Surname	Centre Number	Candidate Number
Other Names		0

GCSE

3300U10-1

S19-3300U10-1

MATHEMATICS
UNIT 1: NON-CALCULATOR
FOUNDATION TIER

TUESDAY, 21 MAY 2019 – MORNING

1 hour 30 minutes

ADDITIONAL MATERIALS

The use of a calculator is not permitted in this examination.

A ruler, protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

If you run out of space, use the continuation page at the back of the booklet. Question numbers must be given for all work written on the continuation page.

Take π as 3·14.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

In question **7**, the assessment will take into account the quality of your linguistic and mathematical organisation and communication.

In question **2***(a)*, the assessment will take into account the quality of your linguistic and mathematical accuracy in writing.

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	**4**	
2.	**5**	
3.	**2**	
4.	**2**	
5.	**4**	
6.	**7**	
7.	**4**	
8.	**4**	
9.	**3**	
10.	**5**	
11.	**5**	
12.	**3**	
13.	**4**	
14.	**5**	
15.	**4**	
16.	**4**	
Total	**65**	

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01

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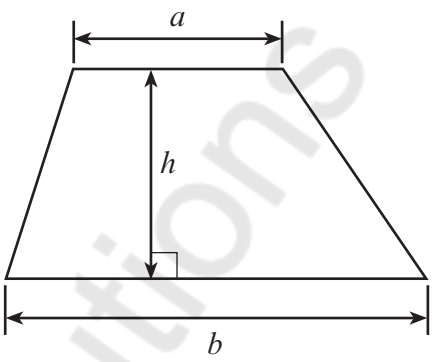
Formula List - Foundation Tier

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



Examiner only

1. *(a)* Add 3874 and 649. [1]

3874
+649
4523

(b) Subtract 532 from 700. [1]

700
−532
168

(c) Write down all the factors of 27. [2]

1, 3, 9, 27

3 | 27
3 | 9
3 | 3
 | 1

The factors of 27 are 1, 3, 9, 27

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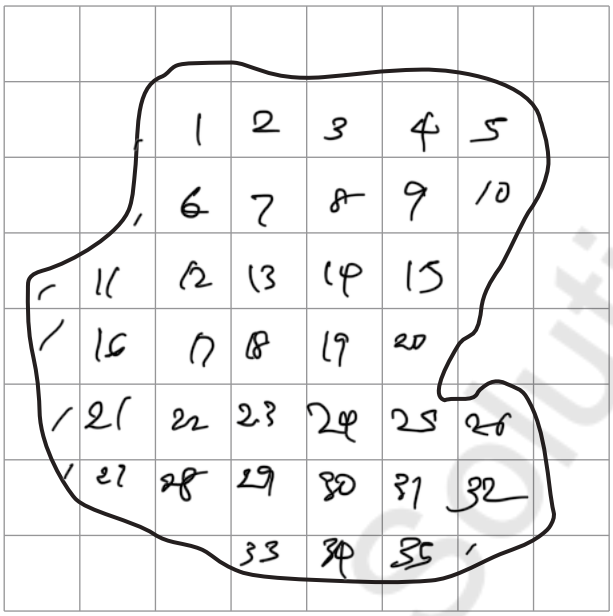
2. *(a) In this part of the question, you will be assessed on the quality of your linguistic and mathematical accuracy in writing.*



+3

The shape above has been drawn on a square grid.
Each square represents an area of 5 cm^2.
Estimate the total area of the shape.
You must show all your working.

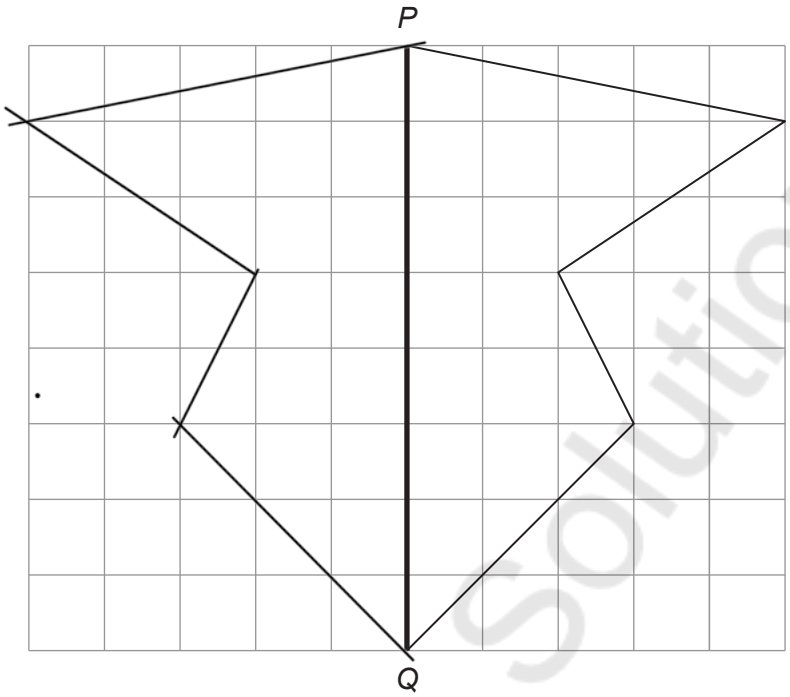
1 sq = 5 cm^2

[3 + 1 W]

approximately 38 squares
est. total area of shape =
38 × 5
≈ 180 cm^2

Examiner only

(b) Draw a reflection of this shape in the line *PQ*. [1]



3. *(a)* Jac has a box of 100 cards.
50 of the cards are blue.
Jac chooses a card at random from his box of cards.

Describe the chance that Jac chooses a blue card.
Circle the correct expression from those given below. [1]

100
50 B — 50
50/100 1/2 half
50%

impossible **unlikely** **an even chance** **likely** **certain**

(b) Mair has a different box of 100 cards.
All the cards are either red or yellow.
Mair chooses a card at random from her box of cards.

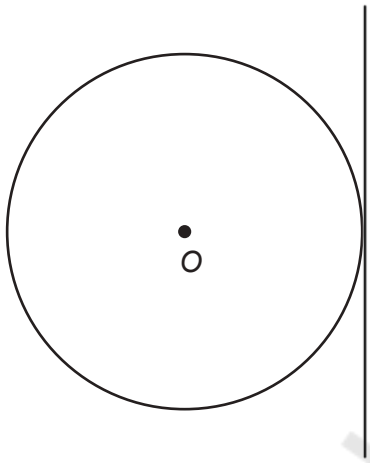
Describe the chance that Mair chooses a green card.
Circle the correct expression from those given below. [1]

100
R or Y

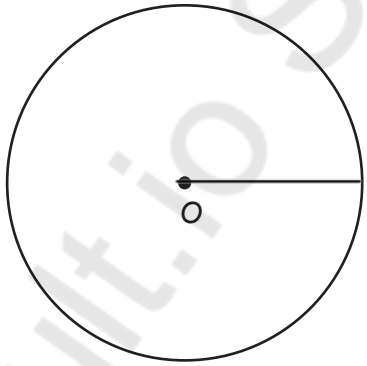
impossible **unlikely** **an even chance** **likely** **certain**

Examiner only

4. *(a)* Draw a tangent to this circle.
O is the centre of the circle. [1]



(b) Draw a radius of this circle.
O is the centre of the circle. [1]



Examiner only

5. *(a)* Write 481·627 correct to 2 decimal places. [1]

481.627

= 481.63

(b) Write down the value of 8^2. [1]

8 × 8

= 64

(c) Write down the value of $\sqrt{49}$. [1]

7 × 7

= 7

(d) Work out 38·25 ÷ 1000. [1]

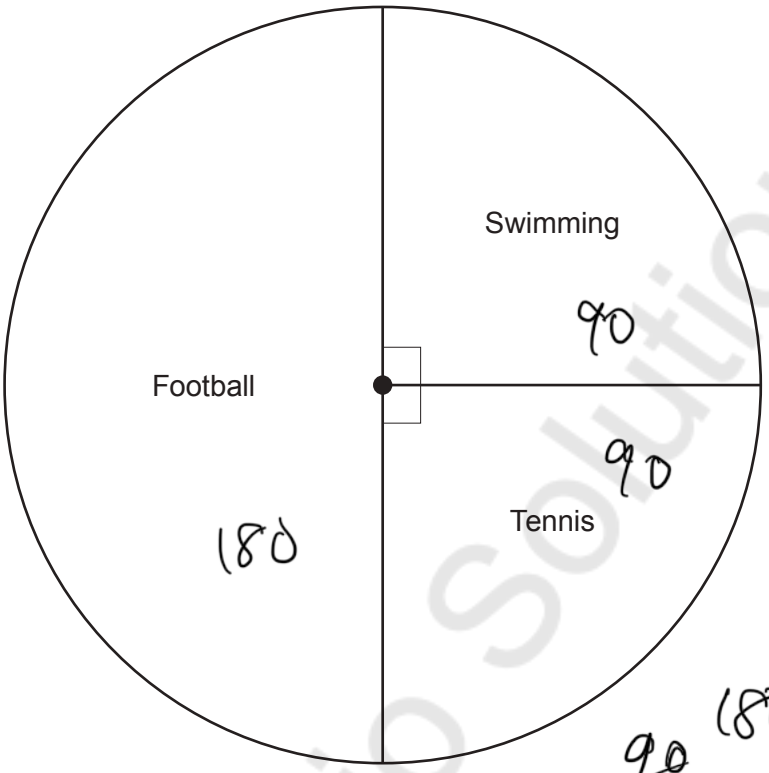
$0.0\overline{38.25}$

1000

= 0.03825

Examiner only

6. The pie chart below shows the favourite sport of 60 people.



360°

90 180 90

$\frac{90}{360}$ $\frac{1}{4}$

(a) Which is the modal sport? [1]

Football

(b) One person is chosen at random.

What is the probability that this person said swimming is their favourite sport? [1]

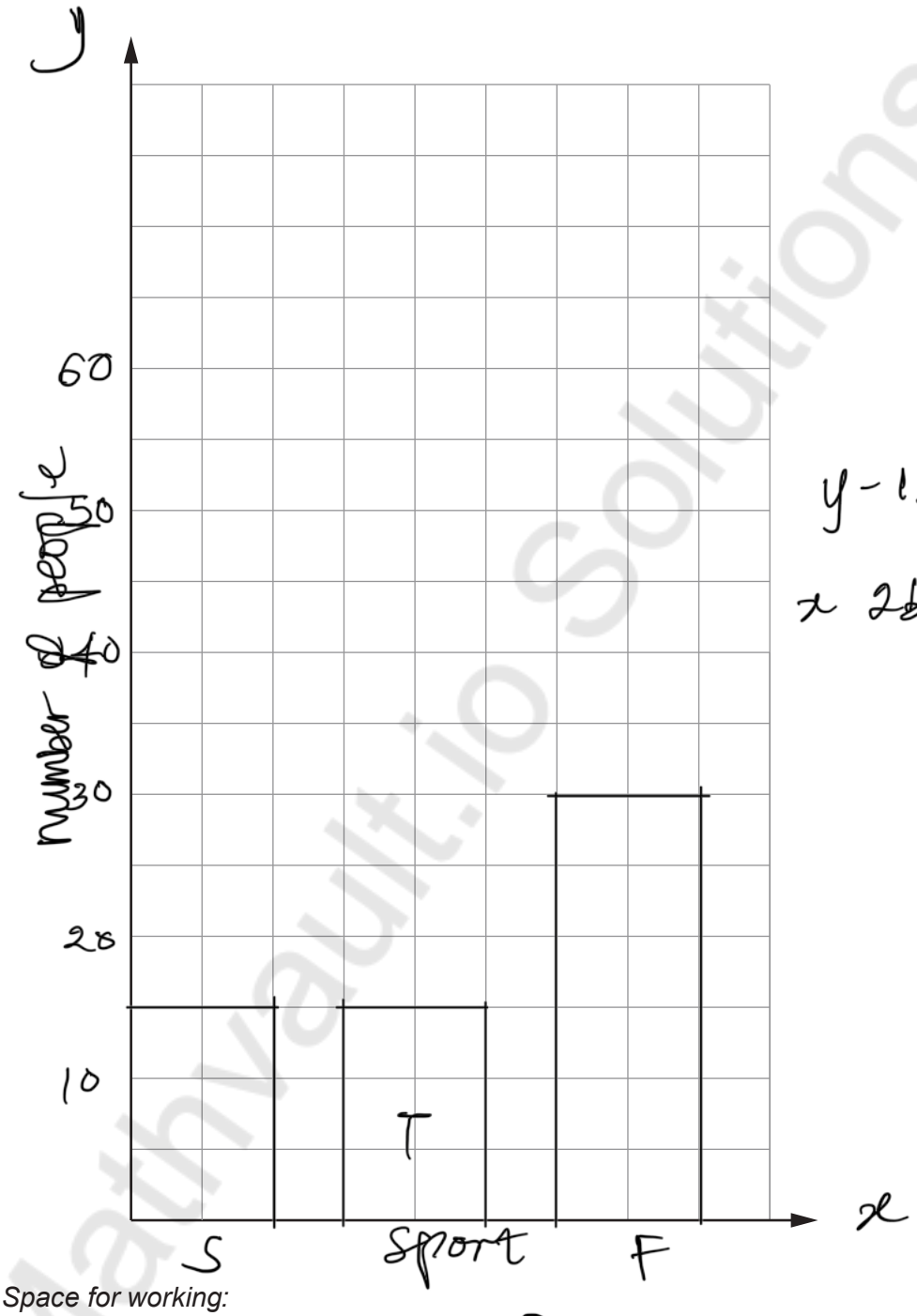
$\frac{90}{360} = \frac{1}{4}$

(c) How many people said tennis is their favourite sport? [2]

$\frac{1}{4} \times 60 = 15$ people

Examiner only

(d) Draw a bar chart to display the favourite sports of the 60 people.
Use the grid below. [3]



Space for working:

Football = $\frac{180}{360_2} \times 60^{30}$

Swimming = 15, Tennis = 15

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7. *In this question, you will be assessed on the quality of your organisation and communication.*

Two rectangles are shown in the diagram below.

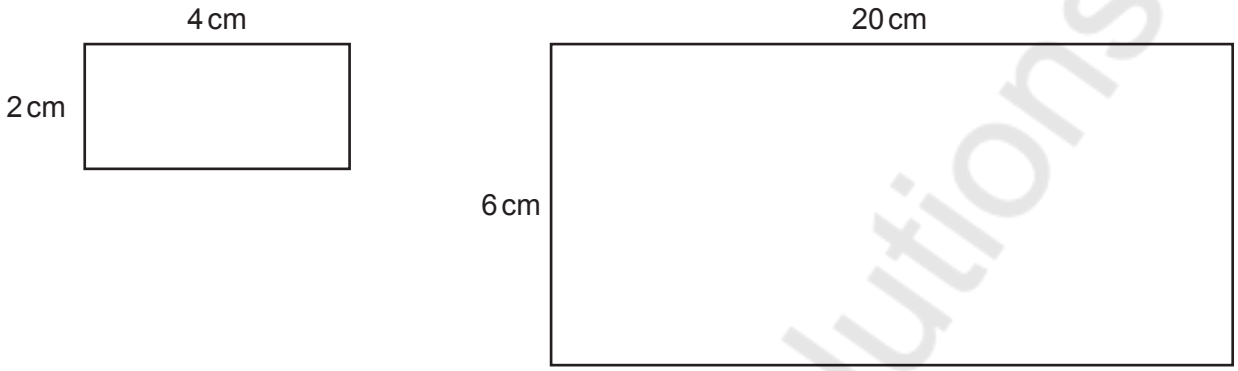


Diagram not drawn to scale

How many small rectangles will fit exactly into the large rectangle?
The small rectangles must not overlap and there must be no space left.
You must show all your working. [3 + 1 OC]

Area of LR = $20 \times 6 = 120$

& SR = $4 \times 2 = 8$

$\frac{120}{8}$

= 15 small rectangles will fit into the Large R.

Examiner only

8. *(a)* Simplify $8p - 12p + 9p$. [1]

$8p + 9p - 12p$

$5p$

(b) Solve the following equations.

(i) $6x = 48$ [1]

$\frac{48}{6}$

$x = 8$

(ii) $32 - y = 17$ [1]

$32 - 17 = y$

$y = 15$

(c) Tom thinks of a number.
He multiplies the number by 4.
The answer is 76.
What number did Tom think of? [1]

Let the number by x

$4 \times x = 76$

$x = \frac{76}{4}$

$x = 19$

Examiner only

9. Circle either TRUE or FALSE for each calculation given below. [3]

CALCULATION		
$23 - (4 + 2) \times 3 = 5$	TRUE	FALSE
$\frac{7}{10} + \frac{2}{5} = \frac{9}{15}$	TRUE	FALSE
$\frac{1}{2}$ of $\frac{1}{8} = \frac{1}{4}$	TRUE	FALSE
25% of 0·4 = 0·1	TRUE	FALSE
$28 - 3 \times 2 + 5 = 55$	TRUE	FALSE

Space for working:

Examiner only

10. Twenty-five balls have numbers printed on them.
Some of the balls are coloured yellow (Y), the others are coloured blue (B).
The list below shows both the colour of each ball and the number printed on it.

Y 76	Y 217	B 54	B 126	Y 21
Y 438	Y 32	B 561	B 194	Y 69
B 37	B 518	Y 94	Y 157	Y 208
Y 382	B 56	B 234	Y 72	B 84
Y 68	Y 271	Y 53	B 100	Y 321

(a) Complete the frequency table. [2]

Type of ball	Yellow		Blue	
	Number < 100	Number $\geqslant 100$	Number < 100	Number $\geqslant 100$
Frequency	8	7	4	6

(b) How can you use your table to check that all the balls have been counted? [1]

Sum up the frequency

(c) The 25 balls are placed in a box.
One ball is chosen at random.
What is the probability that it is a yellow ball numbered less than 100? [2]

$\frac{8}{25}$

Examiner only

11. *(a)* Write down the next two numbers in the following sequence. [2]

−19 −15 −11 −7 −3... ....|....

+4 +4 +4

.....

.....

(b) Rods are used to make a sequence of patterns as shown below.

Pattern 1 Pattern 2 Pattern 3

Pattern 1 uses six rods.

P2 = 6×2 − 1 = 11
P3 = 6×3 − 2 = 16
P4 = 6×4 − 3 = 21

(i) How many rods are required to draw Pattern 4? [1]

21

.....

(ii) Pattern 37 requires 186 rods.
How many rods are required to draw Pattern 38? [1]

P37
P38 = 6×38 − 37
228 − 37
191

.....

(c) Describe in words the rule used in the following sequence. [1]

243 81 27 9 3...

÷3 ÷3 ÷3 ÷3

.....

divide by 3
divide the previous number by 3

.....

Examiner only

12. In this question, you must use only the numbers 3 and 7 to make other numbers. You must only add or subtract.

For example, if we wanted an answer of 11, we could write

$7 + 7 - 3 = 11.$

$9 - 7 = 2$

Show how you can get each of the following answers.

(a) 2 [1]

$3+3+3-7$

Write your solution in the box below.

$3 + 3 + 3 - 7 = 2$

$7+7$
$7-3+7-3$

(b) 8 [1]

Write your solution in the box below.

$(7-3)+(7-3) = 8$

$12+7$

(c) 19 [1]

$3+3+3+3+7$

Write your solution in the box below.

$3+3+3+3+7 = 19$

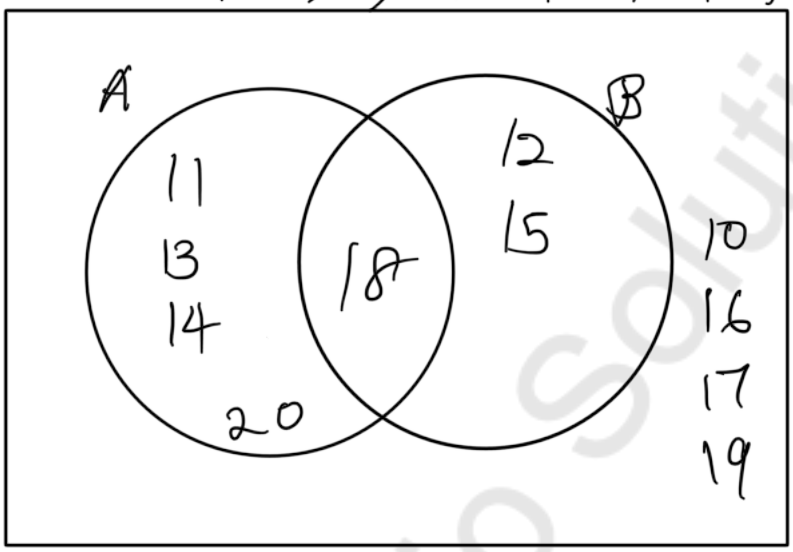
Examiner only

13. A Venn diagram is used to show the following information:

- The Universal set, **ε**, is the set of numbers from 10 to 20 inclusive.
- Set A = {11, 13, 14, 18, 20}.
- Set B = {multiples of 3}.

Draw the Venn diagram that shows the above information. [4]

$\varepsilon = 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20$



null set

Examiner only

14. *(a)* Solve the following equations.

(i) $\frac{x}{7} = 21$ [1]

$x = 21 \times 7$

$x = 147$

(ii) $13f + 2 = 6f + 5.$ [3]

$13f - 6f = 5 - 2$

$7f = 3$

$f = \frac{3}{7}$

(b) n is an integer.

$n = 1, 2$

Tick the correct statement below.
You must give an explanation for your decision. [1]

$5n - 3$ is always an even number. ✗	$5n - 3$ is always an odd number. ✗	$5n - 3$ can be an even number or an odd number. ✓

Explanation: If n = odd you get even
n = even you get odd

Examiner only

15. In the diagram below, *ABCE* is a square and *CDE* is a right-angled triangle.
The length of *DE* is 4 cm and the area of triangle *CDE* is 14 cm^2.

Calculate the area of the **whole shape** *ABCDE*.
You must show all your working. [4]

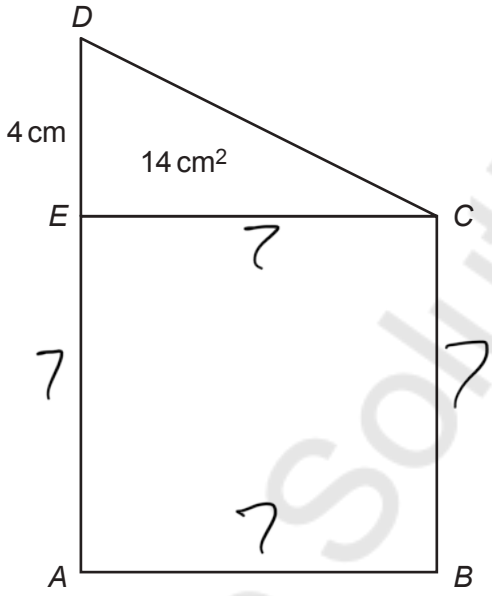


Diagram not drawn to scale

Area of whole shape = Area of △ + Area of □

Area of △ = $\frac{1}{2} b \times h$

$14 = \frac{1}{2} \times 4 \times h$

$28 = 4h$

$h = 7$ cm

Area of □ = $7 \times 7 = 49\ cm^2$

$= 14 + 49$

$= 63\ cm^2$

Examiner only

16. *ABCD* is a rectangle.
AB is parallel to *EF*.
AC, *CE* and *DG* are straight lines.

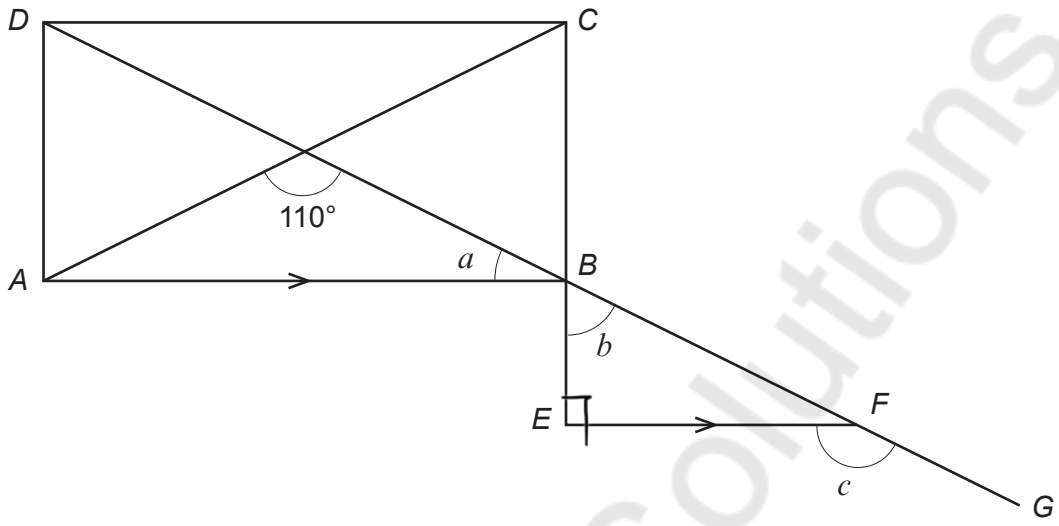


Diagram not drawn to scale

Find the size of each of the angles a, b and c. [4]

$180 - 110 = 70$ $a = 35°$

$\frac{70}{2} = 35$

$b = 180 - (90 + 35)$

$180 - 125$

$b = 55°$

$c = 90 + 55 = 145°$

$c = 145°$

$a =$ 35 ° $b =$ 55 ° $c =$ 145 °

END OF PAPER

Question number	Additional page, if required. Write the question number(s) in the left-hand margin.

Examiner only