

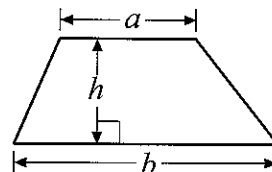


GCSE Mathematics 1387/8

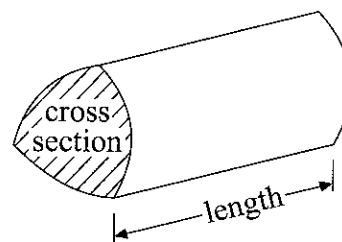
Formulae: Intermediate Tier

**You must not write on this formulae page.  
Anything you write on this formulae page will gain NO credit**

**Area of trapezium** =  $\frac{1}{2}(a+b)h$



**Volume of prism** = area of cross section  $\times$  length



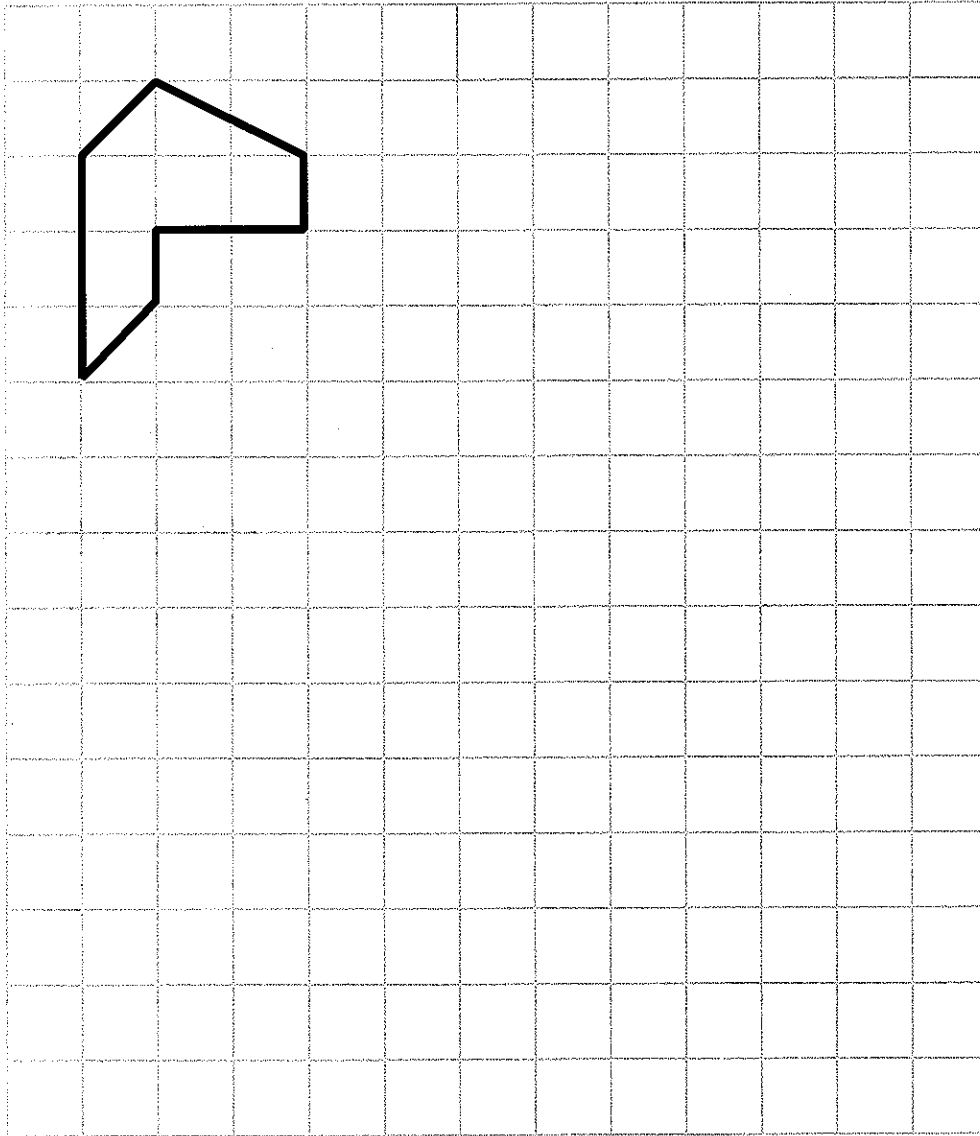
**Answer ALL TWENTY SIX questions.**

**Write your answers in the spaces provided.**

**You must write down all stages in your working.**

**You must NOT use a calculator.**

1. On the grid, enlarge the shape with a scale factor of 2.



Q1

(Total 2 marks)



2. 80 students each study one of three languages.  
The two-way table shows some information about these students.

	French	German	Spanish	Total
Female	15			39
Male		17		41
Total	31	28		80

- (a) Complete the two-way table. (2)

One of these students is to be picked at random.

- (b) Write down the probability that the student picked studies French.

.....  
(1)

(Total 3 marks)

Q2

3. (a) Simplify  $3p + q - p + 2q$

.....  
(2)

- (b) Simplify  $3y^2 - y^2$

.....  
(1)

- (c) Simplify  $5c + 7d - 2c - 3d$

.....  
(2)

- (d) Simplify  $4p \times 2q$

.....  
(1)

(Total 6 marks)

Q3



4. The diagram shows a 5-sided shape.  
All the sides of the shape are equal in length.

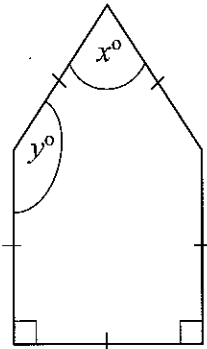


Diagram NOT accurately drawn

- (a) (i) Find the value of  $x$ .

$x = \dots\dots\dots$

- (ii) Give a reason for your answer.

.....  
(2)

- (b) Work out the value of  $y$ .

$y = \dots\dots\dots$   
(2)

(Total 4 marks)

Q4



5. The diagram shows a wall with a door in it.

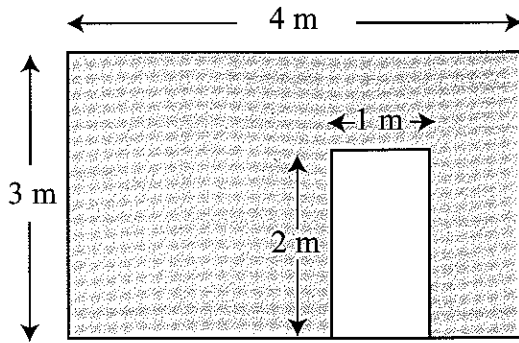


Diagram **NOT** accurately drawn

(a) Work out the shaded area.

..... m<sup>2</sup>  
(3)

Meg can cover the shaded area with 680 tiles.  
She buys extra tiles in case she breaks some.  
To work out the total number of tiles to buy, Meg increases 680 by 10%.

(b) (i) Increase 680 by 10%.

.....

The tiles Meg is going to use are sold in boxes of 50.

(ii) Work out the number of boxes of tiles Meg should buy.

.....  
(5)

(Total 8 marks)

Q5



6. (a) Work out the value of  $2a + ay$  when  $a = 5$  and  $y = -3$

.....  
(2)

(b) Work out the value of  $5t^2 - 7$  when  $t = 4$

.....  
(3)

(Total 5 marks)

Q6

7. The cost of a calculator is £6.79

Work out the cost of 28 of these calculators.

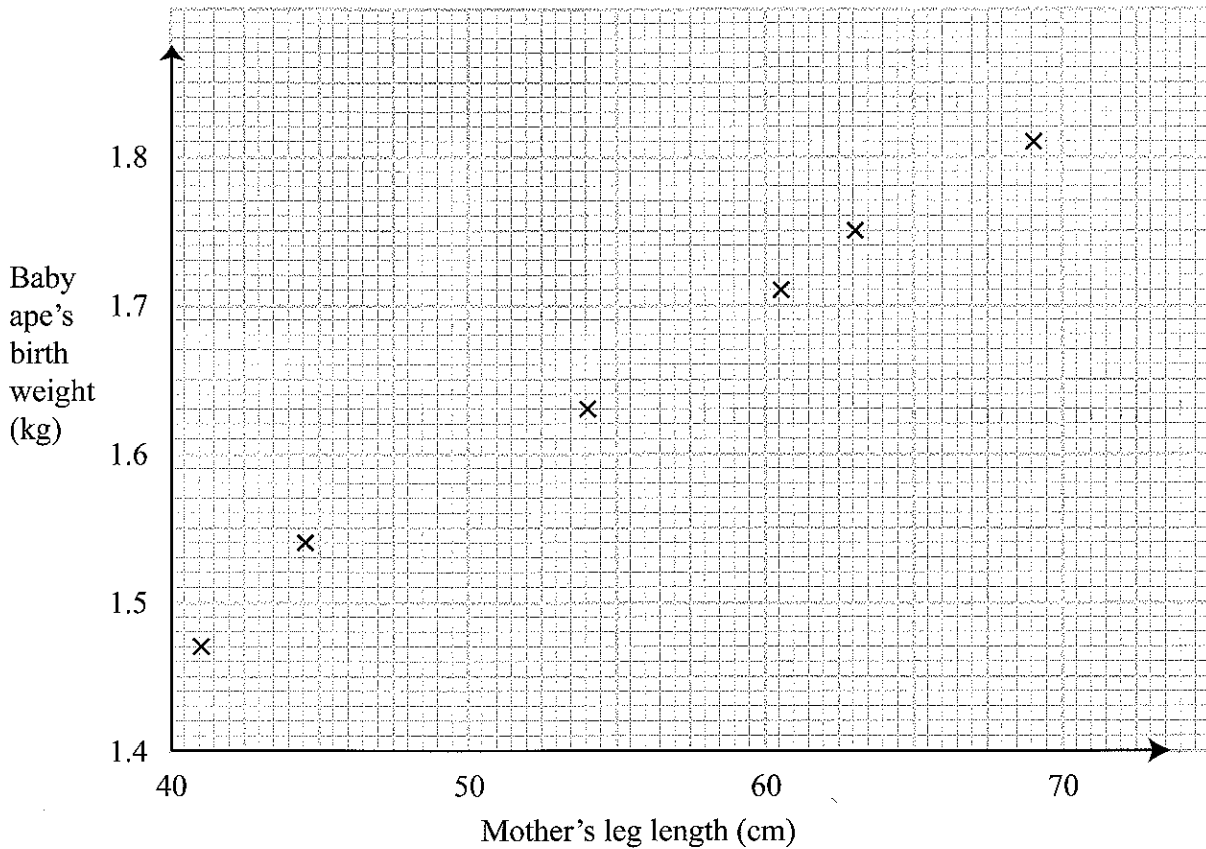
£ .....

(Total 3 marks)

Q7



8. The scatter graph shows some information about six new-born baby apes. For each baby ape, it shows the mother's leg length and the baby ape's birth weight.



The table shows the mother's leg length and the birth weight of two more baby apes.

Mother's leg length (cm)	50	65
Baby ape's birth weight (kg)	1.6	1.75

- (a) On the scatter graph, plot the information from the table. (1)
- (b) Describe the **correlation** between a mother's leg length and her baby ape's birth weight.  
 ..... (1)
- (c) Draw a line of best fit on the diagram. (1)
- A mother's leg length is 55 cm.
- (d) Use your line of best fit to estimate the birth weight of her baby ape.

..... kg  
 (1)

(Total 4 marks)

Q8





9. Here are the ingredients needed to make 500 ml of custard.

**Custard**

**makes 500 ml**

400 ml of milk

3 large egg yolks

50 g sugar

2 teaspoons of cornflour

(a) Work out the amount of sugar needed to make 2000 ml of custard.

..... g  
(2)

(b) Work out the amount of milk needed to make 750 ml of custard.

..... ml  
(2)

(Total 4 marks)

Q9



10. The cost, in pounds, of hiring a car can be worked out using this rule.

Add 3 to the number of days' hire  
 Multiply your answer by 10

The cost of hiring a car for  $n$  days is  $C$  pounds.

Write down a formula for  $C$  in terms of  $n$ .

.....

(Total 3 marks)

Q10

11. (a) Factorise  $p^2 + 6p$

.....

(2)

(b) Expand and simplify  $(x + 7)(x - 4)$

.....

(2)

(Total 4 marks)

Q11

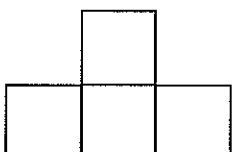


12. Here are the plan, front elevation and side elevation of a 3-D shape.

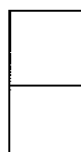
**plan**



**front elevation**



**side elevation**



In the space below, draw a sketch of the 3-D shape.

Q12

(Total 2 marks)

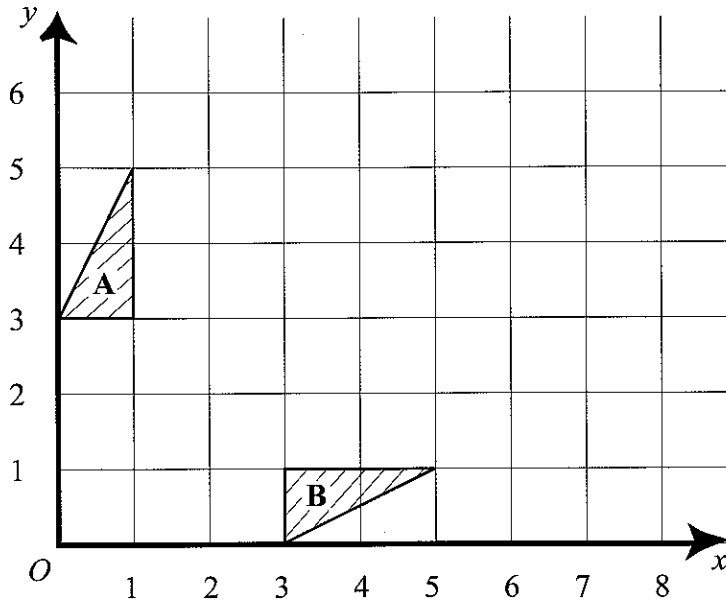
13. Work out an estimate for the value of  $\frac{637}{3.2 \times 9.8}$

Q13

(Total 2 marks)



14.



Triangle **A** and triangle **B** have been drawn on the grid.

- (a) Reflect triangle **A** in the line  $x = 3$ .  
Label this image **C**.

(2)

- (b) Describe fully the single transformation which will map triangle **A** onto triangle **B**.

.....

(2)

(Total 4 marks)

Q14



15. (a) Write as a power of 5

(i)  $5^4 \times 5^2$

.....

(ii)  $5^9 \div 5^6$

.....

(2)

(b)  $2^x \times 2^y = 2^{10}$

and

$2^x \div 2^y = 2^4$

Work out the value of  $x$  and the value of  $y$ .

$x =$  .....

$y =$  .....

(3)

(Total 5 marks)

Q15

16. (a) Solve  $5 - 3x = 2(x + 1)$

$x =$  .....

(3)

(b)  $-3 \leq y < 3$   
 $y$  is an integer.

Write down all the possible values of  $y$ .

.....

(2)

(Total 5 marks)

Q16



17. Janie wants to collect information about the amount of sleep the students in her class get.  
Design a suitable question she could use.

Q17

(Total 2 marks)

18. (a) Work out the value of  $\frac{2}{3} \times \frac{3}{4}$

Give your answer as a fraction in its simplest form.

.....  
(2)

(b) Work out the value of  $1\frac{2}{3} + 2\frac{3}{4}$

Give your answer as a fraction in its simplest form.

.....  
(3)

Q18

(Total 5 marks)



19.

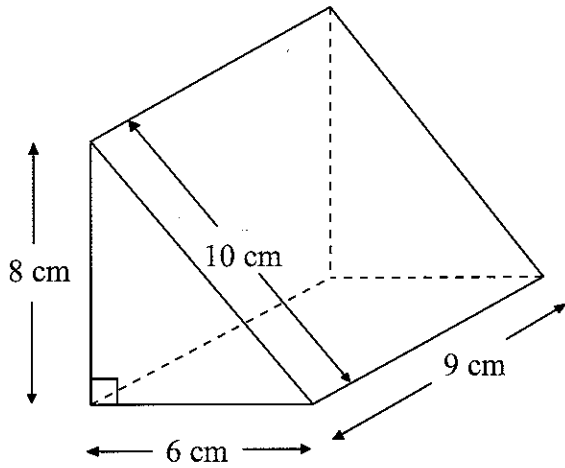


Diagram **NOT** accurately drawn

Work out the surface area of the triangular prism.  
State the units with your answer.

.....

Q19

(Total 4 marks)

20. The table shows some expressions.  
 $a$ ,  $b$ ,  $c$  and  $d$  represent lengths.  
 $\pi$  and 3 are numbers which have no dimensions.

$3a^2$	$\frac{\pi ab^3}{3d}$	$\pi bc$	$ac + bd$	$\pi(a + b)$	$3(c + d)^3$	$3\pi bc^2$
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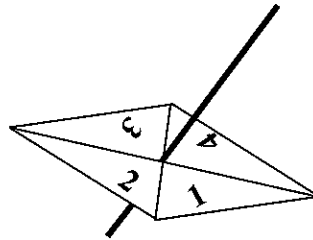
Tick (✓) the boxes underneath the **three** expressions which could represent volumes.

(Total 3 marks)

Q20



21. Here is a 4-sided spinner.



The sides of the spinner are labelled 1, 2, 3 and 4.

The spinner is biased.

The probability that the spinner will land on each of the numbers 2 and 3 is given in the table.

The probability that the spinner will land on 1 is equal to the probability that it will land on 4.

Number	1	2	3	4
Probability	$x$	0.3	0.2	$x$

(a) Work out the value of  $x$ .

$x = \dots\dots\dots$   
(2)

Sarah is going to spin the spinner 200 times.

(b) Work out an estimate for the number of times it will land on 2.

$\dots\dots\dots$   
(2)

(Total 4 marks)

Q21



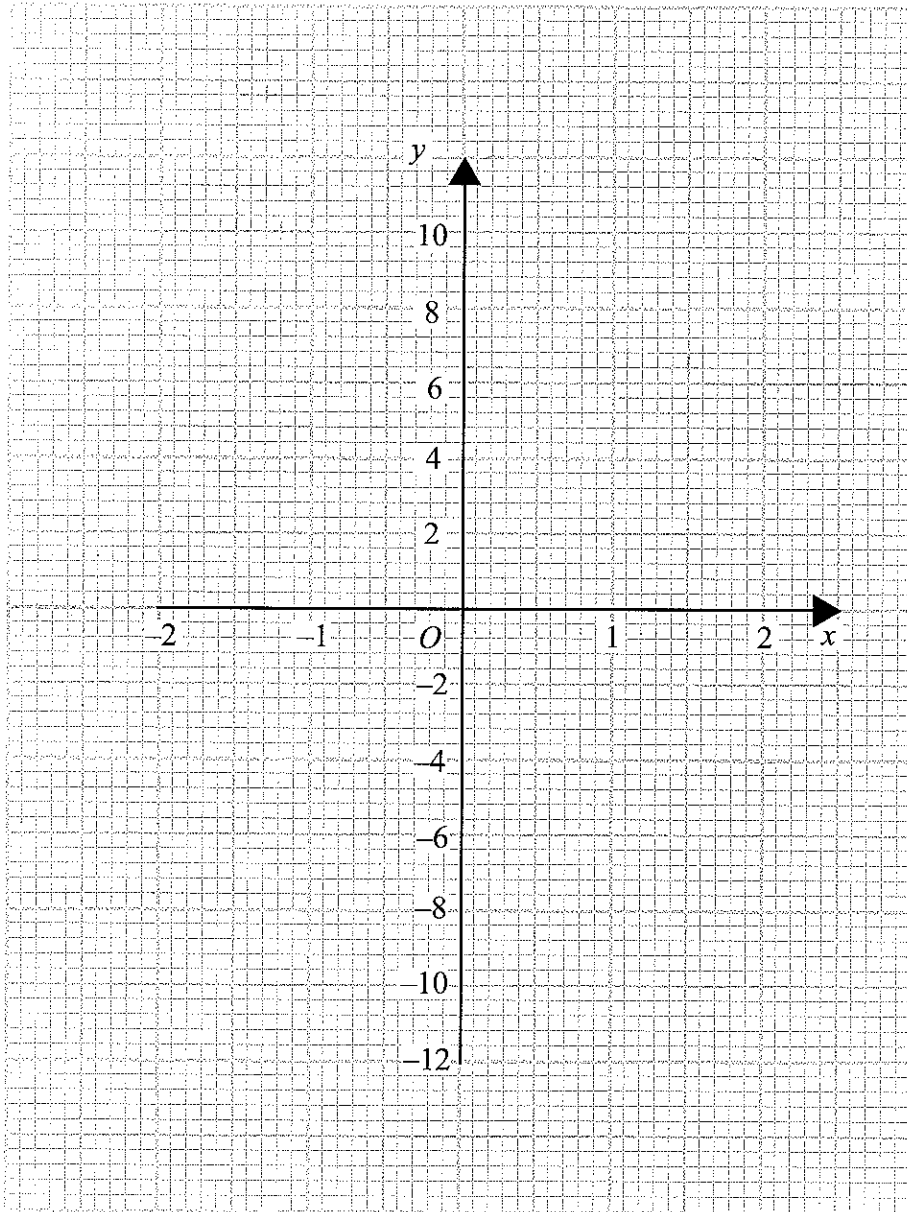


22. (a) Complete this table of values for  $y = x^3 + x - 2$

$x$	-2	-1	0	1	2
$y$	-12			0	

(3)

(b) On the grid, draw the graph of  $y = x^3 + x - 2$



(2)

(Total 5 marks)

Q22

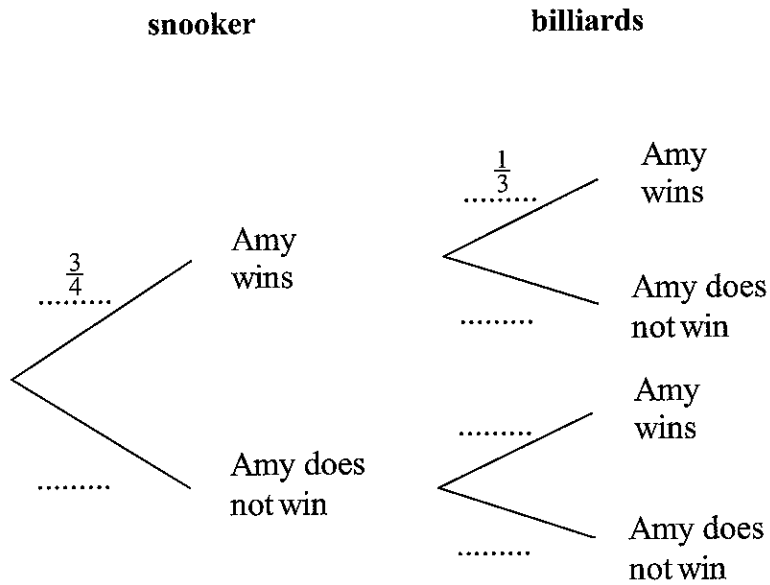


23. Amy is going to play one game of snooker and one game of billiards.

The probability that she will win the game of snooker is  $\frac{3}{4}$

The probability that she will win the game of billiards is  $\frac{1}{3}$

Complete the probability tree diagram.



(Total 2 marks)

Q23



24. The number 40 can be written as  $2^m \times n$ , where  $m$  and  $n$  are prime numbers.

Find the value of  $m$  and the value of  $n$ .

$m = \dots\dots\dots$

$n = \dots\dots\dots$

(Total 2 marks)

Q24

25.

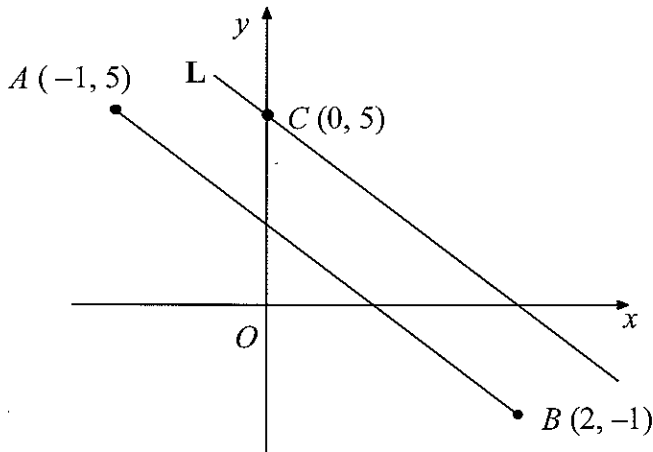


Diagram NOT accurately drawn

The diagram shows three points  $A(-1, 5)$ ,  $B(2, -1)$  and  $C(0, 5)$ . The line **L** is parallel to  $AB$  and passes through  $C$ .

Find the equation of the line **L**.

.....

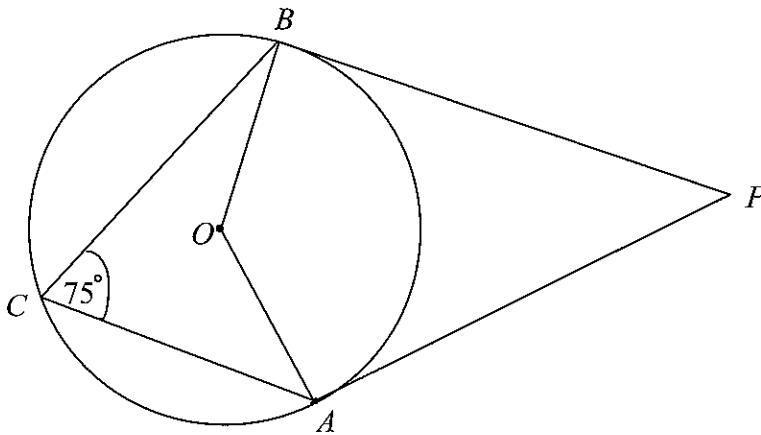
(Total 4 marks)

Q25



26.

Diagram NOT accurately drawn



In the diagram,  $A$ ,  $B$  and  $C$  are points on the circumference of a circle, centre  $O$ .  
 $PA$  and  $PB$  are tangents to the circle.  
 Angle  $ACB = 75^\circ$ .

(a) (i) Work out the size of angle  $AOB$ .

.....  
 °

(ii) Give a reason for your answer.

.....  
 .....  
 (2)

(b) Work out the size of angle  $APB$ .

.....  
 °  
 .....  
 (3)

(Total 5 marks)

Q26

TOTAL FOR PAPER: 100 MARKS

END

