

Centre No					
Candidate No					

Paper reference							
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Surname	Initial(s)
Signature	

Paper References(s)

5503/03

Edexcel GCSE

Mathematics A – 1387

Paper 3 (Non-Calculator)

Intermediate Tier

Friday 5 November 2004 – Morning

Time: 2 hours

Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.
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 20 questions. There is one blank page.

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

Calculators must not be used.

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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N17481RA

Turn over

Answer ALL TWENTY questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

You must NOT use a calculator.

1. Enzo makes pizzas.

One day he makes 36 pizzas.
He charges £2.45 for each pizza.

(a) Work out the total amount he charges for 36 pizzas.

£.....
(3)

Mario delivers pizzas.
He is paid 65p for each pizza he delivers.
One day he was paid £27.30 for delivering pizzas.

(b) How many pizzas did Mario deliver?

..... pizzas
(3)

Rosa prepares the ingredients for pizzas.

She uses cheese, topping and dough in the ratio 2 : 3 : 5
Rose uses 70 grams of dough.

(c) Work out the number of grams of cheese and the number of grams of topping Rosa uses.

Cheese.....g

Toppingg
(Total 9 marks)

2. The table gives information about an estate agent's charges for selling a house.

Value of the house	Estate agent's charges
Up to £60 000	2% of the value of the house
Over £60 000	2% of the first £60 000 plus 1% of the remaining value of the house

The estate agent sold a house for £80 000.

Work out the total charge.

£.....
(Total 4 marks)

3. (a) Work out

$$1 - \left(\frac{1}{2} + \frac{1}{6} \right)$$

.....
(3)

- (b) Work out

$$12\frac{1}{2} \div \frac{5}{8}$$

.....
(3)
(Total 6 marks)

4. The diagram shows a Tangram.

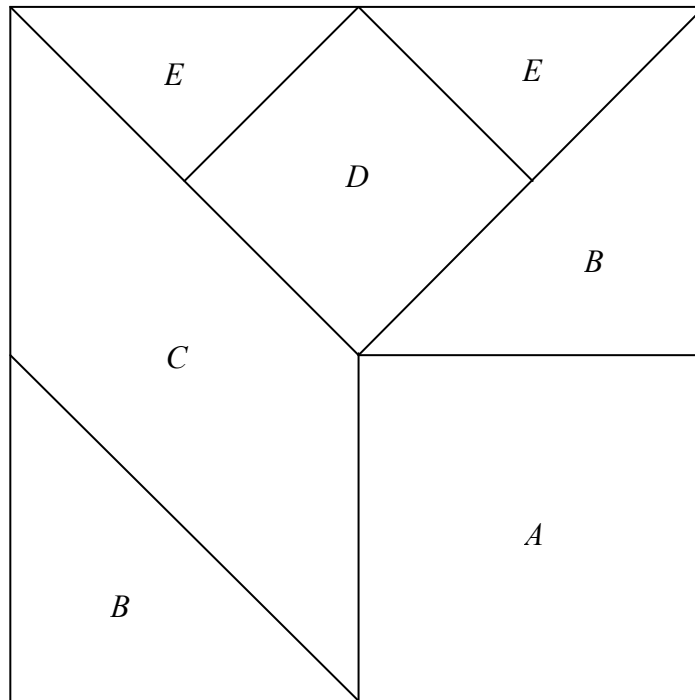


Diagram **accurately**
drawn

The Tangram is a large square that is made up from

one square *A*,
two triangles *B*,
one parallelogram *C*,
another square *D* and
two small triangles *E*.

The total area of the Tangram is 64 cm^2 .

Find the area of

(i) square *A*,

..... cm^2

(ii) triangle *B*,

..... cm^2

(iii) parallelogram *C*.

..... cm^2

(Total 4 marks)

5. (a) Simplify

(i) $3a + 4b - 2a - b$

.....

(ii) $5x^2 + 2x - 3x^2 - x$

.....

(4)

(b) Expand the brackets

(i) $4(2x - 3)$

.....

(ii) $p(q - p^2)$

.....

(2)

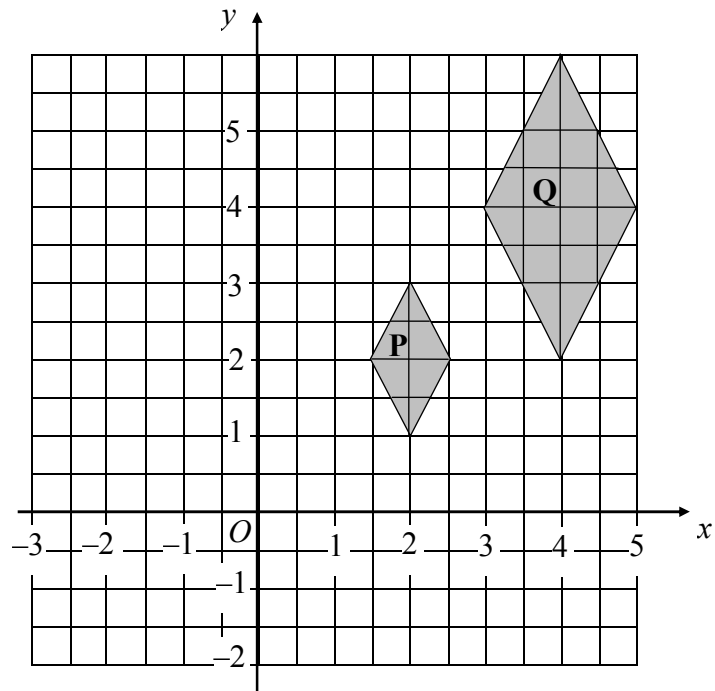
(c) Expand and simplify $5(3p + 2) - 2(5p - 3)$

.....

(2)

(Total 8 marks)

6.



(i) Describe fully the single transformation that maps shape **P** onto shape **Q**.

.....
.....

(ii) Reflect shape **P** in the line $x = 1$

(Total 5 marks)

7.

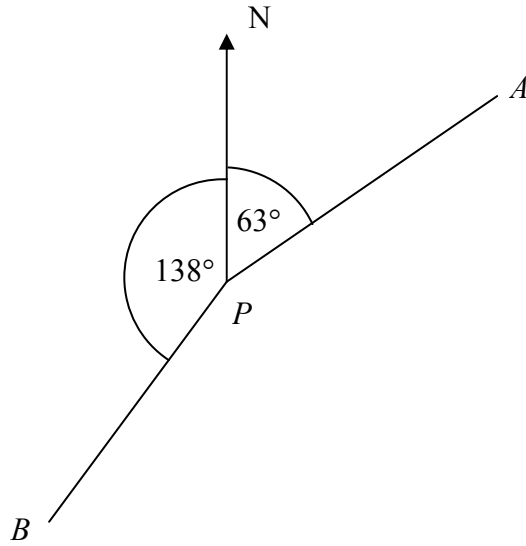


Diagram **NOT** accurately drawn

Work out the bearing of

(i) *B* from *P*,

.....°

(i) *P* from *A*,

.....°

(Total 3 marks)

8.

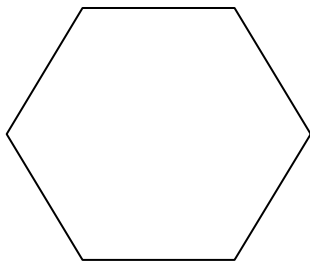


Diagram **NOT** accurately drawn

Calculate the size of the exterior angle of a regular hexagon.

.....°

(Total 2 marks)

9. Siân wants to collect information about the different ways in which students travel to school.
Design a suitable data collection sheet that Siân could use to collect the information.

(Total 3 marks)

10. On average, Nick walks 18 000 steps every day.
He walks 1 mile approximately every 3500 steps.

Work out an estimate for the average distance, in miles, that Nick walks **in one year**.

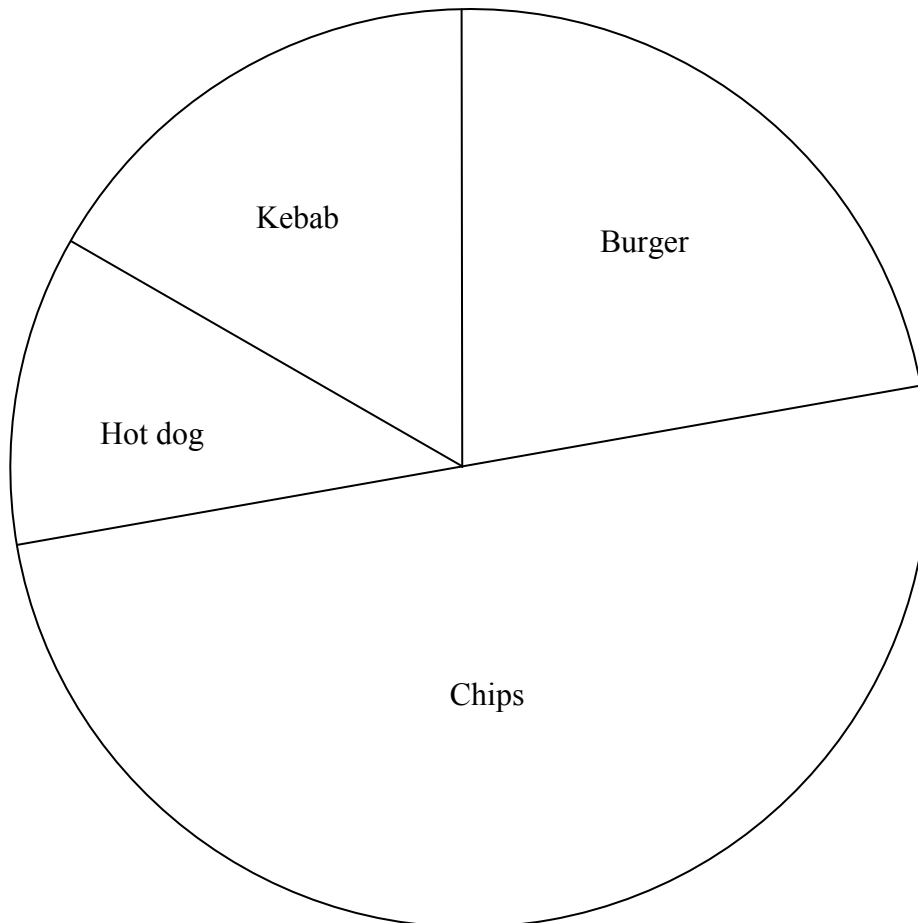
..... miles
(Total 3 marks)

11. Sandra carries out a survey of 90 Year 11 students.
She asks them their favourite snack.

She draws this accurate pie chart.

Favourite snack in
Year 11

Diagram **accurately**
drawn



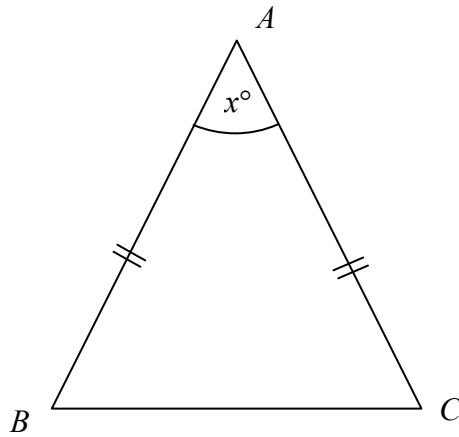
Use the pie chart to complete the table.

Favourite snack in Year 11	Frequency	Angle
Burger	20	
Chips	45	180°
Hot dog		
Kebab		
Total	90	

(Total 4 marks)

12. ABC is an isosceles triangle.

Diagram **NOT** accurately drawn



$$\begin{aligned} AB &= AC \\ AB &= 3p + q \\ BC &= p + q \end{aligned}$$

- (a) Find an expression, in terms of p and q , for the perimeter of the triangle.
Give your answer in its simplest form.

.....
(2)

Angle $A = x^\circ$

- (b) Find an expression, in terms of x , for the size of angle B .

.....
(2)

- (b) Solve the simultaneous equations

$$3p + q = 11$$

$$p + q = 3$$

$$p = \dots\dots\dots$$

$$q = \dots\dots\dots$$

(3)
(Total 7 marks)

13. (a) (i) Write 40 000 000 in standard form.

.....

(ii) Write 3×10^{-5} as an ordinary number.

.....

(2)

(b) Work out the value of

$$3 \times 10^{-5} \times 40\,000\,000$$

Give your answer in standard form.

.....

(2)

(Total 4 marks)

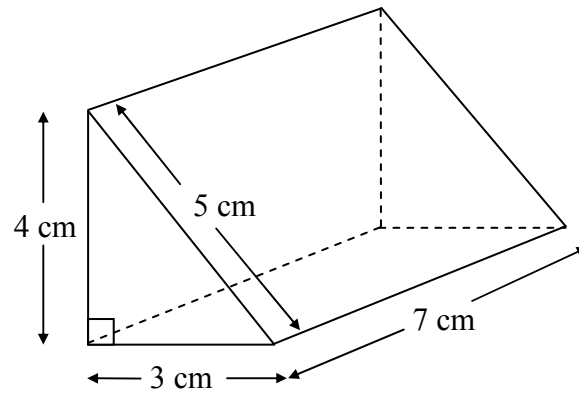
14. Use ruler and compasses to **construct** an angle of 45° at A .
You must show **all** construction lines.

A _____

(Total 3 marks)

15.

Diagram **NOT**
accurately drawn



Calculate the volume of the triangular prism.

.....
(Total 4 marks)

16. (a) Simplify

(i) $\frac{x^6}{x^2}$

.....

(ii) $(y^4)^3$

.....

(2)

(b) Expand and simplify $(t + 4)(t - 2)$

.....

(2)

(c) Write down the integer values of x that satisfy the inequality

$$-2 \leq x < 4$$

.....

(2)

(Total 6 marks)

17.

$$D = ut + kt^2$$

$$u = 20$$

$$t = 1.2$$

$$k = -5$$

(a) Work out the value of D .

.....
(2)

$$D = 50$$

$$t = 5$$

$$k = -5$$

(c) Work out the value of u .

.....
(2)

(c) Make u the subject of the formula

$$D = ut + kt^2$$

$u =$
(2)

(Total 6 marks)

18. The table gives information about the ages of 160 employees of an IT company.

Age (A) in years	Frequency
$15 < A \leq 25$	44
$25 < A \leq 35$	56
$35 < A \leq 45$	34
$45 < A \leq 55$	19
$55 < A \leq 65$	7

(a) Write down the modal class interval

.....
(1)

(b) Complete the cumulative frequency table.

Age (A) in years	Cumulative Frequency
$15 < A \leq 25$	
$15 < A \leq 35$	
$15 < A \leq 45$	
$15 < A \leq 55$	
$15 < A \leq 65$	

(1)

(c) On the grid opposite, draw a cumulative frequency graph for your table.

(2)

(d) Use your graph to find an estimate for

(i) the median age of the employees,

..... years

(i) the interquartile range of the ages of the employees.

..... years

(3)

Another IT company has 80 employees.

The age of the youngest employee is 24 years.

The age of the oldest employee is 54 years.

The median age is 38 years.

The lower quartile is 30 years.

The lower quartile is 44 years.

(e) On the grid opposite, draw a box plot to show information about the ages of the employees.

(2)

(Total 9 marks)

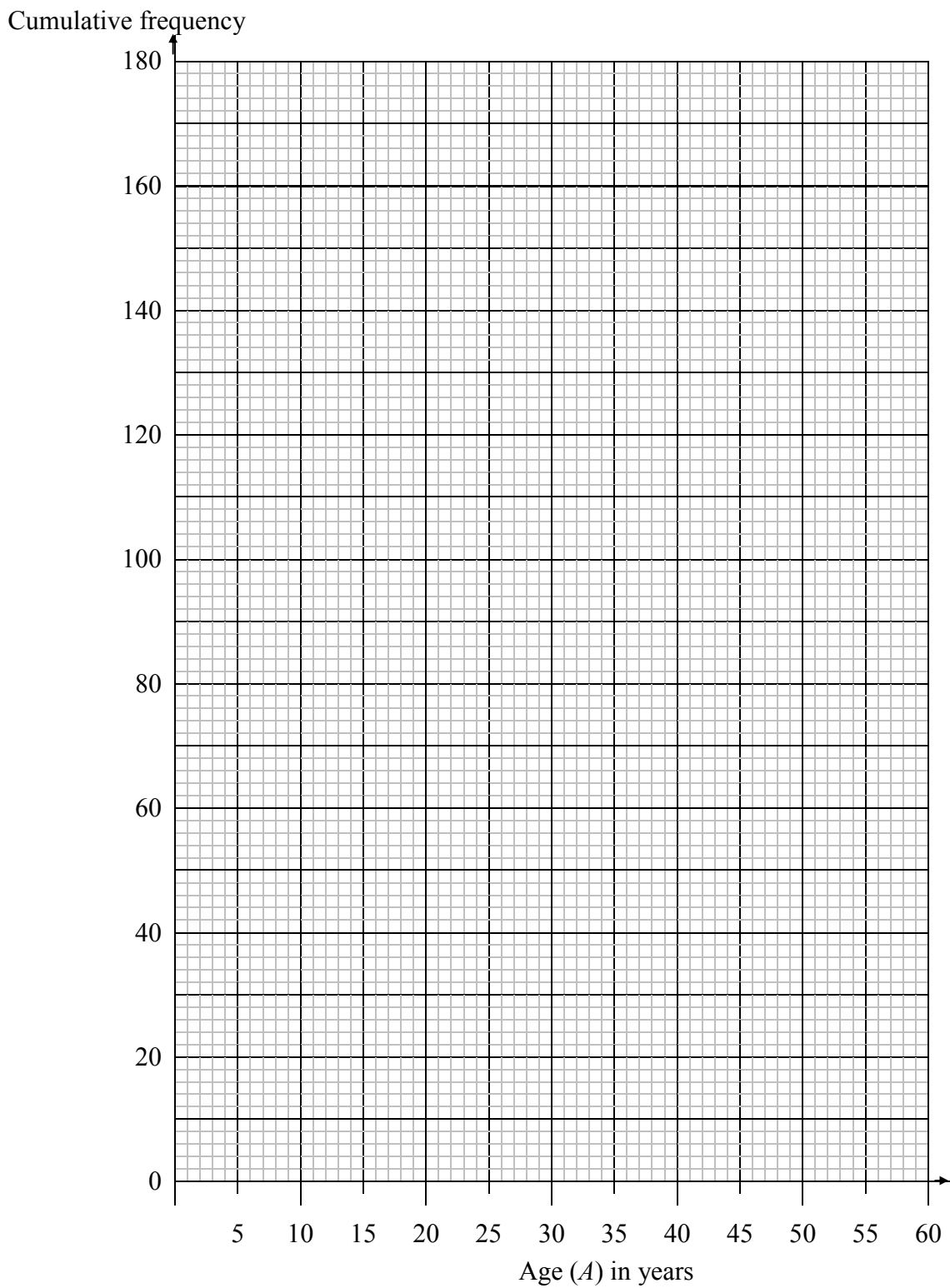
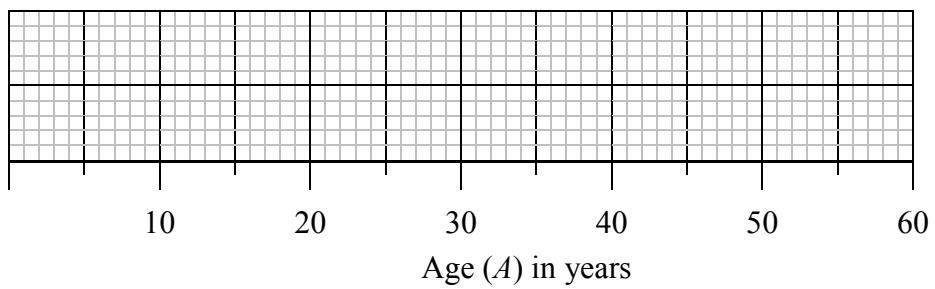
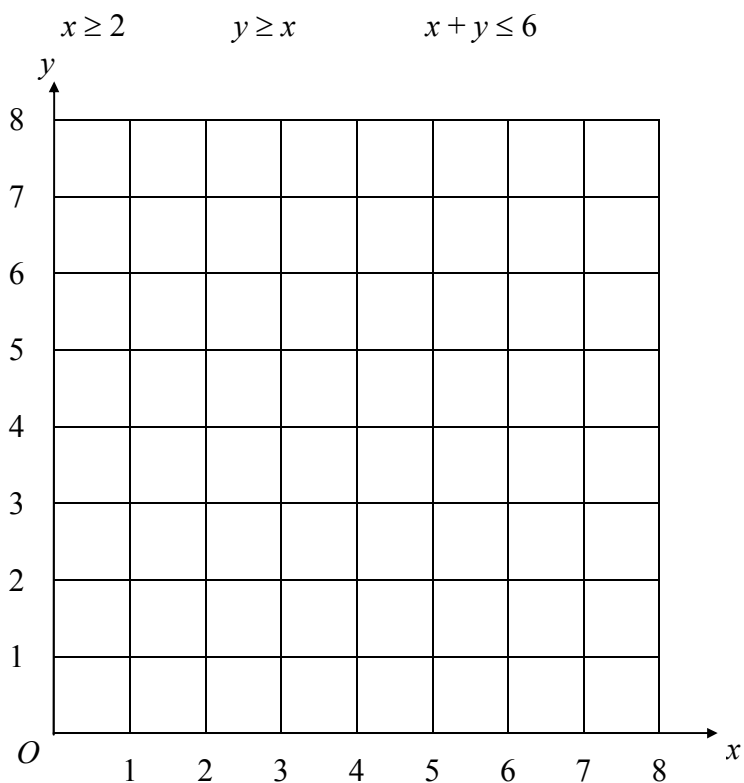


Diagram for part (e)



19. (a) On the grid below, draw straight lines and use shading to show the region **R** that satisfies the inequalities



(3)

The point P with coordinates (x, y) lies inside the region **R**.
 x and y are **integers**.

- (b) Write down the coordinates of **all** points of **R** whose coordinates are both integers.

.....

(2)

(Total 5 marks)

20.

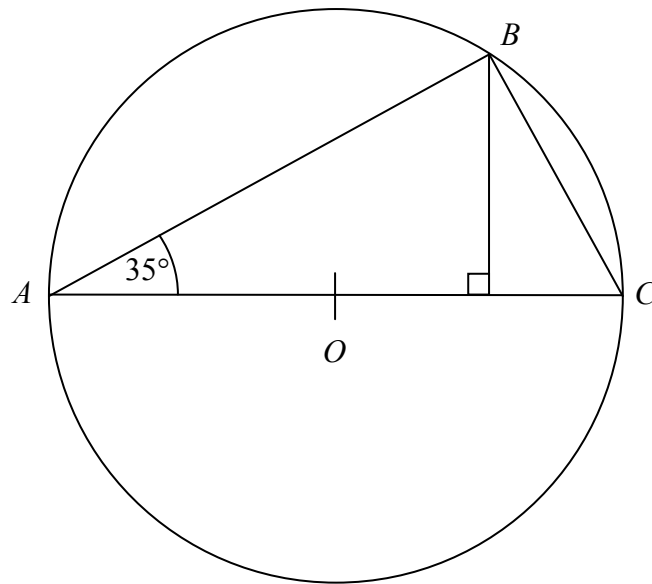


Diagram **NOT** accurately drawn

The diagram shows a circle, centre O .

AC is a diameter.

Angle $BAC = 35^\circ$.

D is the point on AC such that angle BDA is a right angle.

- (a) Work out the size of angle BCA .
Give reasons for your answer.

.....^o
(2)

- (b) Calculate the size of angle DBC .

.....^o
(1)

- (c) Calculate the size of angle BOA .

.....^o
(2)

(Total 5 marks)

TOTAL FOR PAPER: 100 MARKS

END