Centre No.						Paper Reference						Surname	Initial(s)
Candidate No.						5	5	0	3	/	0	3	Signature

Examiner's use only

Team Leader's use only

Paper Reference(s)

5503/03

Edexcel GCSE

Mathematics A – 1387

Paper 3 (Non-Calculator)

Intermediate Tier

Wednesday 4 June 2003 – Afternoon

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

Formulae sheet

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initial(s), and your signature.
Check that you have the correct question paper.
Answer **ALL** the questions in the spaces provided in this question paper.
Supplementary answer sheets may be used.

Information for Candidates

The total mark for this paper is 100.
The marks for individual questions and parts of questions are shown in round brackets: e.g. (**2**).
Calculators must not be used.
This paper has 27 questions. There is one blank page.

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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Edexcel
Success through qualifications

Answer ALL TWENTY SEVEN questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

You must NOT use a calculator.

Leave blank

1. (a) Simplify

(i) $3g + 5g$

.....

(ii) $2r \times 5p$

.....

(2)

(b) Expand $5(2y - 3)$

.....

(1)

(c) Expand and simplify

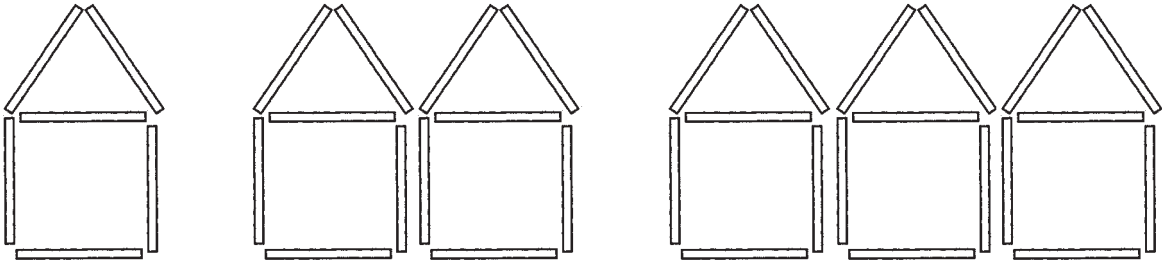
$2(3x + 4) - 3(4x - 5)$

.....

(2)

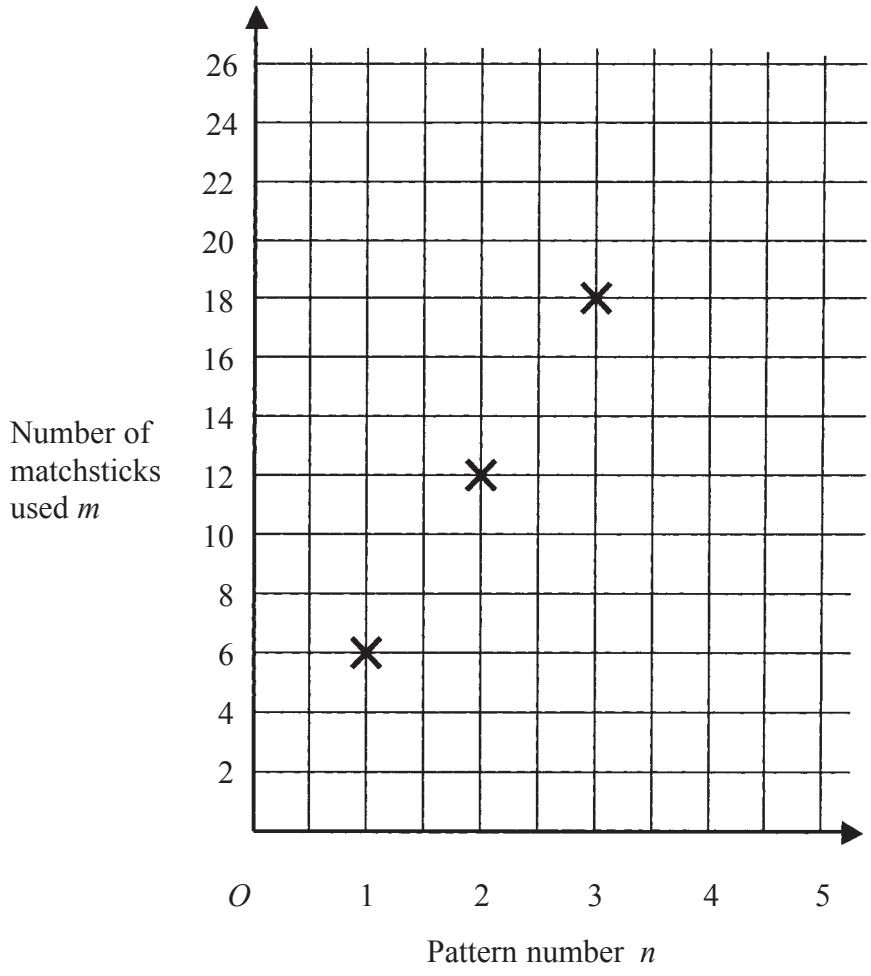
2. Here are some patterns made from matchsticks.

Leave blank



Pattern number 1 Pattern number 2 Pattern number 3

The graph shows the number of matchsticks m used in pattern number n.



Write down a formula for m in terms of n.

.....

(2)

Page Total

3. Write these numbers in order of size.
Start with the smallest number.

Leave blank

(i) 0.56, 0.067, 0.6, 0.65, 0.605

.....

(ii) $5, -6, -10, 2, -4$

.....

(iii) $\frac{1}{2}, \frac{2}{3}, \frac{2}{5}, \frac{3}{4}$

.....

(4)

4. Bob carried out a survey of 100 people who buy tea.

He asked them about the tea they buy most.

The two-way table gives some information about his results.

	Tea bags	Packet tea	Instant tea	Total
50 g	2	0	5	
100 g	35	20		60
200 g	15			
Total		25		100

Complete the two-way table.

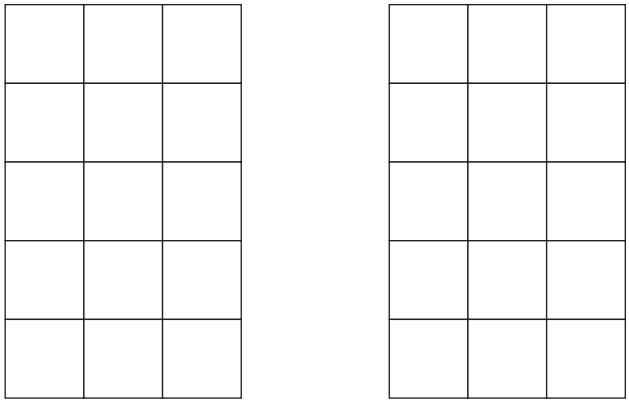
(3)

Leave blank

5. Here are two fractions $\frac{3}{5}$ and $\frac{2}{3}$.

Explain which is the larger fraction.

You may use the grids to help with your explanation.



.....

.....

.....

(3)

6. Rosie had 10 boxes of drawing pins.

She counted the number of drawing pins in each box.

The table gives information about her results.

Number of drawing pins	Frequency	
29	2	
30	5	
31	2	
32	1	

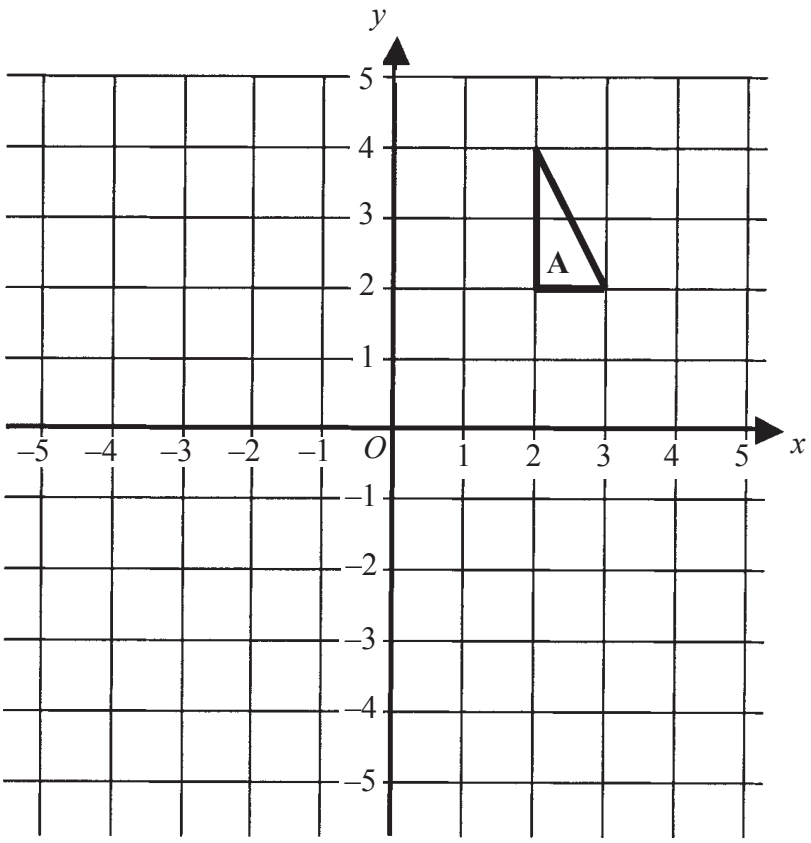
Work out the mean number of drawing pins in a box.

.....

(3)

Page Total

7.



(a) On the grid, rotate triangle **A** 180° about O.

Label your new triangle **B**.

(2)

(b) On the grid, enlarge triangle **A** by scale factor $\frac{1}{2}$, centre O.

Label your new triangle **C**.

(3)

Leave blank

Leave blank

8. Lisa packs pencils in boxes.

She packs 12 pencils in each box.

Lisa packs x boxes of pencils.

(a) Write an expression, in terms of x, for the number of pencils Lisa packs.

.....

(1)

Lisa also packs pens in boxes.

She packs 10 pens into each box.

Lisa packs y boxes of pens.

(b) Write down an expression, in terms of x and y, for the **total** number of pens and pencils Lisa packs.

.....

(2)

9. Simon spent $\frac{1}{3}$ of his pocket money on a computer game.

He spent $\frac{1}{4}$ of his pocket money on a ticket for a football match.

Work out the fraction of his pocket money that he had left.

.....

(3)

Page Total

10.

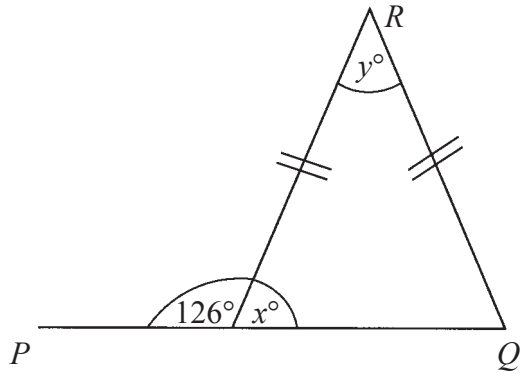


Diagram **NOT** accurately drawn

PQ is a straight line.

(a) Work out the size of the angle marked $x°$.

.....°

(1)

(b) (i) Work out the size of the angle marked $y°$.

.....°

(ii) Give reasons for your answer.

.....

.....

(3)

Leave blank

11. Tayub said, "When $x = 3$, then the value of $4x^2$ is 144".

Bryani said, "When $x = 3$, then the value of $4x^2$ is 36".

(a) Who was right?

Explain why.

(2)

(b) Work out the value of $4(x + 1)^2$ when $x = 3$.

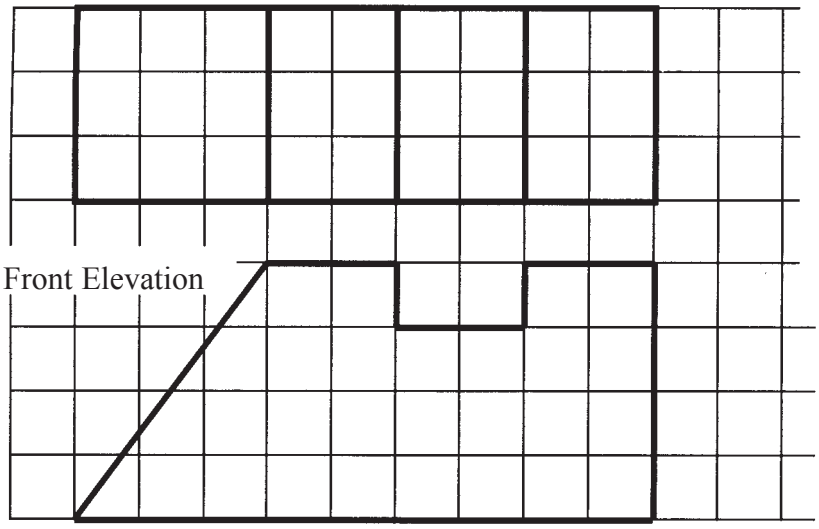
.....

(1)

Leave blank

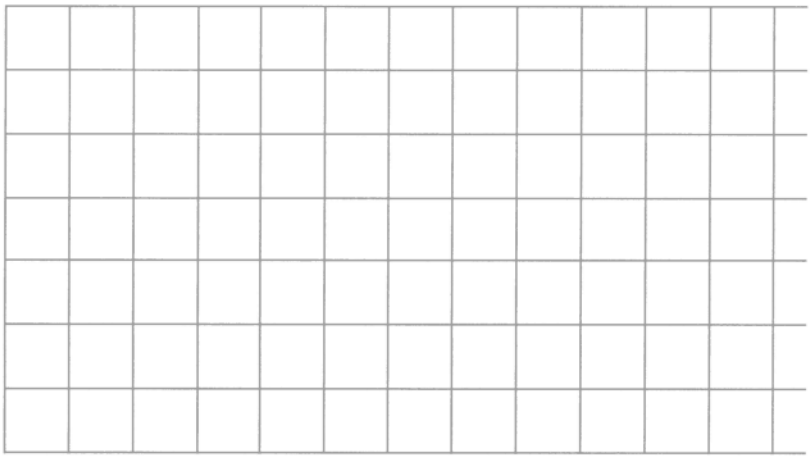
12. Here are the plan and front elevation of a prism.
The front elevation shows the cross section of the prism.

Plan



Front Elevation

(a) On the grid below, draw a side elevation of the prism.



(3)

(b) In the space below, draw a 3-D sketch of the prism.

(2)

Page Total

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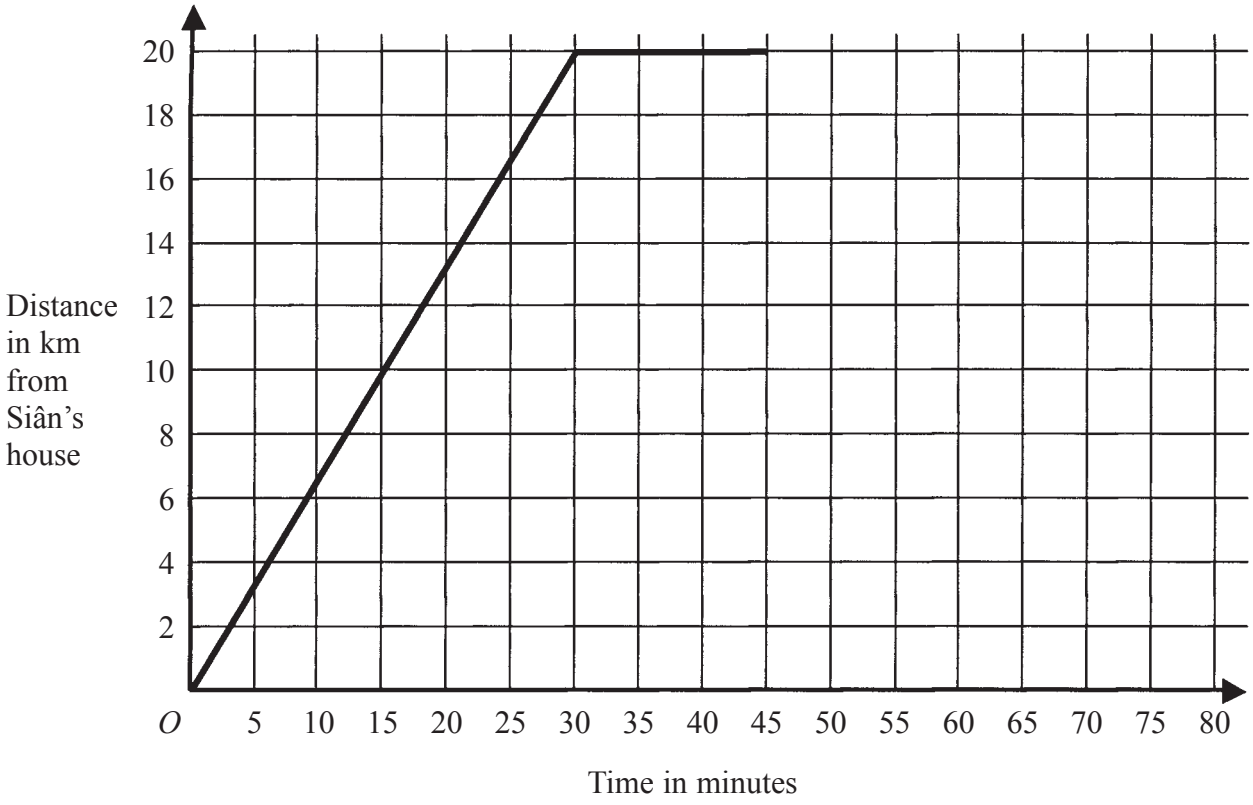
13. Here is part of a travel graph of Siân's journey from her house to the shops and back.



(a) Work out Siân's speed for the first 30 minutes of her journey.
Give your answer in km/h.

..... km/h

(2)

Siân spends 15 minutes at the shops.
She then travels back to her house at 60 km/h.

(b) Complete the travel graph.

(2)

Leave blank

14. Using the information that

$$97 \times 123 = 11\,931$$

write down the value of

(i) 9.7×12.3

.....

(ii) $0.97 \times 123\,000$

.....

(iii) $11.931 \div 9.7$

.....

(3)

15. Ben bought a car for £12 000.

Each year the value of the car depreciated by 10%.

Work out the value of the car two years after he bought it.

£ .....

(3)

Page Total

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16. (a) Solve $7p + 2 = 5p + 8$

$p =$ .....

(2)

(b) Solve $7r + 2 = 5(r - 4)$

$r =$ .....

(2)

17. Here are the first 5 terms of an arithmetic sequence.

6, 11, 16, 21, 26

Find an expression, in terms of n, for the nth term of the sequence.

.....

(2)

Leave blank

18. (a) $-2 < x \leqslant 1$

x is an integer.

Write down all the possible values of x.

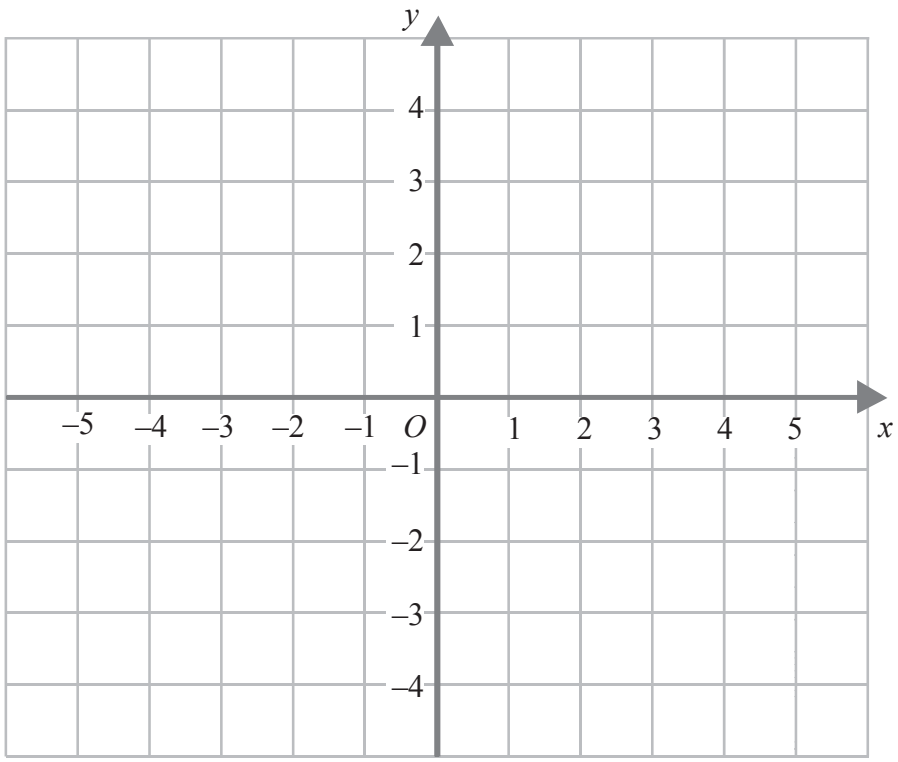
.....

(2)

(b) $-2 < x \leqslant 1$ $\quad y > -2$ $\quad y < x + 1$

x and y are integers.

On the grid, mark with a cross (×), each of the six points which satisfies **all** these 3 inequalities.



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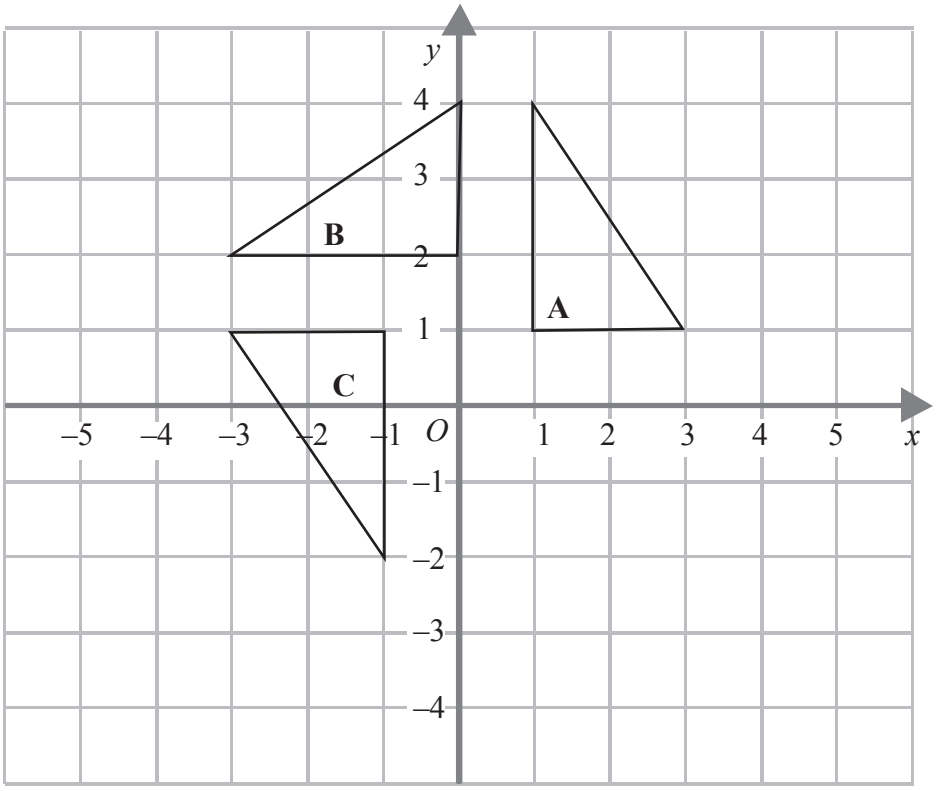


Shape **A** is rotated 90° anticlockwise, centre (0, 1), to shape **B**

Shape **B** is rotated 90° anticlockwise, centre (0, 1), to shape **C**

Shape **C** is rotated 90° anticlockwise, centre (0, 1), to shape **D**

(a) Mark the position of Shape **D**

(2)

(b) Describe the single transformation that takes shape **C** to shape **A**.

.....

(2)

Leave blank

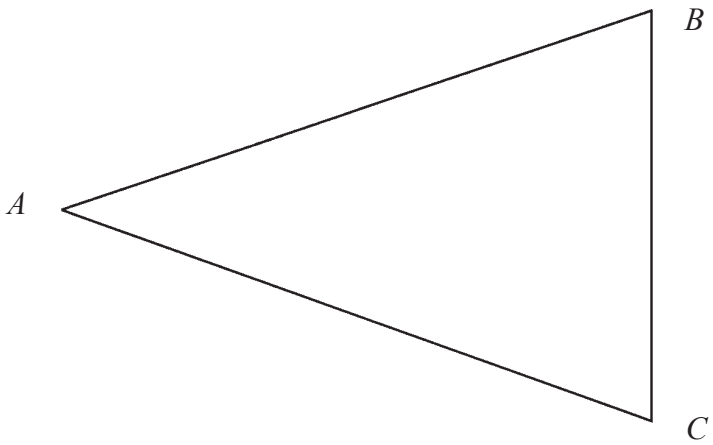
20. The diagram represents a triangular garden ABC.

The scale of the diagram is 1 cm represents 1 m.

A tree is to be planted in the garden so that it is

nearer to AB than to AC,
within 5 m of point A.

On the diagram, shade the region where the tree may be planted.



(3)

21. This table shows some expressions.

The letters x, y and z represent lengths.

Place a tick in the appropriate column for each expression to show whether the expression can be used to represent a length, an area, a volume or none of these.

Expression	Length	Area	Volume	None of these
$x + y + z$				
xyz				
$xy + yz + xz$				

(3)

Page Total

22. Mr Beeton is going to open a restaurant.
He wants to know what type of restaurant people like.
He designs a questionnaire.

Leave blank

(a) Design a suitable question he could use to find out what type of restaurant people like.

(2)

He asks his family "Do you agree that pizza is better than pasta?"

This is **not** a good way to find out what people who might use his restaurant like to eat.

(b) Write down **two** reasons why this is **not** a good way to find out what people who might use his restaurant like to eat.

First reason .....

.....

Second reason .....

.....

(2)

Leave blank

23. A spaceship travelled for 6×10^2 hours at a speed of 8×10^4 km/h.

(a) Calculate the distance travelled by the spaceship.
Give your answer in standard form.

.....km
(3)

One month an aircraft travelled 2×10^5 km.
The next month the aircraft travelled 3×10^4 km.

(b) Calculate the total distance travelled by the aircraft in the two months.
Give your answer as an ordinary number.

..... km
(2)

24. Work out the value of

(i) $(2^2)^3$

.....

(ii) $\left(\sqrt{3}\right)^2$

.....

(iii) $\sqrt{2^4 \times 9}$

.....

(4)

Page Total

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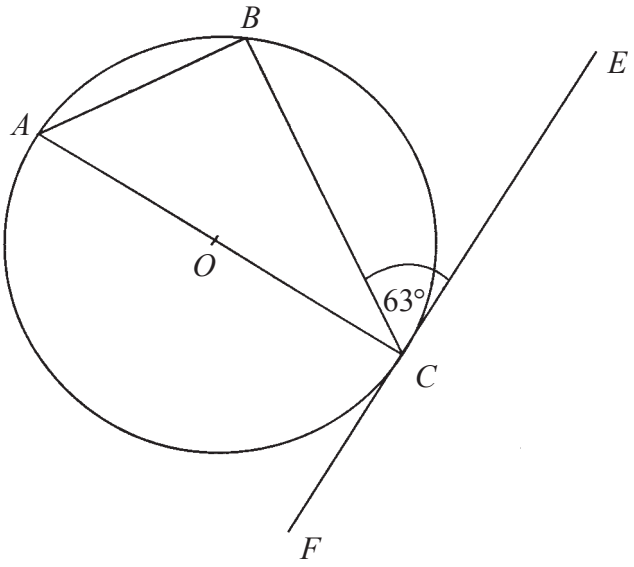


Diagram **NOT** accurately drawn

Leave blank

In the diagram, *A*, *B* and *C* are points on the circle, centre *O*.
Angle *BCE* = 63°.
FE is a tangent to the circle at point *C*.

(i) Calculate the size of angle *ACB*.
Give reasons for your answer.

.....°

(ii) Calculate the size of angle *BAC*.
Give reasons for your answer.

.....°

(4)

Leave blank

26. Mary recorded the heights, in centimetres, of the girls in her class.

She put the heights in order.

132	144	150	152	160	162	162	167
167	170	172	177	181	182	182	

(a) Find

(i) the lower quartile,

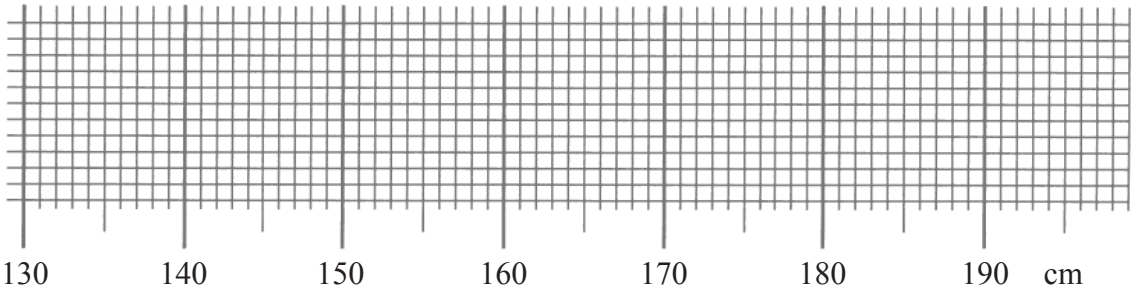
.....cm

(ii) the upper quartile.

.....cm

(2)

(b) On the grid, draw a box plot for this data.



(3)

27. (a) Expand and simplify

$(x + y)^2$

.....

(2)

(b) Hence or otherwise find the value of

$3.47^2 + 2 \times 3.47 \times 1.53 + 1.53^2$

.....

(2)

TOTAL FOR PAPER: 100 MARKS

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