



Answer all questions.  
Calculators must not be used in this paper.

1 Given that  $\sqrt{11} = 3.32$  and  $\sqrt{1.1} = 1.05$ , evaluate the following, leaving your answers in standard form.

(a)  $\sqrt{0.000000044}$

(b)  $\sqrt{1760000}$

Answer (a) .....[2]

(b) .....[2]

2 Evaluate

(a)  $(0.4)^2 - \sqrt[3]{0.027} + 0.2$ .

(b)  $\left(\frac{3}{2}\right)^3 + \frac{5}{8} \times \left(\frac{1}{16}\right)^{-\frac{1}{2}} - (\sqrt{169})^0$ .

Answer (a) .....[1]

(b) .....[2]

3 (a) Solve  $10ab - 6a = 9 - 15b$ .

(b) Find the values of  $m$  and  $n$  given that  $(64^{\frac{1}{3}} x^{\frac{3}{2}})^5 + (16^{\frac{5}{4}} x^{\frac{2}{3}})^3 = (2x^m)^n$ .

Answer (a) .....

(b) .....

4 If  $A$  is inversely proportional to  $(B - 4)$  and  $A = 2$  when  $B = 8$ ,

(a) express  $A$  in terms of  $B$ ,

(b) find the value of  $A$  when  $B = 6$ .

Answer (a).....

(b).....

- 5 (a) Solve the inequality  $3 - 6y \geq -5y + 5$ .  
(b) Given that  $-6 \leq x \leq 5$  and  $-5 \leq y \leq 2$ , find  
(i) the largest value of  $x$ , such that  $x$  is a perfect square,  
(ii) the largest possible value of  $x^2 - y^2$ .

Answer (a) .....[1]

(b) (i) .....[1]

(ii) .....[1]

- 6 (a) In Figure 1, add one circle such that the figure will have only one line of symmetry.  
(b) In Figure 2, add one circle such that the figure will have rotational symmetry of order 2.

Answer (a) [1]

(b) [1]

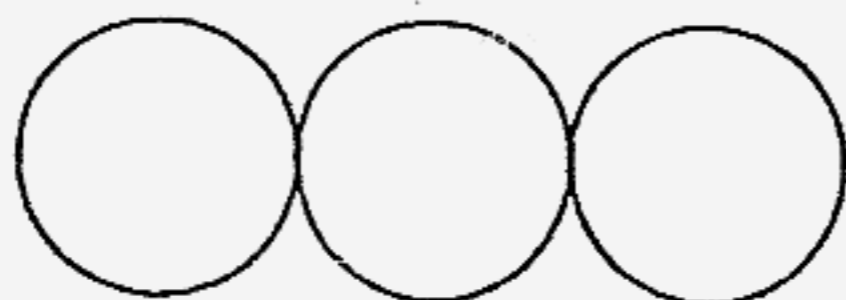


Figure 1

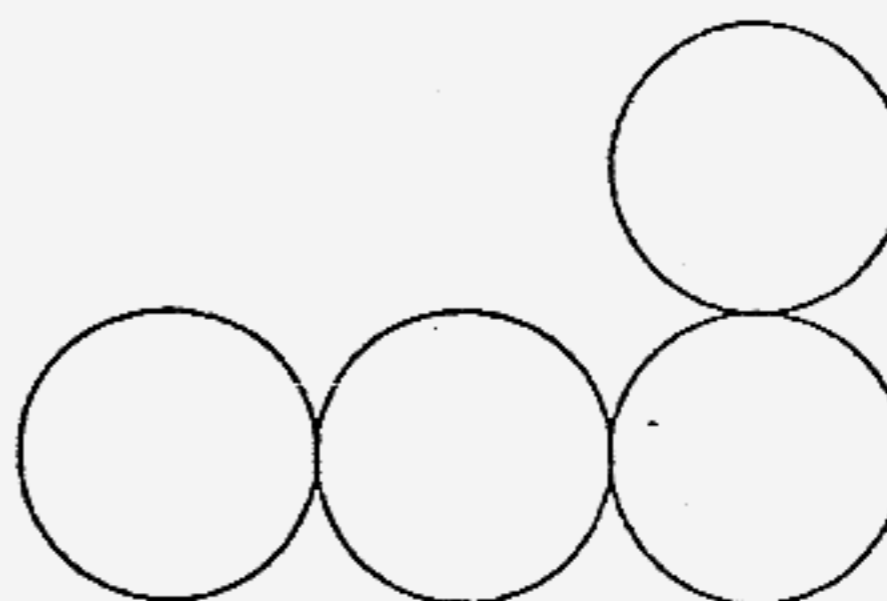
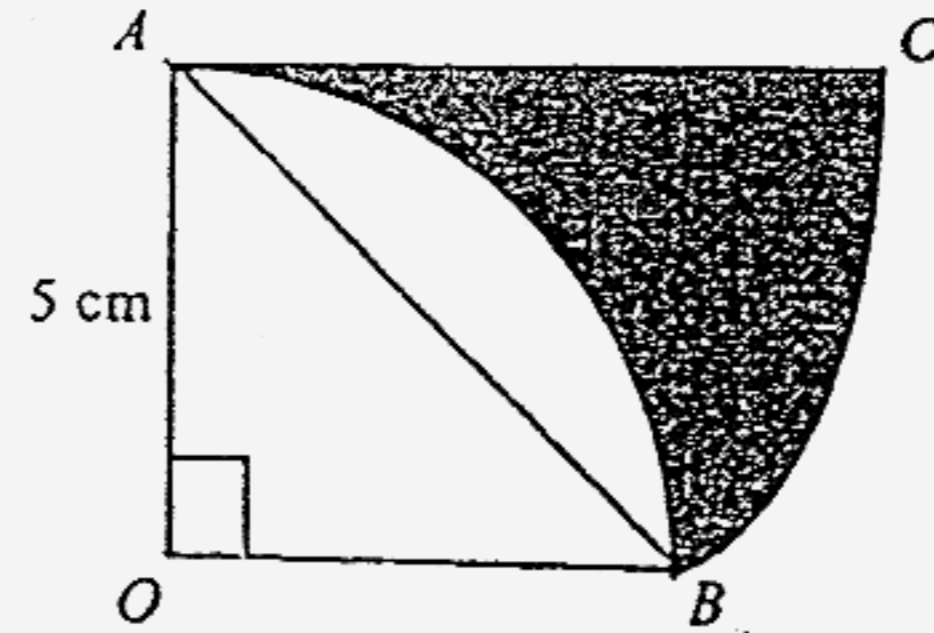


Figure 2

- 7 It is given that 5 cm on the map represents an actual distance of 2 km.
- (a) Express the scale of the map in the form of  $1 : n$ .
  - (b) Calculate the length of the road, in kilometres, which is represented by a line 12 cm long on the map.
  - (c) Given that the actual area of a park is  $8.4 \text{ km}^2$ , find, in square centimetres, the area of the park on the map.

Answer (a) .....[  
(b) .....[  
(c) .....[

- 8 In the diagram,  $\angle AOB = 90^\circ$ ,  $AC$  is parallel to  $OB$  and  $OA = 5$  cm.  $AB$  is an arc of a circle with centre  $O$  and  $BC$  is an arc of a circle with centre  $A$ . Find
- (a) the area of the shaded region,
  - (b) the perimeter of the shaded region, leaving your answer in terms of  $\pi$  and in surd form.

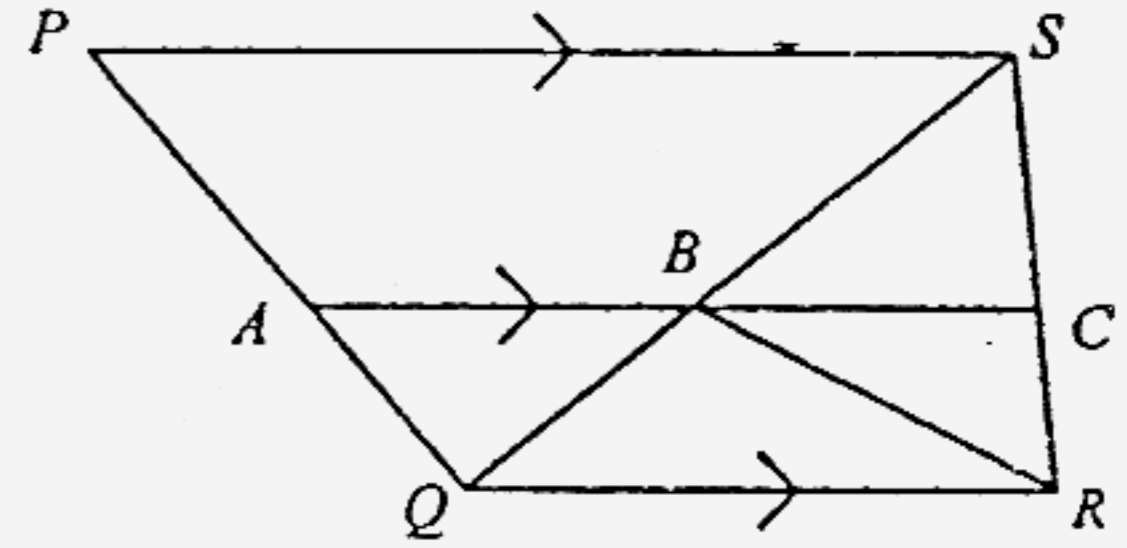


Answer (a) .....[3]

(b) .....[3]

9 In the figure, the lines  $PS$ ,  $AC$  and  $QR$  are parallel lines. Given that  $QA : AP = 2 : 5$ ,  $PS = 7$  cm and  $QR = 4$  cm.

- (a) Find the length of  $AC$ .
- (b) Given that the area of  $\triangle ABQ$  is  $x$  cm<sup>2</sup>, find the area of  $\triangle BQR$  in terms of  $x$ .
- (c) Find the value of  $\frac{\text{area of } \triangle SBC}{\text{area of } \triangle CRQ}$ .

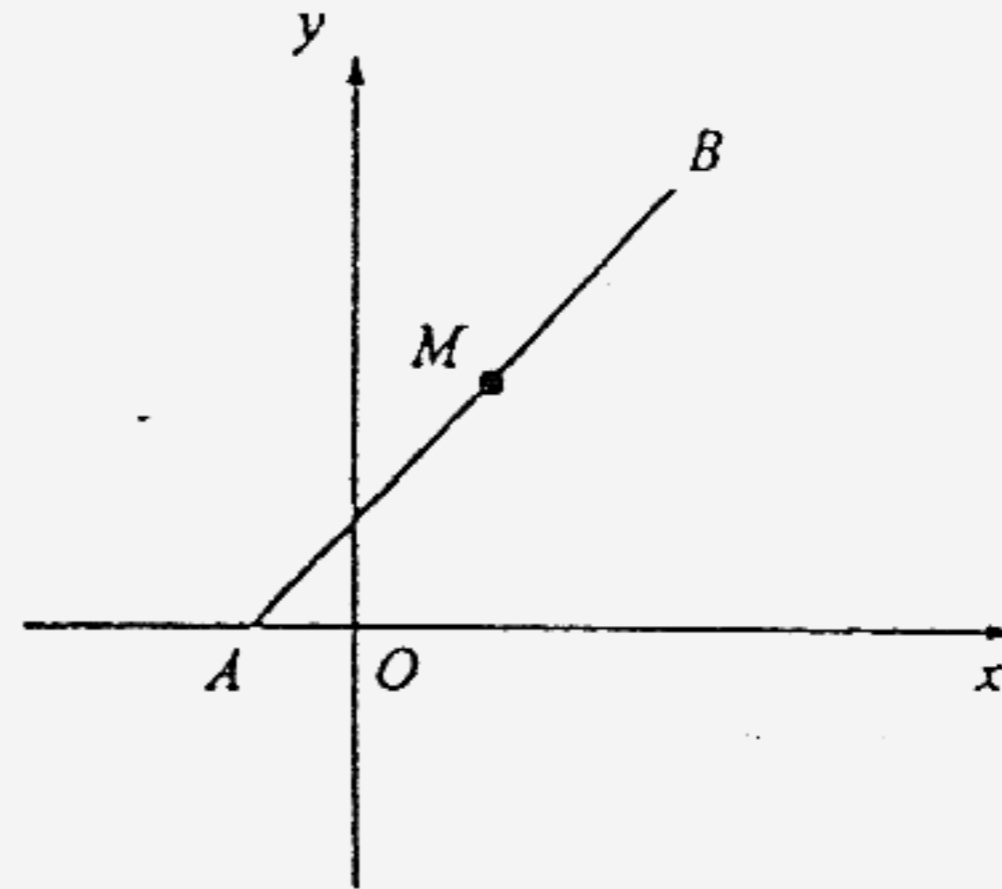


Answer (a) .....

(b) .....

(c) .....

- 10 In the figure,  $M(1, 4)$  is the mid-point of  $AB$ , where  $A$  is the point  $(-1, 0)$ .
- (a) Find
    - (i) the coordinates of  $B$ ,
    - (ii) the equation of  $AB$ .
  - (b) Write down the equation of the image of  $AB$  under a reflection in the line  $y = 0$ .
  - (c)  $A$  is mapped onto a point  $C$  by an anticlockwise rotation of  $90^\circ$  about the origin. Find the length of  $MC$ .

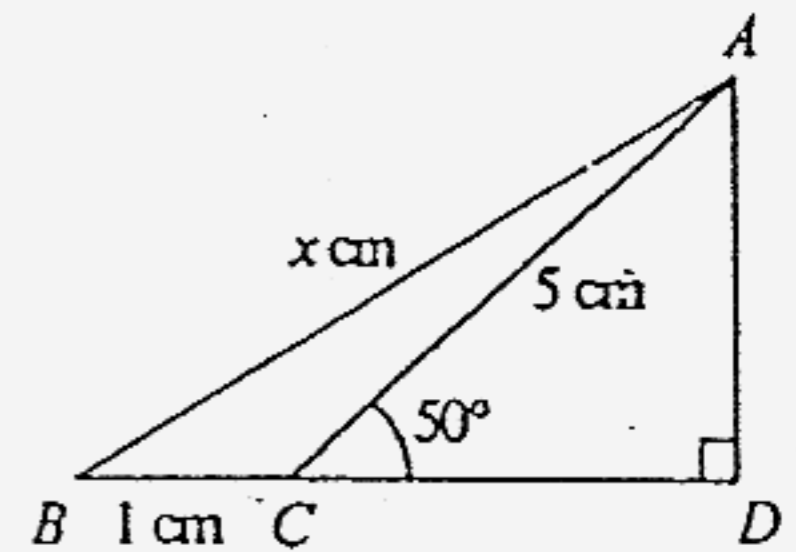


- Answer (a) (i).....[1]  
(ii) .....[1]  
(b) .....[1]  
(c) .....[2]



- 11 In the diagram,  $AC = 5$  cm,  $BC = 1$  cm and  $AB = x$  cm. It is also given that  $\angle ACD = 50^\circ$  and  $\angle ADB = 90^\circ$ . Using as much information given below as is necessary, find
- (a) the value of  $\tan \angle ACB$ ,
  - (b) the exact value of  $x^2$ ,
  - (c) the area of triangle  $ABC$ .

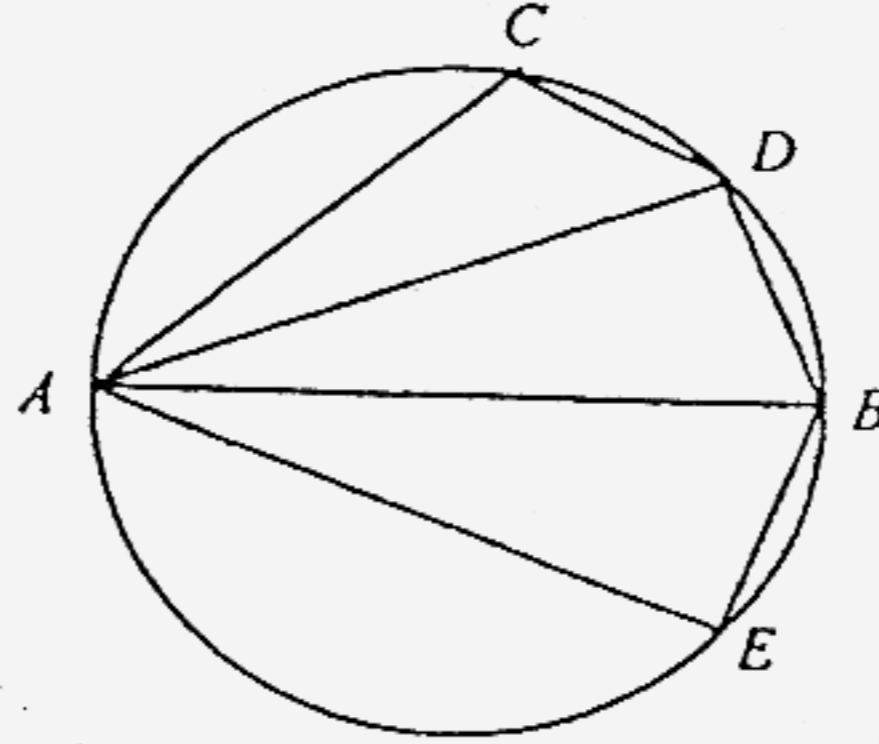
[  $\sin 50^\circ = 0.77$ ,  $\cos 50^\circ = 0.64$ ,  $\tan 50^\circ = 1.19$  ]



Answer (a) .....  
(b) .....  
(c) .....

12 In the figure,  $AB$  is a diameter of the circle. Given that  $\angle CAD = \angle DAB = \angle BAE = 23^\circ$ , calculate

- (a)  $\angle ABE$ ,
- (b)  $\angle ADC$ ,
- (c)  $\angle ACE$ .

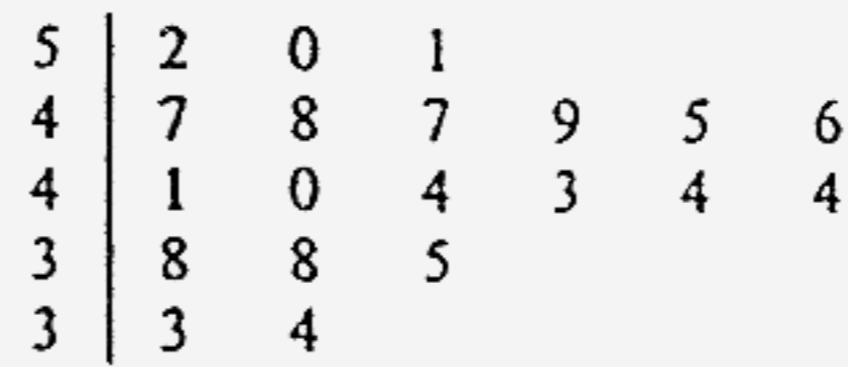


Answer (a) .....[1]

(b) .....[2]

(c) .....[1]

- 13 (a) The following stem and leaf diagram represents the lengths of hairclips measured to the nearest 0.1 cm.



Key: 3|3 means 3.3 cm

- (i) What is the modal length?  
 (ii) What is the median length?
- (b) The table below shows the number of marks out of 5 marks scored by a group of Secondary 4 students in a recent Mathematics quiz.

Marks	0	1	2	3	4	5
Number of Pupils	2	3	4	2	2	x

- (i) If the median mark is 3, find the possible values of  $x$ .  
 (ii) If the mean mark is 3, find  $x$ .

Answer (a) (i) .....[1

(ii) .....[1

(b) (i) .....[2

(ii) .....[2

14 The natural numbers below are arranged in the following manner:

<u>Row Number</u>	<u>Natural Numbers</u>				
1	1				
2	3		5		
3	7	9		11	
4	13	15	17	19	

(a) Complete the following table. [1]

Row number, $n$	1	2	3	4	5
Average of the first and last term, $A$	1	4	9	16	
Sum of terms, $S$	1	8	27	64	

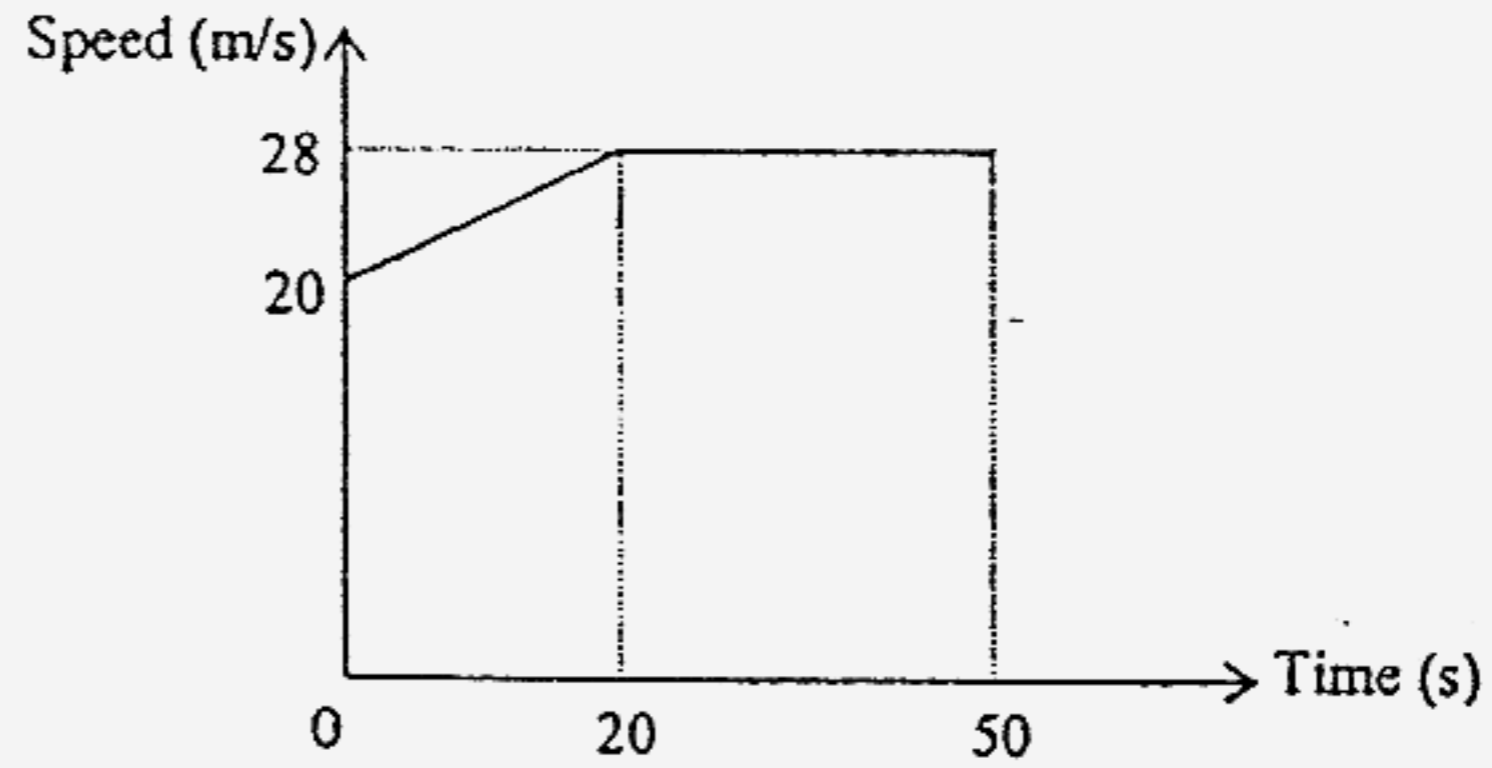
(b) Write an expression for  $A$  in terms of  $n$  and hence find the average of the first and last terms for the 23<sup>rd</sup> row.

(c) Find which row has a sum of 1331 when its terms are added up.

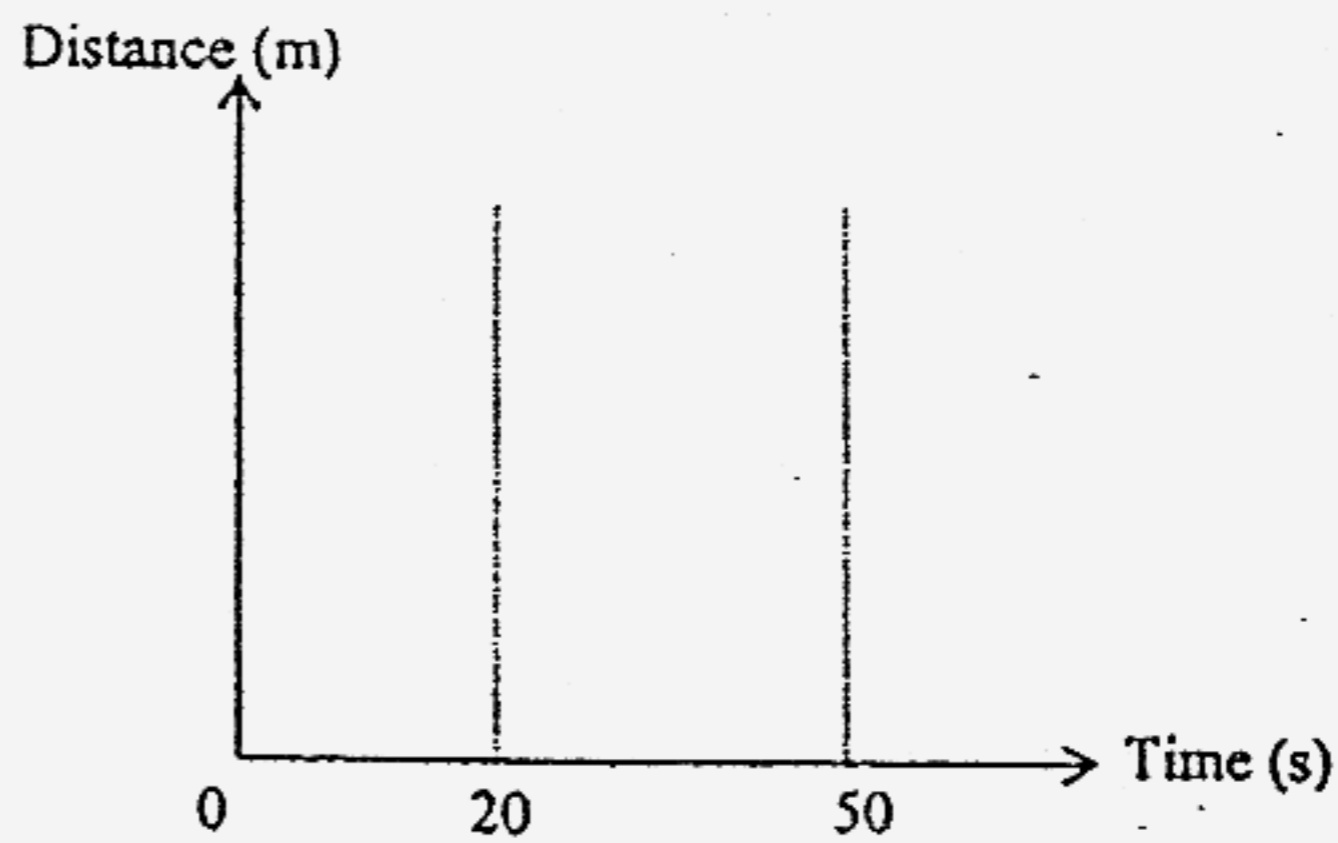
Answer (b) .....[2]

(c) .....[1]

- 15 The speed-time graph shows the motion of a particle over a period of 50 seconds. Calculate
- (a) the speed of the particle when  $t = 8$  seconds,
  - (b) the time at which the particle comes to rest if the rate at which it slows down after  $t = 50$  is twice the rate at which it accelerates during the first 20 seconds,
  - (c) its average speed during the 50 seconds.



- (d) Sketch the distance-time graph of the particle during the 50 seconds in the diagram given below: [2]



Answer (a) .....

(b) .....

(c) .....

- 16 A bag contains 60 balls, some of which are red, some are blue and the rest are yellow. The probabilities of drawing a red ball and a blue ball are  $\frac{1}{6}$  and  $\frac{1}{5}$  respectively.
- (a) Find the number of yellow balls.
  - (b) If  $x$  yellow balls are removed from the bag so that the probability of drawing a yellow ball from the remaining balls becomes  $\frac{9}{20}$ , find  $x$ .

Answer (a) .....[2]

(b) .....[2]

- 17 Two points  $P$  and  $Q$  have position vectors  $p$  and  $q$  respectively, relative to an origin  $O$ . Given that  $p = \begin{pmatrix} -3 \\ 4 \end{pmatrix}$  and  $q = \begin{pmatrix} k \\ 0 \end{pmatrix}$ , find

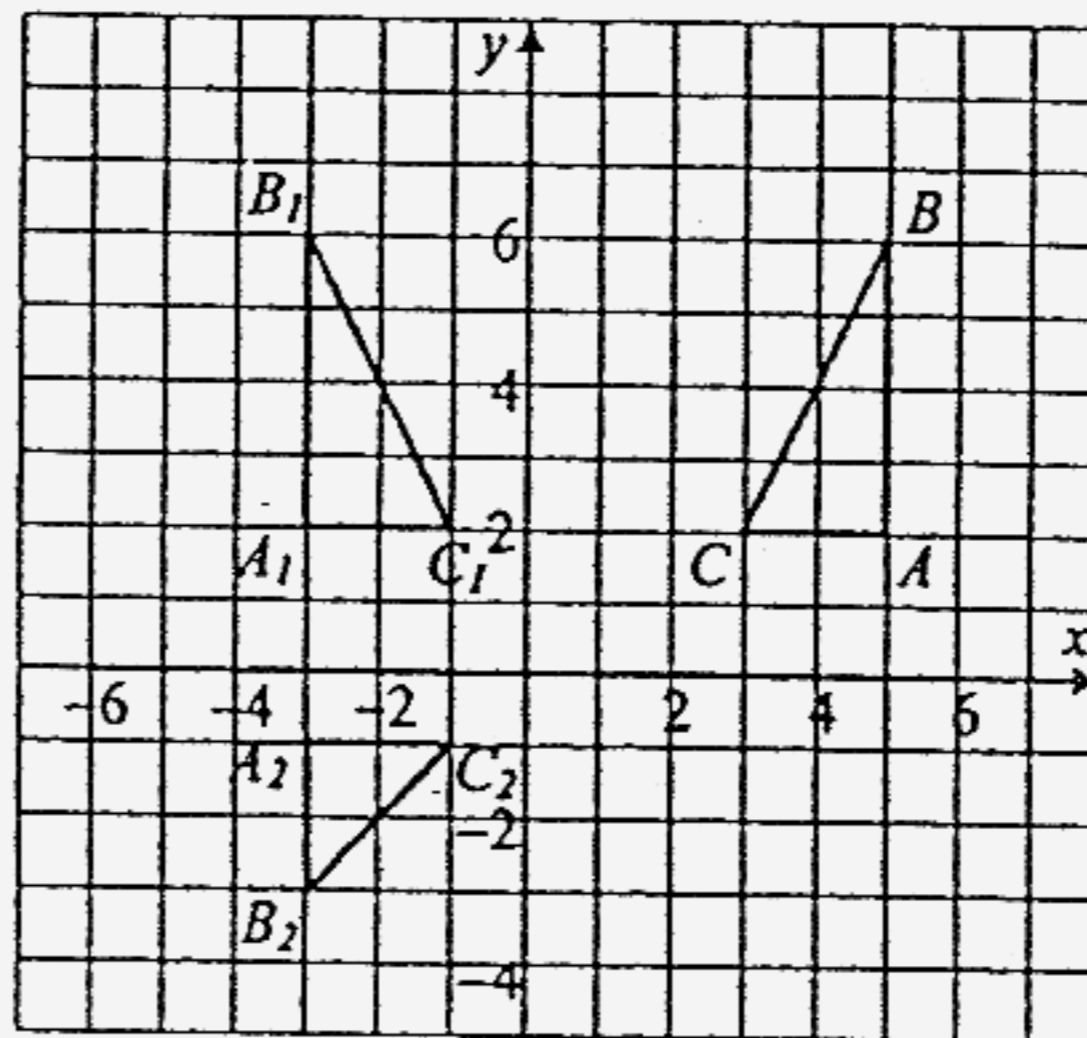
- (a)  $\vec{PQ}$  in terms of  $k$ ,
- (b) the value(s) of  $k$  if  $OP$  and  $OQ$  are two sides of a rhombus,
- (c) the coordinates of the point  $R$  which is such that  $\vec{OR} = 3\vec{PO}$ .

Answer (a) .....[1]

(b) .....[2]

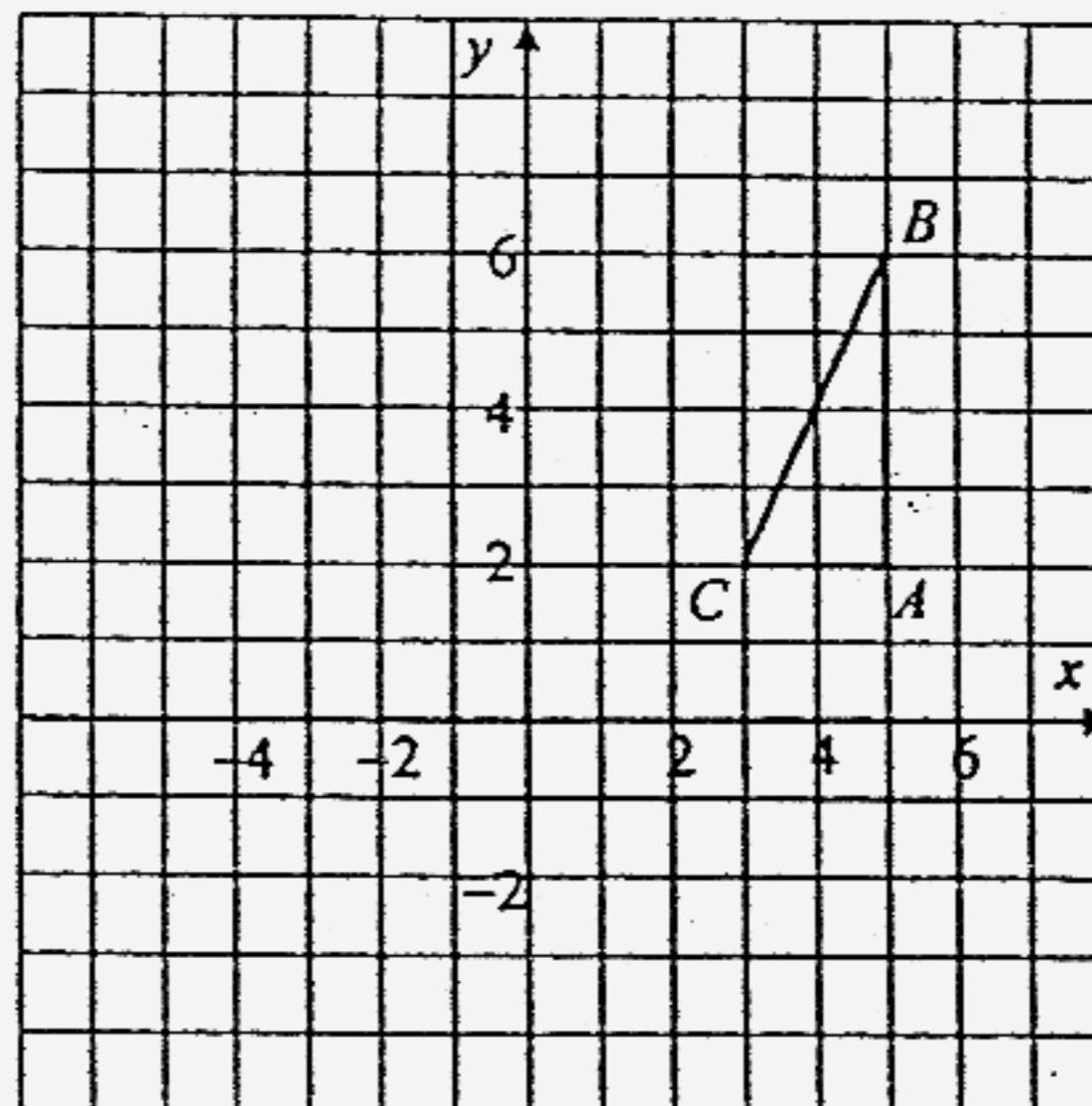
(c) .....[1]

18 The diagram below shows  $\Delta ABC$ ,  $\Delta A_1B_1C_1$  and  $\Delta A_2B_2C_2$ .



- (a) Describe the single transformation that maps  $\Delta ABC$  onto  $\Delta A_1B_1C_1$ .
- (b) Describe the single transformation that maps  $\Delta A_1B_1C_1$  onto  $\Delta A_2B_2C_2$ .
- (c)  $\Delta ABC$  is mapped onto  $\Delta A_3B_3C_3$  under a shear of factor  $-1$  with the  $y$ -axis as invariant line. Draw and label  $\Delta A_3B_3C_3$  on the grid below.

[2



Answer (a) .....

(b) .....

End of Paper



**Cedar Girls' Secondary School  
Preliminary Examination  
2006**

Subject : Mathematics  
Paper Number : 4017/2  
Level : Secondary Four  
Duration : 2 hours 30 minutes  
Date : 18 Sep 2006

**Instructions to Candidates:**

1. Write your name and register number on all your answer scripts.
2. Write your answers and working on the separate answer paper provided.
3. Arrange your answers in numerical order.
4. All working must be shown clearly in ink.
5. Omission of essential working will result in loss of marks.

*Section A*

Answer all questions.

*Section B*

Answer one question.

**Information for Candidates:**

1. The number of marks is given in brackets [ ] at the end of each question or part question.
2. The total of the marks for this paper is 100.
3. You are expected to use an electronic calculator to evaluate explicit numerical expressions.
4. If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.  
For  $\pi$ , use either your calculator value or 3.142, unless the question requires the answer in terms of  $\pi$ .

**Additional Materials:**

1. 8 sheets of writing paper.
2. 2 sheets of graph paper.
3. 1 sheet of blank paper.

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This question booklet consists of 10 printed pages.



Section A [88 marks]

Answer all the questions in this section.

- 1 (a) Express as a fraction in its simplest form

$$\frac{1}{x+2} + \frac{3}{x-2} - \frac{2x}{4-x^2} \quad [3]$$

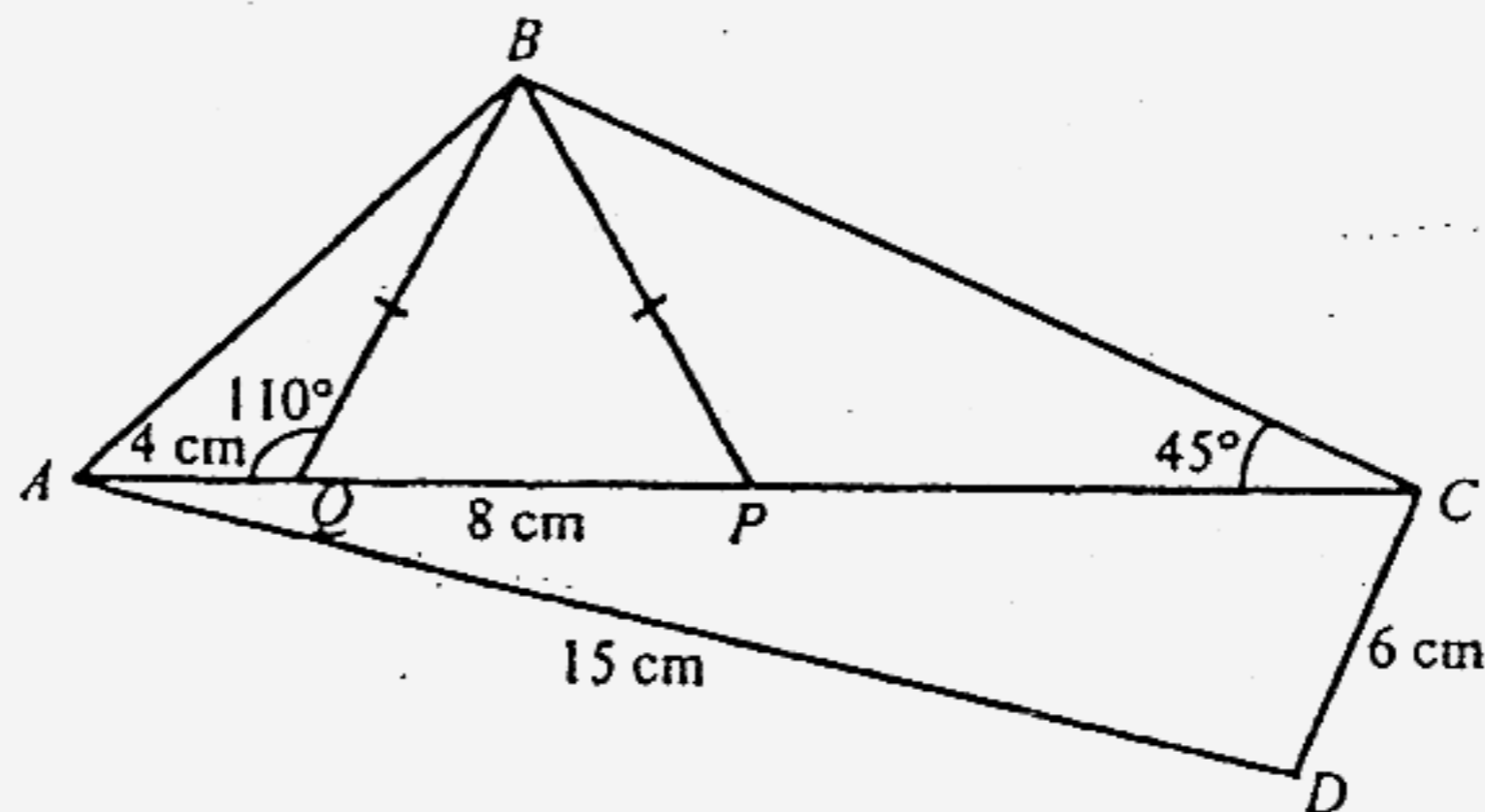
- (b) Factorise  $a^3 - 2a^2 - 2a + 4$ .

Hence, simplify  $\frac{a^3 - 2a^2 - 2a + 4}{3a^2 - 5a - 2}$ . [4]

- 2 Daniel wants to buy a new *iJod* which costs \$575. The shop has two different financing schemes he can opt for. In Scheme A, he has to pay a downpayment of \$75, a monthly instalment of \$20 for 23 months and a final payment of \$100 at the end of the second year. In Scheme B, he has to pay a lump sum of \$175 and take up an instalment plan for \$400, payable by monthly instalment over a period of 2 years at simple interest of 5% per annum.

- (a) Calculate the total amount he will have to pay for the *iJod* under Scheme A. [2]  
 (b) What is the simple interest rate charged by the shop under Scheme A? [2]  
 (c) Calculate the monthly instalment he has to pay under Scheme B. [3]  
 (d) Daniel finally decides on Scheme B. What would be the percentage difference if he had chosen Scheme A instead? [3]

3



In the diagram,  $A, B, C, D, P$  and  $Q$  are points on level ground, with  $AQ = 4$  cm,  $PQ = 8$  cm,  $AD = 15$  cm,  $CD = 6$  cm,  $BQ = BP$ ,  $\angle AQB = 110^\circ$  and  $\angle BCP = 45^\circ$ . Find

- (a) the length of  $BQ$ , [3]  
 (b) the length of  $PC$ , [2]  
 (c)  $\angle ADC$ , [2]  
 (d) the area of  $\triangle ADC$ . [2]

4 Answer the whole of this question on a sheet of graph paper.

A survey was conducted with 480 people to find out the time, in hours, they spent on blogging on a certain day.

The results are given in the table below:

Time in hours, $x$	$x \leq 1$	$1 < x \leq 2$	$2 < x \leq 3$	$3 < x \leq 4$	$4 < x \leq 5$	$5 < x \leq 6$
No. of people	12	65	103	155	120	25

(a) Copy and complete the cumulative frequency table below. [1]

Time in hours	1	2	3	4	5	6
No. of people spending this time or less	12					480

(b) Using a horizontal scale of 2 cm to represent 1 hour and a vertical scale of 2 cm to represent 50 people, draw a cumulative frequency curve for this distribution. [3]

(c) Showing your method clearly, use your graph to estimate

(i) the median, [1]

(ii) the interquartile range, [2]

(iii) the number of people who spent more than  $3\frac{1}{2}$  hours on the computer. [1]

(d) One person is selected at random and the probability that he spent more than  $n$  hours is  $\frac{1}{6}$ . Use your graph to estimate the value of  $n$ . [2]

(e) Two persons are selected at random. Find the probability that one spent not more than 3 hours and the other spent more than 5 hours. [2]

5 The figure shows the cross section of a circular pipe of diameter 46 cm. It is filled with water up to a depth of 15 cm.

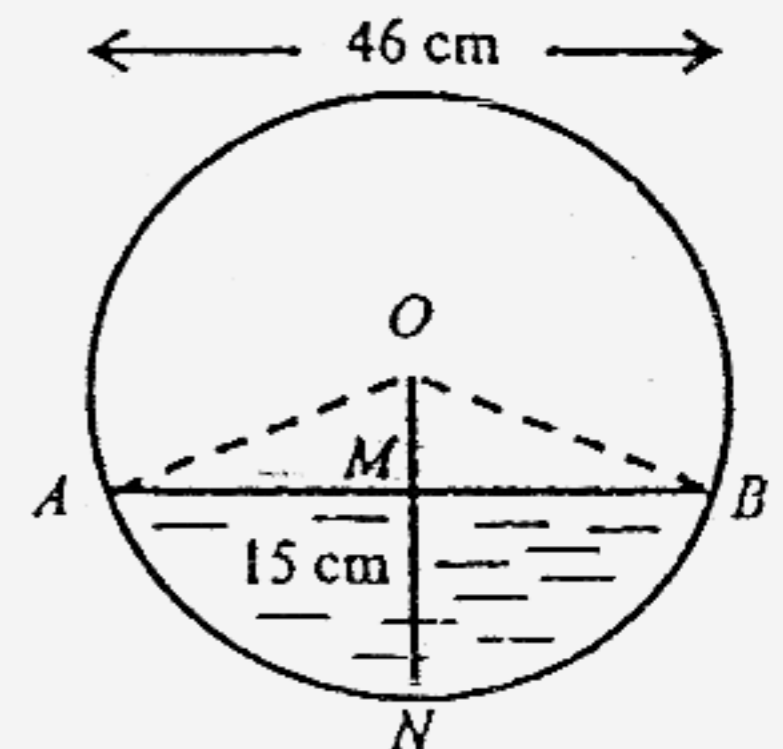
(i) Calculate the length of  $AB$ . [2]

(ii) Find  $\angle AOB$ . [2]

(iii) Find the area of segment  $ABN$ . [2]

(iv) The length of the pipe is 1.5 km. Calculate the amount of water in the pipe, if the cross section of the pipe and the water level is constant throughout the entire length of the pipe. Give your answer in litres.

[1 litre = 1000 cm<sup>3</sup>] [2]



- 6 In the diagram, the circle with centre at  $B$  has a radius  $(2r + 1)$  cm. The semicircle with centre at  $A$  and the semicircle with centre at  $C$  are identical and each has a radius  $(12 - 6r)$  cm.  $O$  is the centre of the largest semicircle.

(a) Write down an expression, in terms of  $r$ , for

(i)  $BC$ , [1]

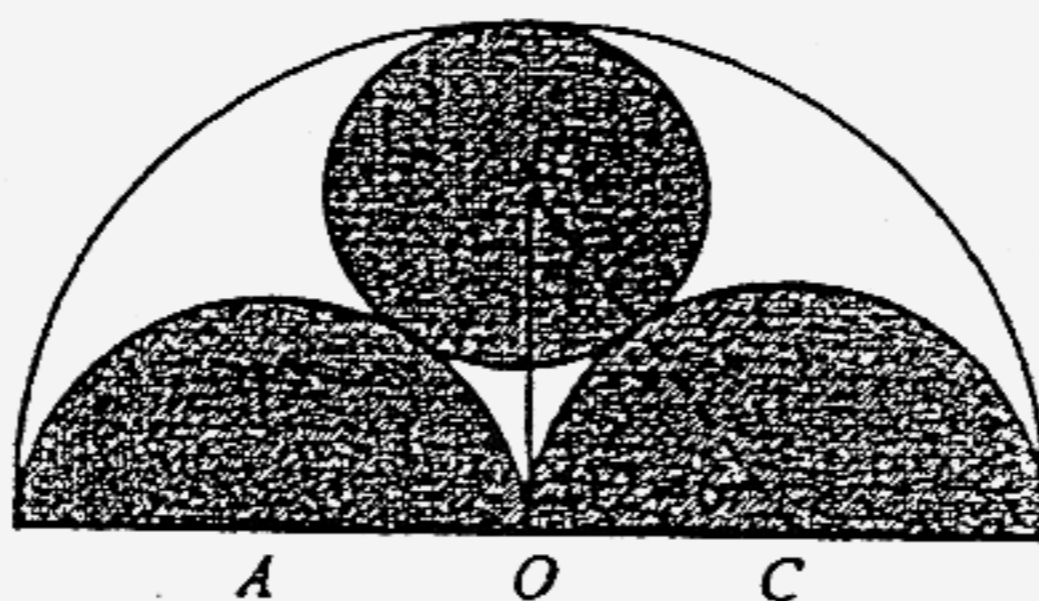
(ii)  $BO$ . [1]

(b) By using Pythagoras Theorem, form an equation in  $r$  and show that it reduces to

$$18r^2 - 57r + 42 = 0. \quad [2]$$

(c) Solve the equation to find the possible value of  $r$ . [2]

(d) Find the area of the unshaded region. [Take  $\pi = 3.142$ ] [2]



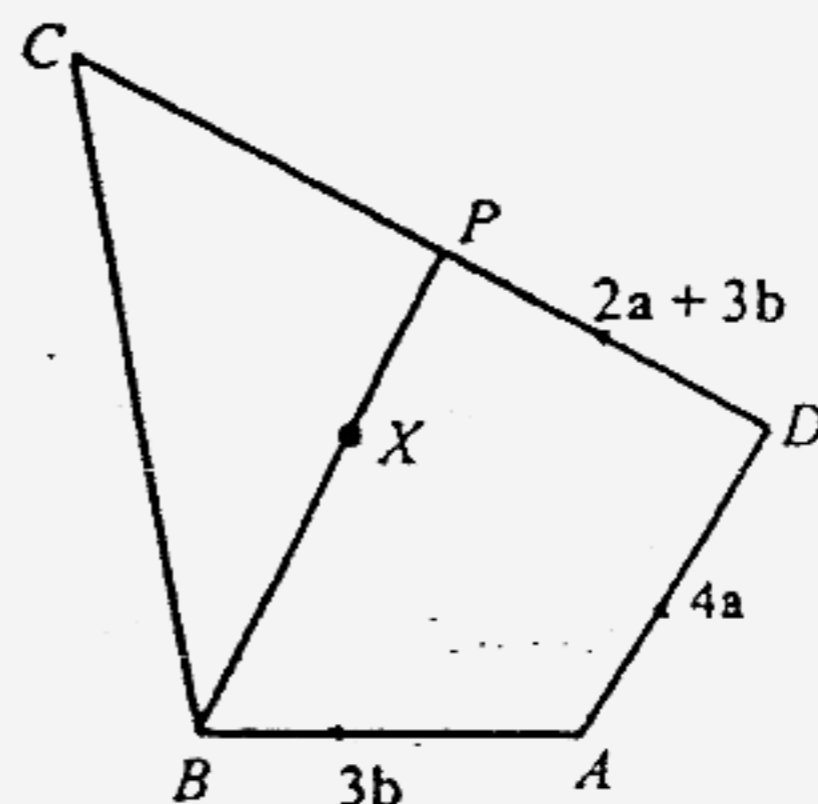
- 7 In the diagram,  $P$  is a point on  $DC$  such that  $DC = 2DP$  and  $X$  is a point on  $BP$  such that  $3BX = 2BP$ .  $\overline{AD} = 4a$ ,  $\overline{AB} = 3b$  and  $\overline{DP} = 2a + 3b$ .

(a) Express, as simply as possible, in terms of  $a$  and /or  $b$ ,

(i)  $\overline{BP}$ , [1]

(ii)  $\overline{AX}$ , [2]

(iii)  $\overline{AC}$ . [1]



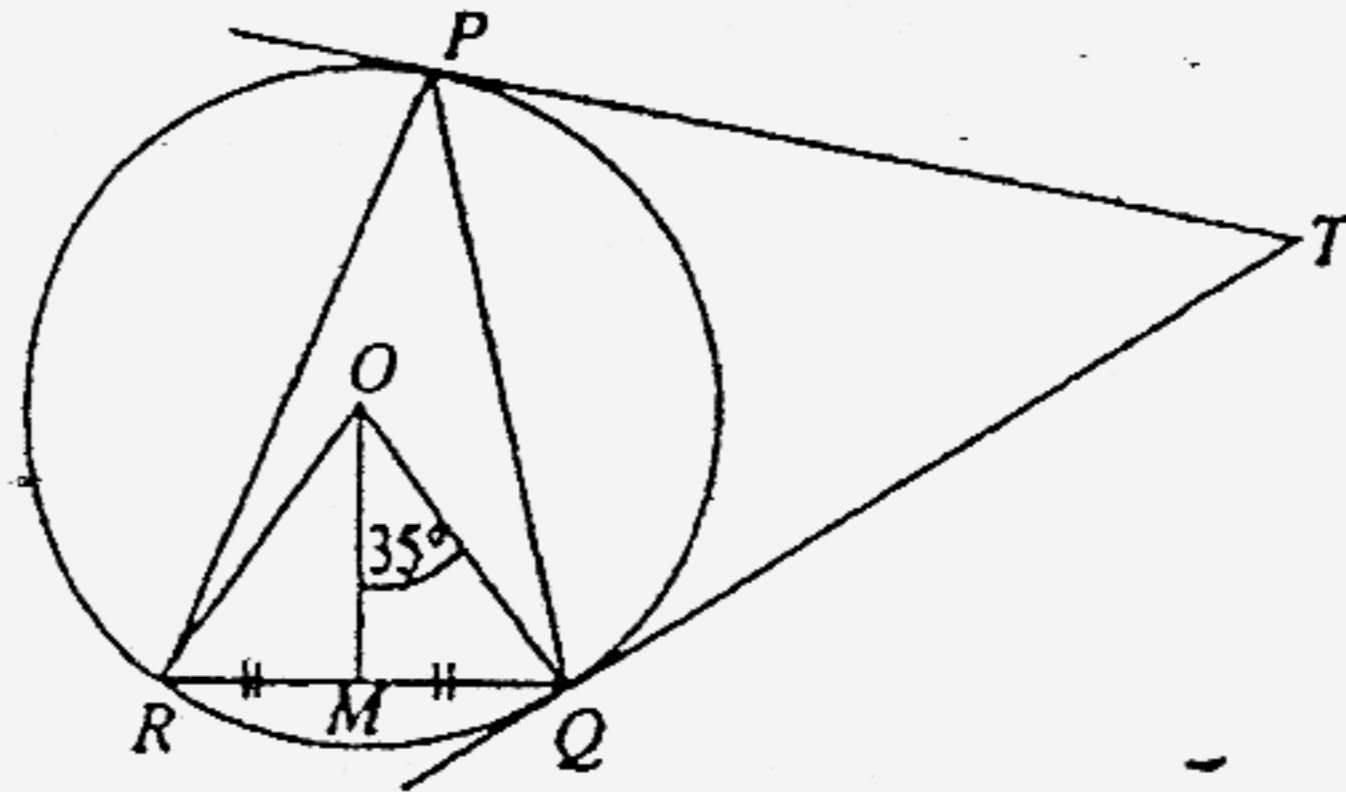
(b) From your answers to (a)(ii) and (a)(iii), what can you deduce about the points  $A$ ,  $X$  and  $C$ ? [1]

(c) Given that the area of  $\Delta BCP = 24 \text{ cm}^2$ , write down the area of

(i)  $\Delta CXP$ , [1]

(ii)  $\Delta ABX$ . [1]

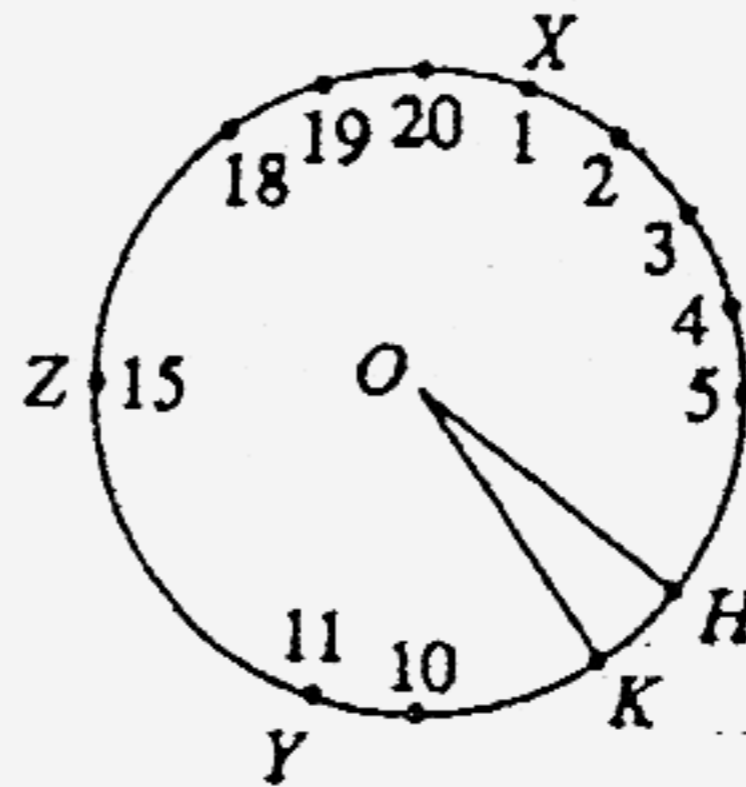
8 (a)



The circle with centre at  $O$ , passes through  $P$ ,  $Q$  and  $R$ . The tangents to the circle at  $P$  and  $Q$  meet at  $T$ . Given that the midpoint of  $RQ$  is  $M$ ,  $\angle QOM = 35^\circ$  and  $\angle PQO = 15^\circ$ , find

- (i)  $\angle RPQ$ , [2]  
 (ii)  $\angle PTQ$ . [2]

(b)

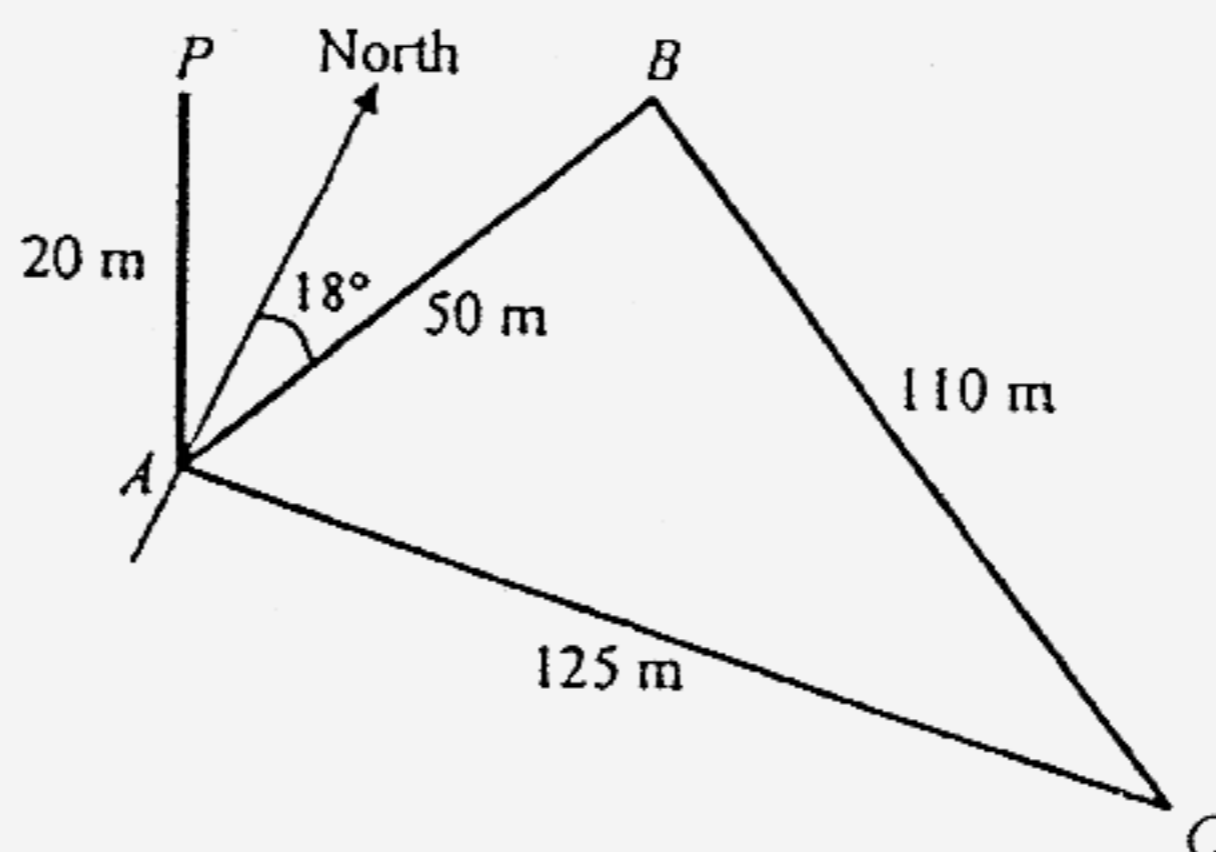


The circle represents a cycle wheel with centre  $O$ . The spokes from the centre of the wheel meet the circumference of the wheel at the points  $1, 2, \dots, 20$ . The points are marked at regular intervals. The diagram above shows some of these points.

$H$  and  $K$  are two of the points next to each other on the circumference.  $X$ ,  $Y$  and  $Z$  are the points labelled  $1$ ,  $11$  and  $15$  respectively. Calculate

- (i)  $\angle HOK$ , [1]  
 (ii)  $\angle HXK$ , [1]  
 (iii)  $\angle XYZ$  if  $XY$  is the diameter. [2]

- 9 In the diagram,  $ABC$  represents a horizontal triangular field and  $AP$  represents a vertical flagpole.  $B$  is 50 m from  $A$  on a bearing  $018^\circ$  and  $C$  is 125 m from  $A$ . The length of  $BC$  is 110 m and the height of the flagpole is 20 m.



- (a) Calculate
- (i) the bearing of  $A$  from  $B$ , [1]
  - (ii)  $\angle ABC$ . [2]
- (b) A man walks along  $CB$ . Calculate
- (i) the shortest distance the man is from  $A$  as he walks along  $CB$  produced, [2]
  - (ii) the greatest angle of elevation of the top of the flagpole when viewed by the man as he walks along  $CB$  produced. [2]

10 Answer the whole of this question on a sheet of plain paper.

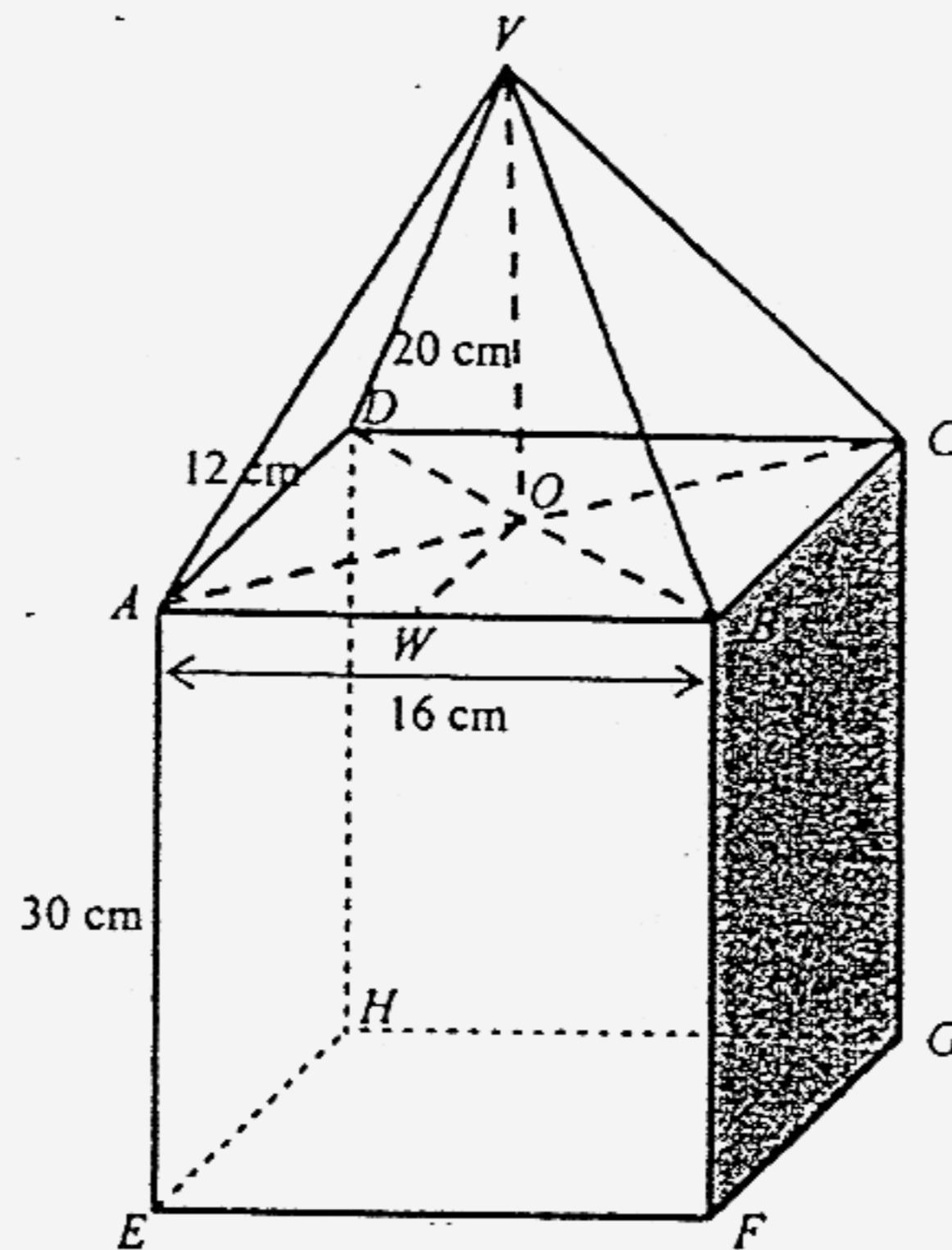
Three office buildings  $A$ ,  $B$  and  $C$  are located at the vertices of triangle  $ABC$  where  $B$  is 1050 m due east of  $A$ . It is given that  $AC = 900$  m and the bearing of  $C$  from  $A$  is  $140^\circ$ .

- (a) Using a scale of 1 cm to represent 100 m, make an accurate scale drawing of the triangle  $ABC$ . [1]
- (b) Use your drawing to find the bearing of  $B$  from  $C$ . [1]
- (c) A shopping centre  $S$  is located inside triangle  $ABC$ . It is 400 m from  $AC$  and equidistant from  $AB$  and  $BC$ .
- (i) On your scale drawing construct and label clearly the locus which represents all the points inside the triangle which are
- (1) 400 m from  $AC$ , [1]
- (2) equidistant from  $AB$  and  $BC$ . [1]
- (ii) Mark and label clearly the position of the shopping centre  $S$  [1]
- (d) The police received a call saying that a bomb  $M$  was hidden inside triangle  $ABC$ . The caller informed the police that the bomb is nearer to office building  $C$  than to office building  $B$ ,  $\angle MBC \geq \angle MBA$  and  $\angle BMC \leq 90^\circ$ . On your diagram, shade the possible region of the hidden bomb. [4]
- (e) A thorough search was carried out and the bomb was found in a rubbish bin which is equidistant from the three office buildings.
- (i) On your diagram, mark and label clearly with the letter  $R$ , the position of the rubbish bin. [2]
- (ii) Did the caller provide accurate information about the possible location of the bomb? Give a reason to support your answer. [1]

Section B [12 marks]

Answer one question in this section.

11



The diagram shows a monument which consists of a right rectangular pyramid and a rectangular cuboid. Given that  $AB = 16$  cm,  $AD = 12$  cm,  $AE = 30$  cm,  $VO = 20$  cm and  $W$  is the midpoint of  $AB$ , calculate

- (a)  $\angle ADE$ , [2]
- (b) the length of  $WG$ , [3]
- (c) the tangent of the angle between  $VO$  and  $VW$ , [2]
- (d)  $\angle CVO$ , [3]
- (e) the angle of elevation of  $V$  from  $B$ . [2]

12 Answer the whole of this question on a sheet of graph paper:

The table below shows some values of  $x$  and the corresponding values of  $y$ , given

correct to 2 decimal places, for  $y = \frac{x^2}{3} + \frac{2}{x} - 1$ .

$x$	0.5	0.6	0.8	1.0	1.5	2.0	2.5	3.0
$y$	3.08	2.45	$p$	1.33	1.08	1.33	1.88	2.67

- (a) Calculate the value of  $p$ , correct to 2 decimal places. [1]
- (b) Using a scale of 4 cm to represent 1 unit on each axis, draw the graph for  $0 \leq x \leq 3$  and for  $0 \leq y \leq 4$ . [3]
- (c) Find the coordinates of a point on the curve whose gradient is  $-1$ . [2]
- (d) On the same graph, draw suitable straight lines to solve the equation
- (i)  $\frac{x^2}{3} + \frac{2}{x} - 1 = 2$
- (ii)  $x^2 + \frac{6}{x} = 6x + 3$ . [4]
- (e) Using your graph, find the range of values of  $x$  for which  $\frac{x^2}{3} + \frac{2}{x} < \frac{5}{2}$ . [2]

End of Paper





## CEDAR GIRLS' SECONDARY SCHOOL

SECONDARY 4 MATHEMATICS

Suggested Answer for Paper 4017/1

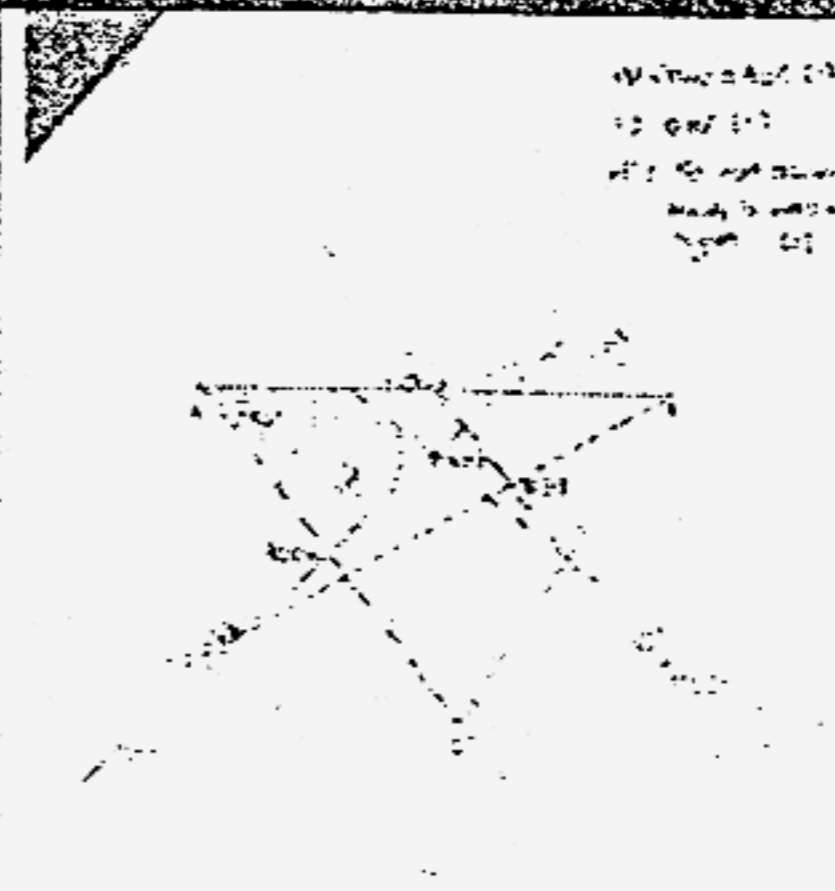
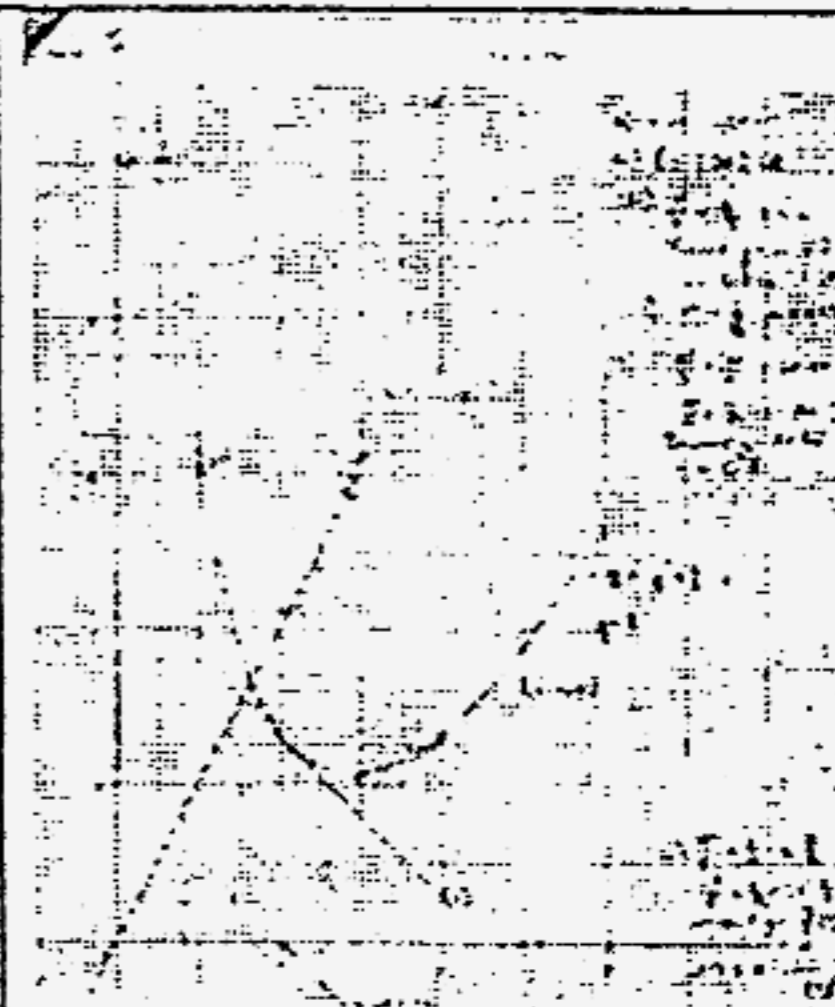
1(a)	$2.1 \times 10^{-4}$	11(a)	-1.19
1(b)	$1.328 \times 10^3$	11(b)	32.4
2(a)	-1.34	11(c)	$1.925 \text{ cm}^2$
2(b)	$4\frac{7}{8}$	12(a)	$67^\circ$
3(a)	$a = -\frac{3}{2}$ $b = \frac{3}{5}$	12(b)	$44^\circ$
3(b)	$m = \frac{11}{10}$ $n = 5$	12(c)	$67^\circ$
4(a)	$A = \frac{8}{B-4}$	13(a)(i)	4.4 cm
4(b)	4	13(a)(ii)	4.4 cm
5(a)	$y \leq -2$	13(b)(i)	6, 7, 8
5(b)(i)	4	13(b)(ii)	7
5(b)(ii)	36	14(a)	25, 125
6		14(b)	$A = n^2, 529$
		14(c)	11 <sup>th</sup> Row
7(a)	1 : 40 000	15(a)	23.2 m/s
7(b)	4.8 km	15(b)	85 s
7(c)	$52.5 \text{ cm}^2$	15(c)	26.4 m/s
8(a)	$12.5 \text{ cm}^2$	16(a)	38
8(b)	$(\frac{5\sqrt{2}}{4}\pi + \frac{5}{2}\pi + 5\sqrt{2}) \text{ cm}$	16(b)	20
9(a)	$4\frac{6}{7} \text{ cm}$	17(a)	$\begin{pmatrix} k+3 \\ -4 \end{pmatrix}$
9(b)	$2x \text{ cm}^2$	17(b)	5 or -5
9(c)	$\frac{25}{24}$	17(c)	(9, -12)
10(a)(i)	(3, 8)	18(a)	Reflection about $x = 1$
10(a)(ii)	$y = 2x + 2$	18(b)	Stretch with x-axis invariant and stretch factor $-\frac{1}{2}$
10(b)	$y = -2x - 2$	18(c)	Draw $A_1(5, -3)$ , $B_1(5, 1)$ , $C_1(3, -1)$
10(c)	$\sqrt{26}$ units		



**CEDAR GIRLS' SECONDARY SCHOOL**

SECONDARY 4 MATHEMATICS

Suggested Answer for Paper 4017/2

1(a)	$\frac{6x+4}{x^2-4}$	10(a)(ii)	
1(b)	$(a^2-2)(a-2), \frac{a^2-2}{3a+1}$		
2(a)	\$635		
2(b)	6%		
2(c)	\$18.33	10(b)	035
2(d)	3.25%	10(e)ii)	No, not accurate cos' the bomb is inside the region
3(a)	11.7 cm	11(a)	68.2°
3(b)	6.99 cm	11(b)	33.3 cm
3(c)	123.6°	11(c)	0.3
3(d)	37.5 cm <sup>2</sup>	11(d)	26.6°
4(a)	77, 180, 335, 455	11(e)	63.4°
4(c)i)	Median = 3.4hrs	12	
4(c)ii)	Interquatile Range = 1.75		
4(c)iii)	225		
4(d)	n = 4.5h		
4(e)	$\frac{75}{1916}$		
5(i)	43.1 cm	12(a)	1.71
5(ii)	139.3°		
5(iii)	470.6 cm <sup>2</sup>		
5(iv)	70590 litres		
6(a)i)	13 - 4r	12(c)	(1, 1.33)
6(a)ii)	23 - 14r or $\sqrt{-20r^2 + 40r + 25}$		
6(c)	2 (NA) or $1\frac{1}{6}$ cm		
6(d)	43.6 cm <sup>2</sup>	12(d)i)	Insert y = -2 x = 0.7 or 2.6

7(a)i)	$6a$	12(d)ii)	Insert $y = 2x$ $x = 0.8$
7(a)ii)	$4a + 3b$	12(e)	Insert $y = \frac{3}{2}$ $0.9 < x < 2.2$
7(a)iii)	$2(4a + 3b)$		
7(b)	$A, X \text{ \& } C$ are collinear		
7(c)i)	$8 \text{ cm}^2$		
7(c)ii)	$16 \text{ cm}^2$		
8(a)i)	$35^\circ$		
8(a)ii)	$30^\circ$		
8(b)i)	$18^\circ$		
8(b)ii)	$9^\circ$		
8(b)iii)	$54^\circ$		
9(a)i)	$198^\circ$		
9(a)ii)	$95.3^\circ$		
9(b)i)	$49.8 \text{ cm}$		
9(b)(ii)	$21.9^\circ$		