Surname	Centre Number	Candidate Number
Other Names		0

GCSE

3300U20-1

S19-3300U20-1

MATHEMATICS
UNIT 2: CALCULATOR-ALLOWED
FOUNDATION TIER

THURSDAY, 6 JUNE 2019 – MORNING

1 hour 30 minutes

ADDITIONAL MATERIALS

A calculator will be required for 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 additional page at the back of the booklet. Question numbers must be given for all work written on the additional page.

Take π as 3·14 or use the π button on your calculator.

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 **9**, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	**4**	
2.	**3**	
3.	**3**	
4.	**2**	
5.	**3**	
6.	**2**	
7.	**4**	
8.	**4**	
9.	**5**	
10.	**4**	
11.	**3**	
12.	**5**	
13.	**4**	
14.	**5**	
15.	**5**	
16.	**5**	
17.	**4**	
Total	**65**	

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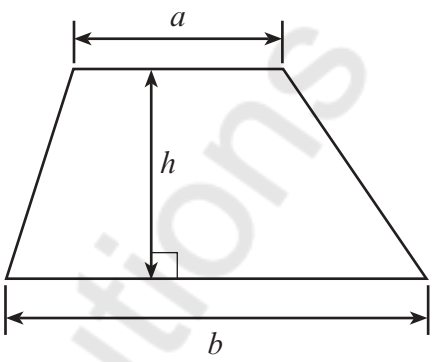
Formula List - Foundation Tier

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



Examiner only

1. Fill in the boxes below to make each calculation correct. [4]

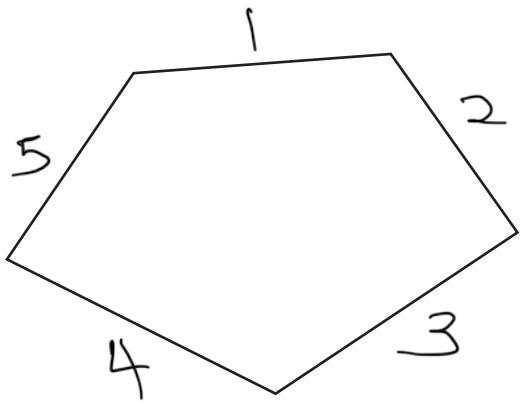
9p	+	£4.58	=	£4.67	$4.58 + 0.09$
43p	+	£5.84	=	£6.27	$6.27 - 0.43 = 5.84$
12	×	59p	=	£7.08	$59 \times 12 = 7.08$
19	×	£1.45	=	£27.55	$27.55 \div 19$

Space for working:

Examiner only

2. Write down the special name of each of the following.

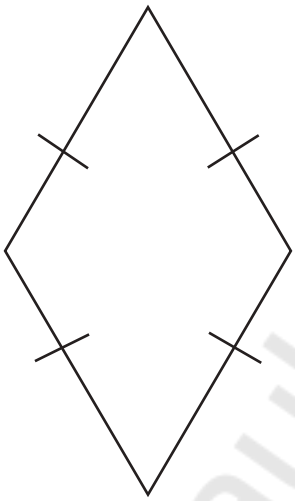
(a)



5 = penta

Pentagon ..... [1]

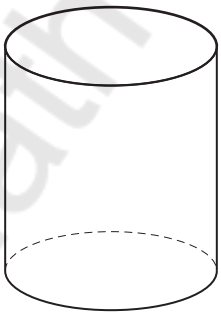
(b)



≠ Square

Rhombus ..... [1]

(c)



Cylinder ..... [1]

47 × 2 = 94 47 × 3 = 141

Examiner only

3. *(a)* Write down the first 3 multiples of 47. [1]

47 , 94 , 141

(b) One of the numbers below is a factor of 676. Circle the correct number. [1]

22 32 42 (52) 62

2 | 676
2 | 338
13 | 169
13 | 13
1

2 × 2 × 13 × 13 4 × 13 = 52

(c) When one of the numbers below is divided by 22, there is a remainder of 11. Circle the correct number. [1]

208 (209) 210 211 212

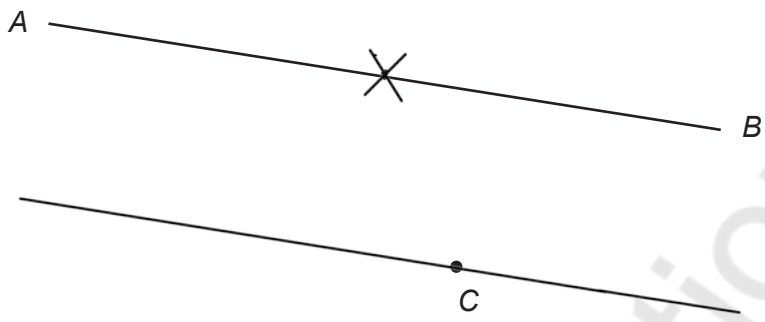
208 ÷ 22
208 104 9 5/11
22 11
22 × 9 = 198
208
−198
10

209 ÷ 22
209
−198
11

Examiner only

4. A line *AB* is shown below.

9/2 4·5



(a) Mark the midpoint of *AB* with a ×. [1]

(b) Draw a line parallel to *AB* that passes through point *C*. [1]

5. *(a)* Bethan writes down two square numbers.

She adds her two numbers together.
Her answer is a square number less than 30.

Which two square numbers did Bethan write down? [2]

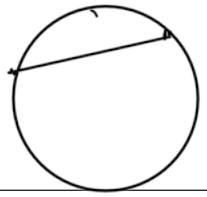
4, 9, 16, 25
9 + 16 = 25
9 and 16

Bethan's square numbers are 9 and 16

(b) Harri adds three even numbers together and gets an answer of 23.

Explain how you know that Harri's answer is incorrect. [1]

If the sum of three even numbers will be even



$d = 2r$

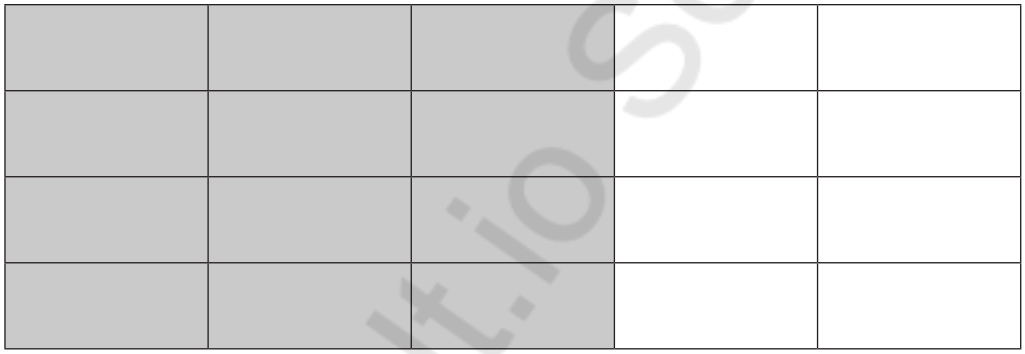
Examiner only

6. Circle either TRUE or FALSE for each statement given below. [2]

$d = \frac{1}{2} r \times$

STATEMENT		
The length of the diameter of a circle is equal to half the length of its radius.	TRUE	FALSE
A straight line connecting two points on the perimeter of a circle is a chord.	TRUE	FALSE
The circumference is the special name for the space inside a circle.	TRUE	FALSE
Two circles, each with radius 5 cm, must be congruent.	TRUE	FALSE

7. *(a)* What percentage of the following shape is shaded? [2]



$\frac{12}{20} \times 100 = 5$ $12 \times 5 = 60\%$

60 %

(b) You are given the value of 25% of a number.
Explain how you can find the value of the number. [1]

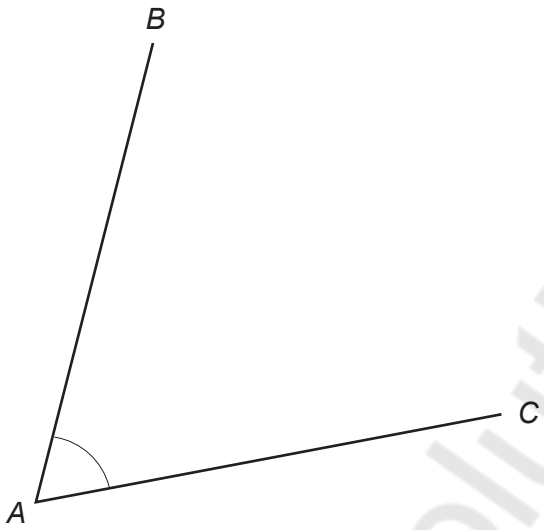
$\frac{25}{100}$ of x $\frac{1}{4}$ x, multiply by 4

(c) Explain how you know that $\frac{1}{8}$ is greater than $\frac{1}{10}$. [1]

$0.125 > 0.1$

Examiner only

8. *(a)* Measure $B\hat{A}C$. [1]



$B\hat{A}C$ = 65 °

(b) One of the angles below is a reflex angle.
Circle the correct answer. [1]

45° 90° 135° 180° (225°)

(c) The diagram below shows two angles on a straight line.
The large angle is 5 times the size of the small angle.
Find the size of each angle. [2]

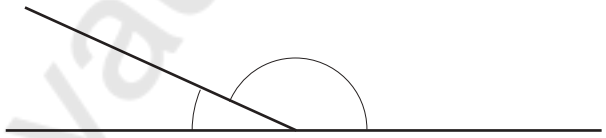


Diagram not drawn to scale

$x + 5x = 180$

$6x = 180$

$x = \frac{180}{6}$

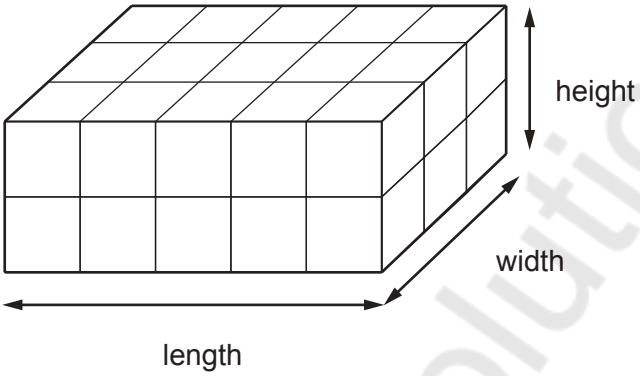
$x = 30°$, $30 \times 5 = 150$

Small angle = 30 ° Large angle = 150 °

Examiner only

9. *In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

Cuboid A is made up of a number of cubes as shown below.
Each edge of each cube is 1 cm long.



A different cuboid, Cuboid B, has the same length and width as Cuboid A.
The height of Cuboid B is three times the height of Cuboid A.

What is the volume of Cuboid B?
You must show all your working. [3 + 2 OCW]

h of CB = 3 × CA
Vol of CB = L × W × H
= 5 × 3 × (2×3)
= 15 × 6
= 90 cm³

Examiner only

10. *(a)* Describe **in words** the rule for continuing each of the following sequences.

(i) 38, 32, 26, 20, … [1]

Rule: −6 −6 −6

Subtract six from the previous term

(ii) $\frac{1}{4}$, $\frac{1}{2}$, 1, 2, … [1]

Rule: ×2 ×2 ×2

Double the previous term

(b) (i) Adam has x marbles. His friend gives him 3 more.
Write down, in terms of x, the total number of marbles Adam now has. [1]

$x + 3$

(ii) Petrol costs £g per litre.
Write down, in terms of g, the cost of 15 litres of petrol. [1]

$15 \times g = £15g$

Examiner only

11. Calculate each of the following.

(a) $4 \cdot 8^2 + \sqrt{28 \cdot 09}$ [2]

28.34

(b) $\frac{4}{9}$ of 78·3 [1]

34.8

Examiner only

12. *(a)* Find the value of $5f + 7g$ when $f = 3{\cdot}8$ and $g = -2{\cdot}6$. [2]

$5(3.8) + 7(-2.6)$

$19 - 18.2$

$= 0.8$

(b) Solve the following equation.
Give your answer correct to 1 decimal place. [3]

$$7x - 4 = 12$$

$7x = 12 + 4$

$7x = 16$

$x = \frac{16}{7} = 2\frac{2}{7} = 2.33$

$x = 2.3$ (to 1 dp)

Examiner only

13. *(a)* Circle the longest time period from the list given below. [1]

180 minutes 4·5 hours 4 hours 45 minutes $4\frac{1}{4}$ hours $\frac{1}{6}$th of a day

180/60 = 3hrs 4hr 30mins 4hrs 45mins 4hrs 15mins 4hrs

(b) Circle the longest distance from the list given below. [1]

30 000 mm 250 m 2 km 70 m 4 000 cm 2·4 km

(c) Circle either TRUE or FALSE for each statement given below. [2]

1 mile = 1,609 km
5 miles = 8 km

1lb = 0·45kg

0·9

STATEMENT		
7 kilometres is less than 5 miles	TRUE	FALSE
1 kilogram is less than 2 pounds (lb)	TRUE	FALSE
1 litre is less than 1 pint	TRUE	FALSE
8 litres is less than 900 cm^3	TRUE	FALSE

$1000 cm^3 = 1 L$

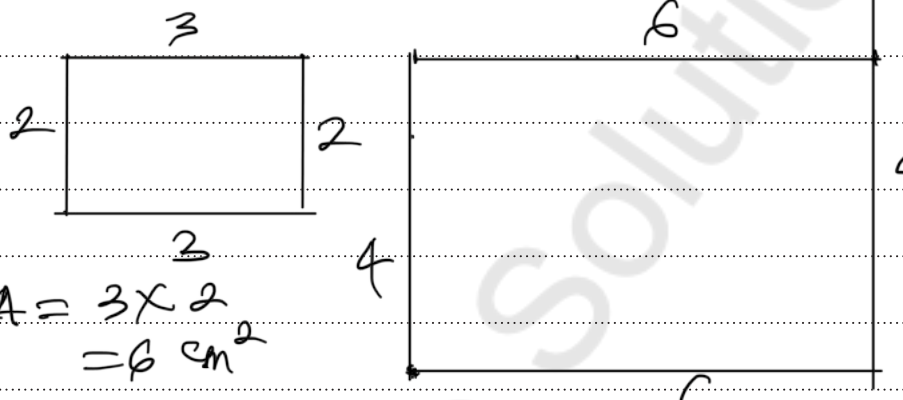
1 pint = 0·473L

Examiner only

14. Catrin makes the following statement.

> If you double the length of each side of a rectangle, you will double its perimeter and also double its area.

Is Catrin correct?
Show clearly, using an example, how you came to your decision. [5]



$A = 3 \times 2$
$= 6\ cm^2$

$P = 2(L+B)$
$2(3+2)$
$= 10\ cm$

A
6×4
$= 24\ cm^2$

$P = 2(L+B)$
$= 2(6+4)$
$= 20\ cm$

Perimeter has been doubled from 10 cm to 20 cm
Area was not doubled i.e $6\ cm^2$ to $24\ cm^2$ (4 times)

Catrin's statement is incorrect

Examiner only

15. 18% of £256 is shared in the ratio 2 : 1.
Calculate the value of the larger share.
Give your answer to the nearest 10p.

You must show all your working. [5]

$\frac{18}{100} \times 256 = £46.08$

$2 : 1 = 2 + 1 = 3$

$\frac{2}{3} \times 46.08 = 30.72$

$= £30.72$

to the nearest 10p $= £30.7$

Examiner only

16. *(a)* The diagram shows two congruent triangles.
The coordinates of each vertex are shown.

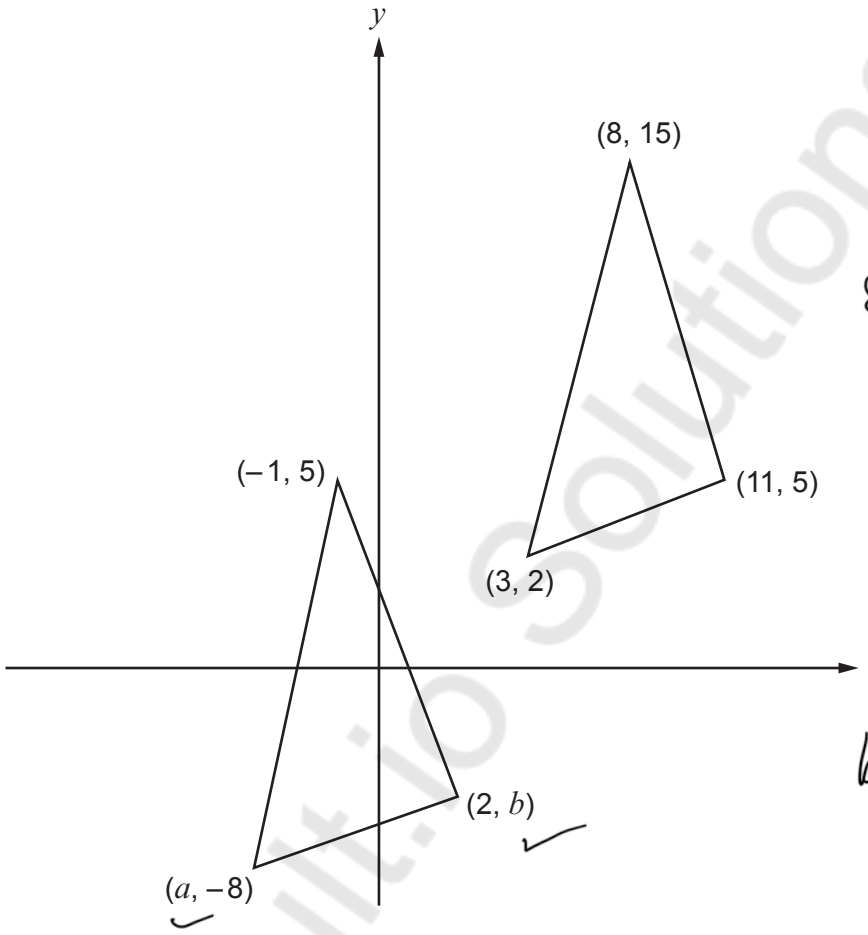


Diagram not drawn to scale

Find the value of a and the value of b. [2]

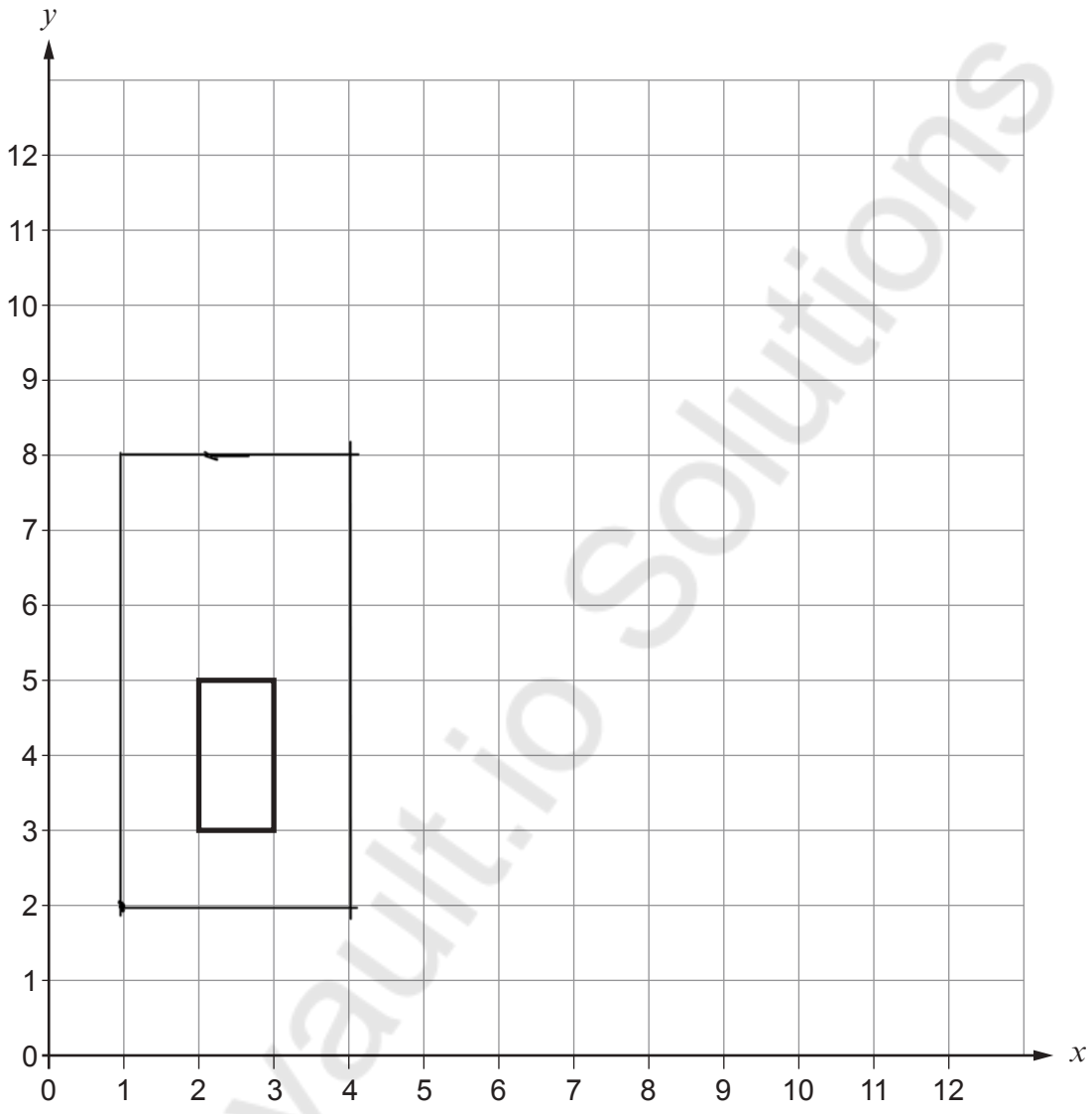
$a = -6$

$b = -5$

$a =$ ..... $b =$ .....

Examiner only

(b) Draw an enlargement of the rectangle below, using a scale factor of 3 and centre (1, 2). [3]

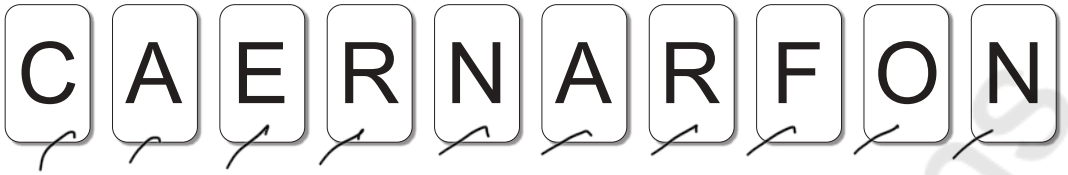


(1, 2)
x y
Scale factor = 3

Examiner only

17. Alison and Sarfraz play a game. They each have a different bag of cards.

Alison has the following cards in her bag.



Sarfraz has the following cards in his bag.

They each take a card at random from their own bag. They make a note of the letter, and return the card to the bag.

They each do this 100 times.

Who do you think is likely to choose the letter R more often?

Alison ☐ Sarfraz ☑

You must explain your decision and show all your working. [4]

Probability of Alison choosing letter R = $\frac{2}{10} = \frac{1}{5}$

" " Sarfraz " " " = $\frac{1}{4}$

$\frac{1}{5} \times 100$ $\frac{1}{4} \times 100$

A = 20% S = 25%

25% > 20%

Sarfraz is most likely to choose letter R

END OF PAPER

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

Examiner only