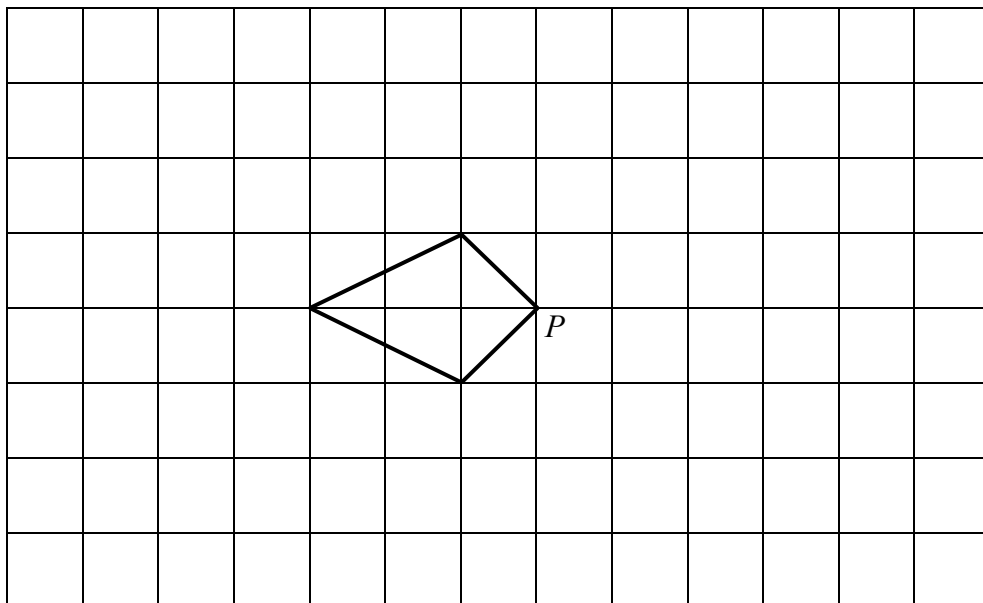
Diagram **NOT**
accurately drawn

Work out the value of a .

$a = \dots\dots\dots$
(Total 3 marks)

4. The diagram shows part of a shape.

The shape has rotational symmetry of order 4 about the point P .

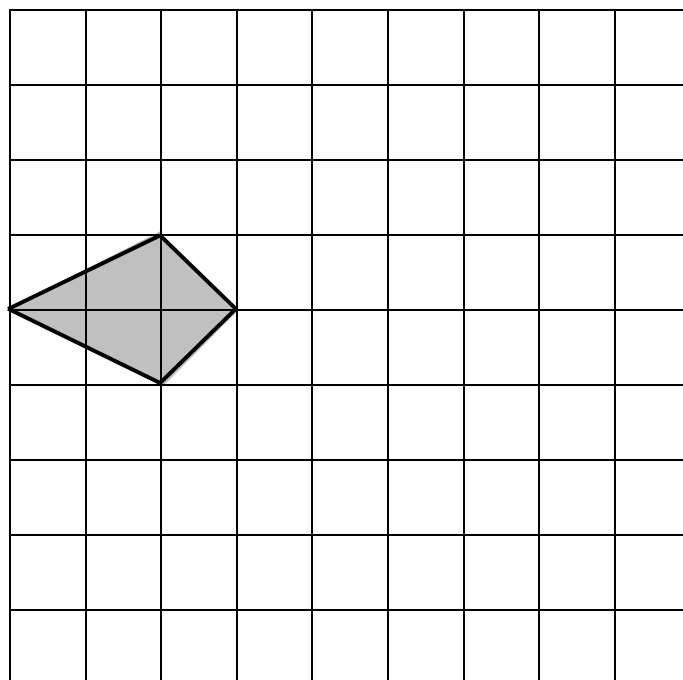


(a) On the grid above, complete the shape.

(3)

(b) On the grid below, show how the shaded shape will tessellate.

You should draw at least six shapes.



(2)
(Total 5 marks)

5. P , Q and R are three stations on a railway line.



$$PQ = 26 \text{ miles.}$$

$$QR = 4 \text{ miles.}$$

A passenger train leaves P at 12.00. It arrives at Q at 12.30.

Information about the journey from P to Q is shown on the travel graph opposite.

The passenger train stops at Q for 10 minutes.

It then returns to P at the same speed as on the journey from P to Q .

- (a) On the grid, complete the travel graph for this train.

(2)

A goods train leaves R at 12.00.

It arrives at P at 13.00.

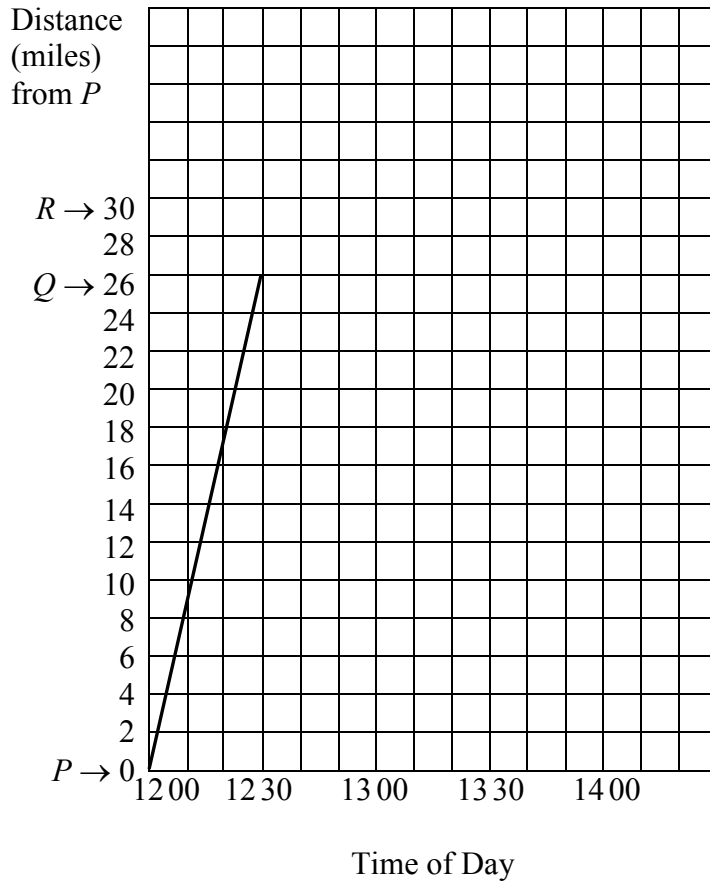
- (b) On the grid opposite, draw the travel graph for the goods train.

(1)

- (c) Write down the distance from P where the goods train passes the passenger train.

..... miles

(1)



(Total 4 marks)

6. The cost of 4 kg of apples is £3.36

The total cost of 3 kg of apples and 2.5 kg of pears is £4.12

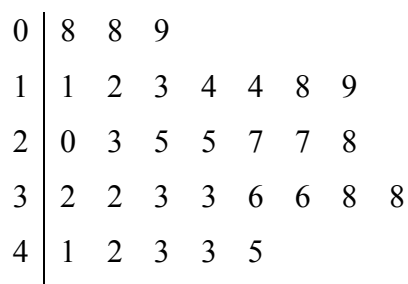
Work out the cost of 1 kg of pears.

Give your answer in pence.

..... p
(Total 3 marks)

7. Anil counted the number of letters in each of 30 sentences in a newspaper.

Anil showed his results in a stem and leaf diagram.



Key 4 | 1 stands for 41 letters

(a) Write down the number of sentences with 36 letters.

.....
(1)

(b) Work out the range.

.....
(1)

(c) Work out the median.

.....
(1)
(Total 3 marks)

8. Jo buys 8 cups and 8 mugs.

A cup costs £ x .

A mug costs £ $(x + 2)$

(a) Write down an expression, in terms of x , for the total cost, in pounds, of 8 cups and 8 mugs.

£.....
(2)

The total cost of 8 cups and 8 mugs is £72

(b) (i) Express this information as an equation in terms of x .

.....
(1)

(ii) Solve your equation to find the cost of a cup and the cost of a mug.

Cost of a cup £.....

Cost of a mug £.....

(4)

(Total 7 marks)

9. A map is drawn to a scale of 1:25 000

Two schools A and B are 12 centimetres apart on the map.

- (a) Work out the actual distance from A to B .
Give your answer in kilometres.

..... km
(3)

B is due East of A .

C is another school.

The bearing of C from A is 064° .

The bearing of C from B is 312° .

- (b) Complete the scale drawing below.

Mark, with a cross (\times), the position of the school C .



(2)
(Total 5 marks)

10. Mary's floor is a rectangle 8 m long and 5 m wide.

She wants to cover the floor completely with carpet tiles.

Each carpet tile is square with sides of length 50 cm.

Each carpet tile costs £4.19

Work out the cost of covering Mary's floor completely with carpet tiles.

£.....

(Total 3 marks)

11. The diameter of a circle is 12 centimetres.

- (a) Work out the circumference of the circle.
Give your answer, in centimetres, correct to 1 decimal place.

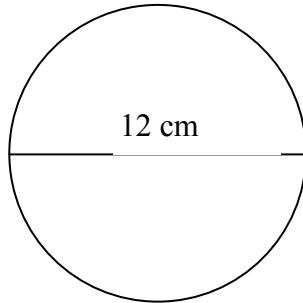


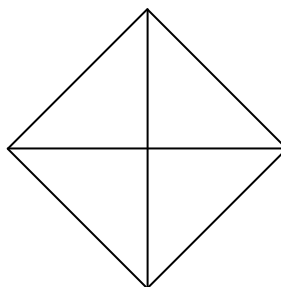
Diagram **NOT**
accurately drawn

..... cm
(2)

Diagram **NOT**
accurately drawn

The length of each diagonal of a square is 20 cm.

- (b) Work out the area of the square.



..... cm²
(2)
(Total 4 marks)

12.

	Number of girls	Number of boys
Year 10	108	132
Year 11	90	110

The table gives information about Year 10 and Year 11 at Mathstown School.

(a) Work out the percentage of students in Year 10 who are girls.

..... %
(2)

Mathstown School had an end of term party.

40% of the students in Year 10 and 70% of the students in Year 11 went to the party.

(b) Work out the percentage of all students in Years 10 and 11 who went to the party.

..... %
(3)
(Total 5 marks)

13. Pablo is an artist.

The scatter graph, opposite, gives information about the area and the cost of some of his pictures.

The table shows the area and the cost of another three of his pictures.

Area (cm ²)	2000	2900	3260
Cost (£)	1150	1250	1500

(a) On the scatter graph, plot the information from the table. (1)

(b) Describe the relationship between the area of a picture and its cost.
.....
..... (1)

(c) Draw a line of best fit on the scatter graph. (1)

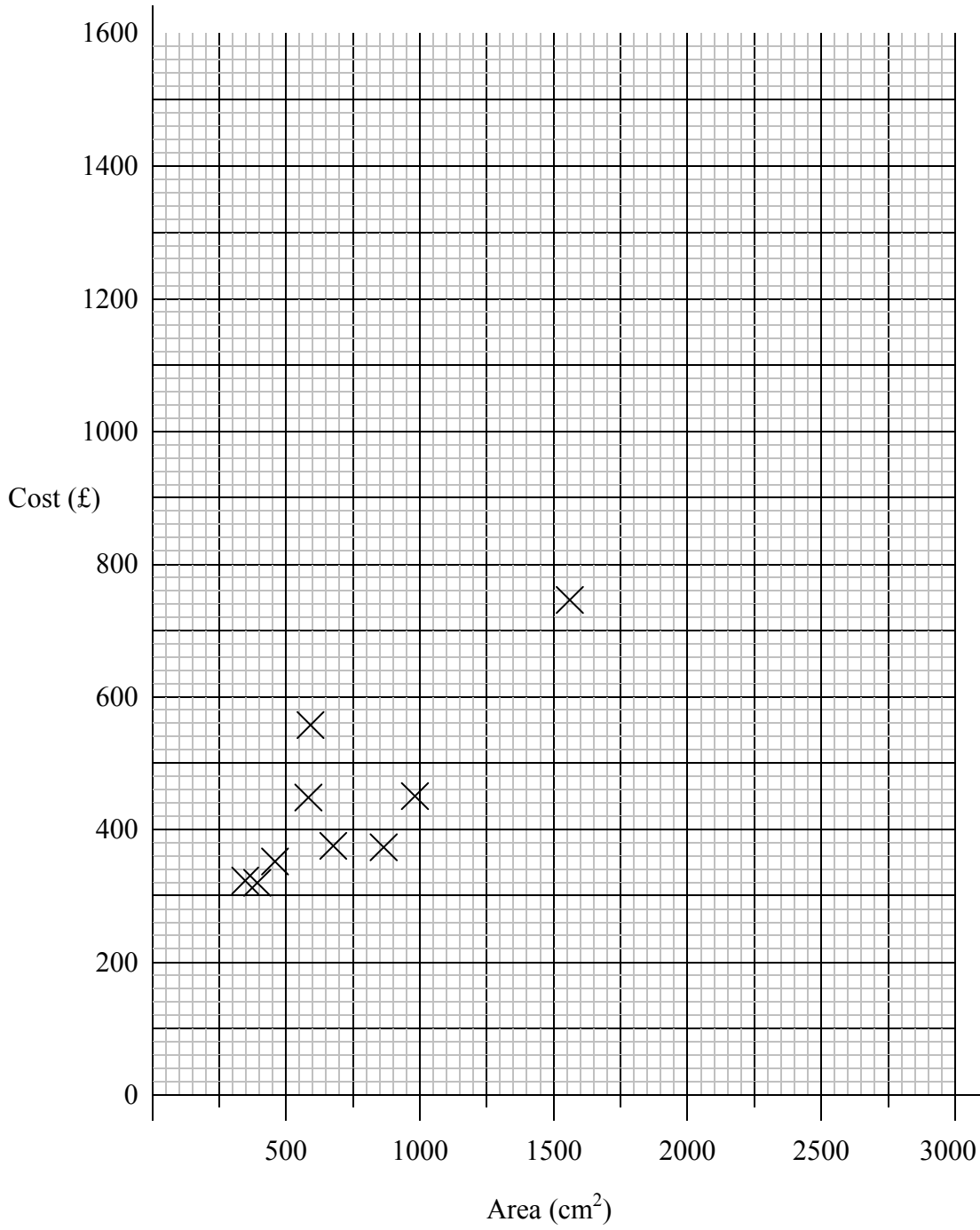
(d) Use your line of best fit to find an estimate of the cost of a picture with an area of 2500 cm².

£.....
(1)

All Pablo's pictures are rectangles.
One of his pictures costs £1000.
Its length is 48 cm.

(e) Use your line of best fit to find an estimate for the width of the picture.

..... cm
(2)



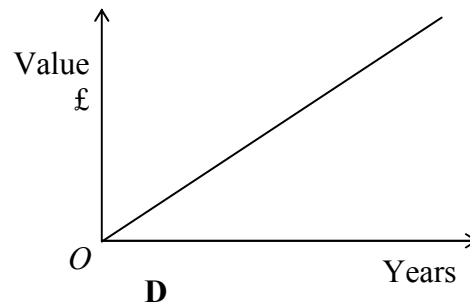
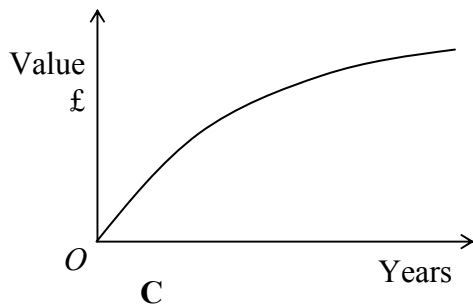
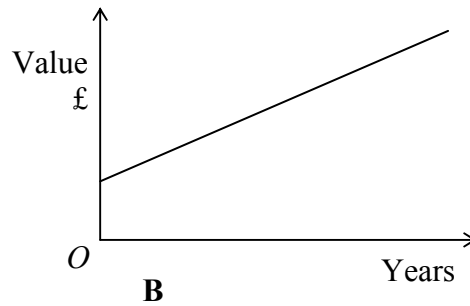
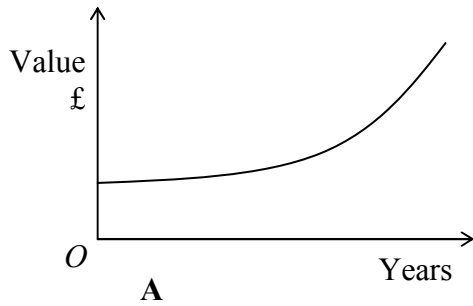
(Total 6 marks)

14. Nicola invests £8000 for 3 years at 5% per annum **compound** interest.

(a) Calculate the value of her investment at the end of 3 years.

£.....
(3)

Jim invests a sum of money for 30 years at 4% annum **compound** interest.



(b) Write down the letter of the graph which best shows how the value of Jim's investment changes over the 30 years.

.....
(1)

Hannah invested an amount of money in an account paying 5% per annum **compound** interest.

After 1 year the value of her investment was £3885

(c) Work out the amount of money that Hannah invested.

£.....

(3)

(Total 7 marks)

15. Fred runs 200 metres in 21.2 seconds.

(a) Work out Fred's average speed.

Write down all the figures on your calculator display.

..... metres per second

(2)

(b) Round off your answer to part (a) to an appropriate degree of accuracy.

..... metres per second

(1)

(Total 3 marks)

16. The equation $x^3 + 4x = 100$

has one solution which is a positive number.

Use the method of trial and improvement to find this solution.

Give your answer correct to 1 decimal place.

You must show **ALL** your working.

$x = \dots\dots\dots$
(Total 4 marks)

17. (a) Solve $4(2x + 1) = 2(3 - x)$

$x = \dots\dots\dots$
(3)

(b) Factorise fully

$$2p^2 - 4pq$$

$\dots\dots\dots$
(2)

(c) Factorise fully

$$x^2 + 7x + 6$$

$\dots\dots\dots$
(2)
(Total 7 marks)

18. Tony throws a biased dice 100 times.
The table shows his results

Score	Frequency
1	12
2	13
3	17
4	10
5	18
6	30

He throws the dice once more.

- (a) Find an estimate for the probability that he will get a 6

.....
(1)

Emma has a biased coin.

The probability that the biased coin will land on a head is 0.7

Emma is going to throw the coin 250 times.

- (b) Work out an estimate for the number of times the coin will land on a head.

.....
(2)
(Total 3 marks)

19.

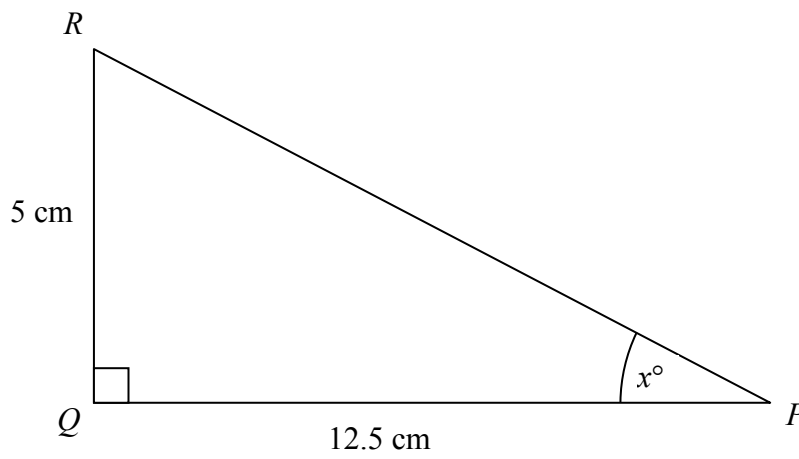


Diagram **NOT**
accurately drawn

PQR is a triangle.
Angle $PQR = 90^\circ$.
 $PQ = 12.5\text{ cm}$.
 $QR = 5\text{ cm}$.

Calculate the value of x .
Give your answer correct to 1 decimal place.

.....
(Total 3 marks)

20.

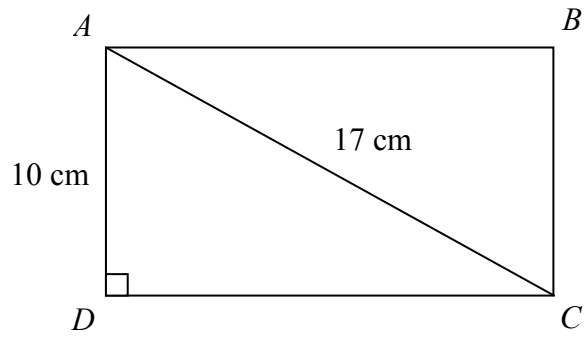


Diagram **NOT**
accurately drawn

$ABCD$ is a rectangle.

$AC = 17$ cm.

$AD = 10$ cm.

Calculate the length of the side CD .

Give your answer correct to one decimal place.

..... cm
(Total 3 marks)

21.

$$\sqrt{\frac{r + t \sin x^\circ}{r - t \sin x^\circ}}$$

$$r = 8.8$$

$$t = 7.2$$

$$x = 40$$

Calculate the value of y . Give your answer correct to 3 significant figures.

$$y = \dots\dots\dots$$

(Total 6 marks)

22. The straight line L_1 has equation $y = 2x + 3$

The straight line L_2 is parallel to the straight line L_1 .

The straight line L_2 passes through the point $(3, 2)$.

Find an equation of the straight line L_2 .

.....

(Total 3 marks)

23. A youth club has 60 members.

40 of the members are boys.

20 of the members are girls.

The mean number of videos watched last week by all 60 members was 2.8

The mean number of videos watched last week by the 40 boys was 3.3

(a) Calculate the mean number of videos watched last week by the 20 girls.

.....
(3)

Ibrahim has two lists of numbers.

The mean of the numbers in the first list is p .

The mean of the numbers in the second list is q .

Ibrahim combines the two lists into one new list of numbers.

Ibrahim says ‘The mean of the new list of numbers is equal to $\frac{p+q}{2}$.’

One of two conditions must be satisfied for Ibrahim to be correct.

(b) Write down each of these conditions.

Condition 1

.....

Condition 2

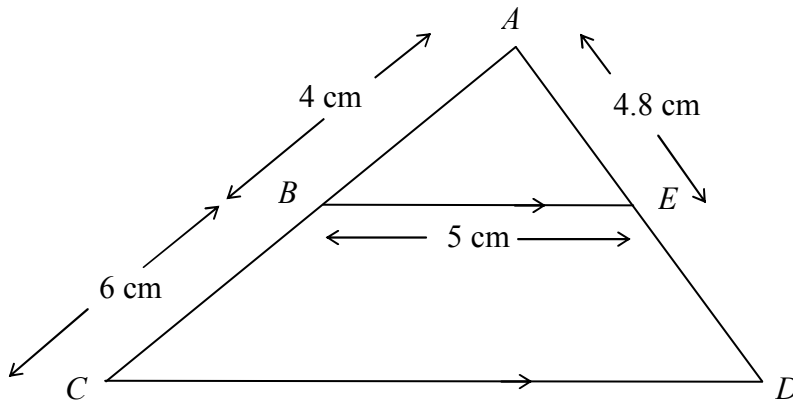
.....

(2)

(Total 5 marks)

24.

Diagram **NOT**
accurately drawn



BE is parallel to CD .

ABC and AED are straight lines.

$AB = 4$ cm, $BC = 6$ cm, $BE = 5$ cm, $AE = 4.8$ cm.

(a) Calculate the length of CD .

..... cm
(2)

(b) Calculate the length of ED .

..... cm
(2)
(Total 4 marks)

TOTAL FOR PAPER: 100 MARKS

END