

Surname	Centre Number	Candidate Number
First name(s)		0



**GCSE**

3300U10-1



**MONDAY, 11 NOVEMBER 2019 – AFTERNOON**

**MATHEMATICS  
UNIT 1: NON-CALCULATOR  
FOUNDATION TIER**

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

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

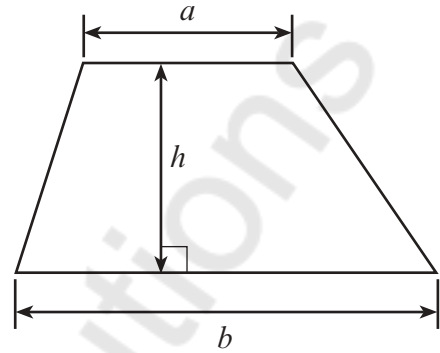
For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	2	
2.	4	
3.	3	
4.	2	
5.	2	
6.	3	
7.	4	
8.	4	
9.	5	
10.	3	
11.	3	
12.	3	
13.	5	
14.	2	
15.	3	
16.	3	
17.	3	
18.	3	
19.	4	
20.	4	
<b>Total</b>	<b>65</b>	



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## Formula List - Foundation Tier

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



1. (a) On the line below, mark the point  $B$ , so that  $AB = 7.5$  cm. [1]



- (b) Measure and write down the size of angle  $x$ . [1]



$x = 63^\circ$



2. (a) Write a number in each box so that each calculation is correct.

(i)  $397 + 405 =$   [1]

$$\begin{array}{r} 397 \\ + 405 \\ \hline 802 \end{array}$$

(ii)  + 274 = 419 [1]

$$\begin{aligned} x + 274 &= 419 \\ x &= 419 - 274 \end{aligned}$$

$$\begin{array}{r} 3419 \\ - 274 \\ \hline 145 \end{array}$$

(iii)  $11 \times$   = 220 [1]

$$\begin{aligned} 11 \times x &= 220 \\ x &= \frac{220}{11} \end{aligned}$$

$$4, x = 20$$

(b) Write these numbers in order of size, beginning with the smallest. [1]

6.49

6.94

6.4

6.9

smallest

largest

0

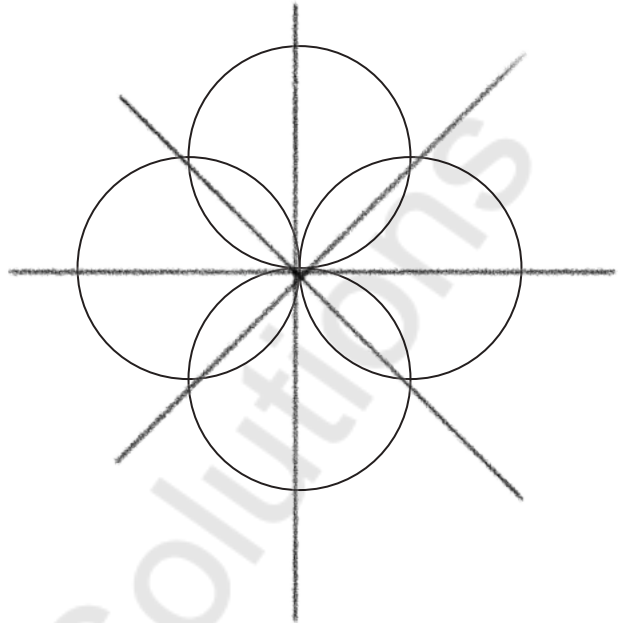
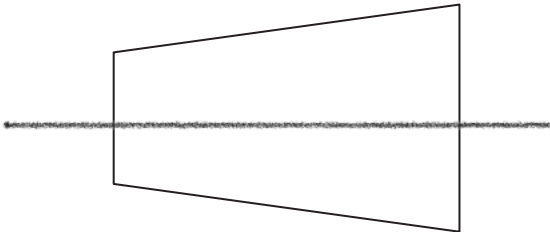
6.494949

10



3. Draw all the lines of symmetry on each of the following shapes.

[3]



4. Fill in the missing term in each of these number sequences.

(a) 100, 91, 82, 73, 64

[1]

Handwritten calculations for sequence (a):  

$$\begin{array}{r} 100 \\ -91 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 91 \\ -82 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 82 \\ -73 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 73 \\ -64 \\ \hline 9 \end{array}$$

(b) 4, 11, 18, 25, 32

[1]

Handwritten calculations for sequence (b):  
 $4 + 7 = 11$   

$$\begin{array}{r} 22 \\ -11 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 18 \\ -11 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 25 \\ -18 \\ \hline 7 \end{array}$$



5. (a) Sara has 20 balls in a bag.  
There are 15 blue balls and 5 red balls.  
Sara chooses a ball at random from her bag.

Describe the chance that Sara chooses a red ball from her bag.  
Circle the correct expression from those given below.

[1]

impossible

unlikely

an even chance

likely

certain

0

0.25

0.5

0.75

1

- (b) Gareth has some cards with a number written on each one.  
These are Gareth's cards.

125

269

748

731

Gareth chooses one of his cards at random.

Describe the chance that Gareth chooses a card with an odd number on it.  
Circle the correct expression from those given below.

[1]

impossible

unlikely

an even chance

likely

certain

0

0.25

0.5

0.75

1

1, 3, 5, 7, 9



6. (a) Write one of the numbers 3, 5, 7, 9 in each box.  
Each number may be used only once.  
The sum of the numbers in the column must equal the sum of the numbers in the row.

[1]

	5	
3	10	9
	7	

Space for working:

$$3 + 5 + 7 + 9 = 24$$

$$5 + 7 = 12, 3 + 9 = 12$$

- (b) Write a **different multiple of 4** in each box to make this sum correct.

[2]

8	+	<del>12</del>	+	20	=	40
---	---	---------------	---	----	---	----

Space for working:

$$4, 8, 12, 16, 20, 24, 28, 32 \dots$$

$$8 + 12 + 20 = 40$$

$$4 + 16 + 20 = 40$$



7. (a) Solve these equations.

(i)  $7x = 56$

[1]

$$x = \frac{56}{7}$$

$$x = 8$$

(ii)  $23 - x = 9$

[1]

$$23 - x = 9$$

$$23 - 9 = x$$

$$x = 14$$

- (b) (i) Sian has  $n$  boxes.  
Each box contains 8 pens.  
How many pens does Sian have altogether?

[1]

$$n \times 8 = 8n$$

Number of pens is  $8n$

- (ii) Meic had  $m$  CDs.  
He gave 3 CDs to a friend.  
How many CDs does Meic have now?

[1]

$$m - 3$$

Number of CDs is  $m - 3$



8. Match each expression with its value.

The first one has been done for you.

[4]

	50% of 22	→	11
			2
2	$\frac{1}{5}$ of 90		8
			10
3	$4^2$	→	16
			18
4	$\sqrt{100}$		20
			45
5	25% of 80	→	20
			50

Space for working:

.....

.....

.....

.....

.....

BODMAS  
 $1/5 \times 90$   
 $18$   
 $4^2$   
 $4 \times 4$   
 $= 16$   
 $\sqrt{100}$   
 $\sqrt{10 \times 10}$   
 $5 = 10$   
 $25 \times 80$   
 $100$   
 $2 = 20$

3300U101  
09



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

A rod is 4 yards long and another rod is  $1\frac{1}{2}$  yards long.

What is the total length of these rods in inches?  
You must show all your working.

[3 + 2 OCW]

You are given that:

1 yard = 3 feet

1 foot = 12 inches

$$4 + 1\frac{1}{2} = 5\frac{1}{2} \text{ yards}$$

$$\text{If } 1 \text{ yrd} = 3 \text{ ft}$$

$$5\frac{1}{2} \text{ yds} = x$$

$$x = 5\frac{1}{2} \times 3 = 15\frac{1}{2} \text{ ft}$$

$$\text{If } 1 \text{ ft} = 12 \text{ inches}$$

$$15\frac{1}{2} \text{ ft} = x$$

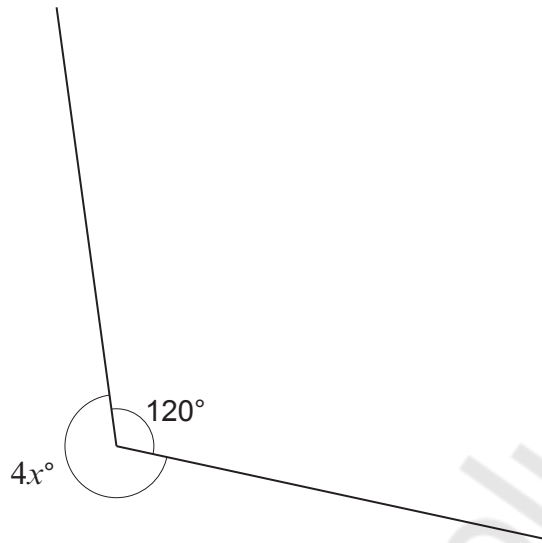
$$x = 15\frac{1}{2} \times 12$$

$$x = 15 \times 12$$

$$x = 80 \text{ inches}$$



10.

*Diagram not drawn to scale*Calculate the value of  $x$ .

[3]

Sum of angles @ a pt =  $360^\circ$

$$4x + 120 = 360$$

$$4x = 360 - 120$$

$$4x = 240$$

$$\frac{4x}{4} = \frac{240}{4}$$

$$x = 60$$

$$x = 60^\circ$$



11. Complete each row of the following table. The first row has been completed for you.

[3]

Place	Temperature at 10 a.m.	Change	Temperature at 6 p.m.
Cwmbran	2°C	Down 4°C	-2°C
Llanelli	-3°C	Down 1°C	-4°C
Llanidloes	-4°C	Up 3°C	-1°C
Porthmadog	-1°C	Up 4°C	3°C

12. Write 7%,  $\frac{3}{5}$  and 0.3 in ascending order.

You must show all your working.

$\frac{7}{100}, \frac{3}{5}, 0.3$

$0.07, 0.6, 0.3$   $0.6 \times \frac{1}{100}$

$0.07, 0.3, 0.6$

$0.07 \quad 0.3 \quad 0.6$

Smallest value  $\longrightarrow$  Greatest value

$-3 - 1 = -4$   
 $-4 + x = -1$   
 $x = -1 + 4$   
 $x = 3$  [3]

$x + 4 = 3$   
 $x = 3 - 4$   
 $x = -1$   
 $0.6$   
 $5 \overline{)30}$   
 $\underline{30}$   
 $0$



13. (a) Calculate the value of  $3x + 4y$  when  $x = -6$  and  $y = 5$ .

[2]

$$\begin{aligned} & 3(-6) + 4(5) \\ & -18 + 20 = 20 - 18 \\ & = 2 \end{aligned}$$

- (b) Simplify the expression  $9g - 4f - 3g - 5f$ .

[2]

$$\begin{aligned} & 9g - 3g - 4f - 5f \\ & 6g - 9f \end{aligned}$$

- (c) Expand  $4(3x - 5)$ .

[1]

$$\begin{aligned} & 4 \times 3x - 4 \times 5 \\ & 12x - 20 \end{aligned}$$



14. The mean of two numbers is 7.  
The range of these two numbers is 8.

What are these two numbers?

[2]

Let the two numbers be  $x$  and  $y$

$$\frac{x+y}{2} = 7, \quad x+y = 14 \quad \text{--- (1)}$$

$$x-y = 8 \quad \text{--- (2)}$$

$$\textcircled{2} \quad x = 8+y \quad \text{--- (3)}$$

$$8+y+y = 14$$

$$2y = 14-8$$

$$2y = 6$$

$$y = 3$$

$$x = 8+3$$

$$x = 11$$

$$x=11, \quad y=3$$

The numbers are

11

and

3

- 15.

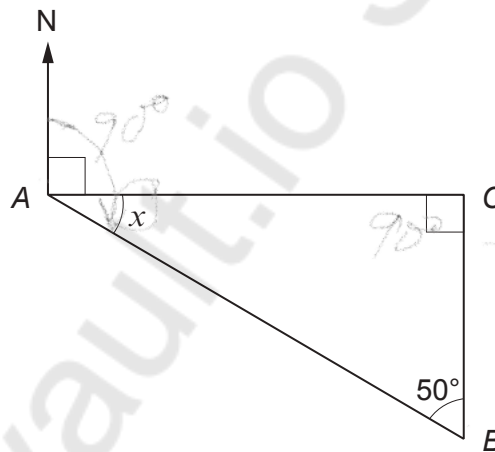


Diagram not drawn to scale

Calculate the size of angle  $x$ .  
Hence, give the bearing of point  $B$  from point  $A$ .

[3]

Sum of angles in a  $\Delta = 180^\circ$

$$x + 90 + 50 = 180$$

$$x = 180 - 140$$

$$x = 40$$

$$90 + 40 = 130^\circ$$

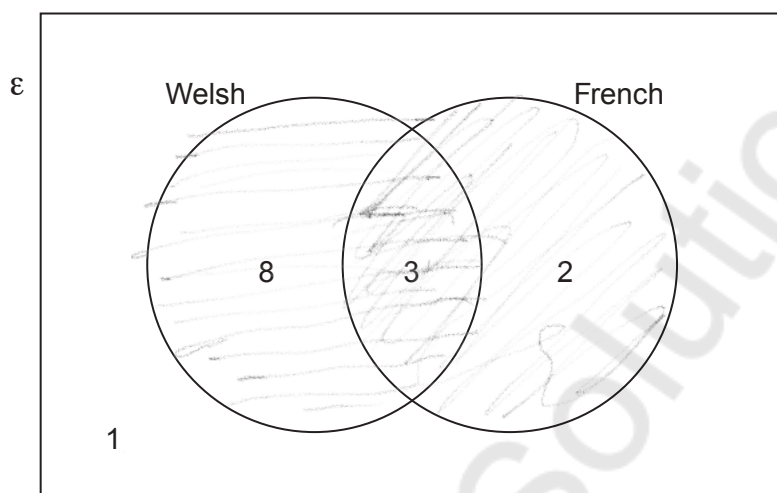
$x = 40^\circ$

Bearing of point  $B$  from point  $A = 130^\circ$



16. A group of pupils is asked whether they can speak Welsh, French, both languages, or neither language.

Their answers are shown in the Venn diagram below.  
The universal set,  $\epsilon$ , contains all the pupils in the group.



- (a) How many of the pupils cannot speak French? [1]

.....

- (b) One pupil from the group is chosen at random.  
What is the probability that this pupil can speak both Welsh and French? [2]

$1 + 8 + 3 + 2 = 14$   
 $= \frac{3}{14}$

.....

.....

.....



17. Find the whole number which satisfies all of the following conditions:

- It is a whole number between 1 and 40 inclusive.
- The number is a multiple of 4 but not a multiple of 8.
- 3 is a factor of this number.
- The number is a square number.

[3]

$$1 = 40$$

4, 8, 16, 20, 24, 28, 32, 36, 40

4, 20, 28, 36

$$36 = 6 \times 6$$

the number = 36

The whole number is 36



18. (a) What is the total mass when 534 g is added to 3.5 kg?  
Circle the correct answer.

[1]

4.034 g

4.034 kg

537.5 g

537.5 kg

884 g

$$1000 \text{ g} = 1 \text{ kg}$$

$$534 \text{ g} = \frac{534}{1000} \text{ kg}$$

$$= 0.534 \text{ kg}$$

$$3.500$$

$$+ 0.534$$

$$= 4.034$$

- (b) What is the total length when 35 cm is added to 7.8 m?  
Circle the correct answer.

[1]

113 cm

42.8 m

42.8 cm

815 cm

815 m

$$100 \text{ cm} = 1 \text{ m}$$

$$35 \text{ cm} = \frac{35}{100} \text{ m}$$

$$= 0.35 \text{ m}$$

$$7.8 + 0.35 = 8.15 \text{ m}$$

$$7.80$$

$$+ 0.35$$

$$= 8.15 \times 100 = 815 \text{ cm}$$

- (c) How many  $\text{mm}^3$  are there in  $4 \text{ cm}^3$ ?  
Circle the correct answer.

[1]

0.4  $\text{mm}^3$ 4  $\text{mm}^3$ 40  $\text{mm}^3$ 400  $\text{mm}^3$ 4000  $\text{mm}^3$ 

$$10 \text{ mm} = 1 \text{ cm}$$

$$1000 \text{ mm}^3 = 1 \text{ cm}^3$$

$$\times = 4 \text{ cm}^3$$

$$= 4 \times 1000$$

$$= 4000 \text{ mm}^3$$



19. The diagram below shows a rectangle  $ABCF$  and a trapezium  $CDEF$ .  
 $AF = 7$  cm,  $ED = 8$  cm and the perpendicular distance between  $FC$  and  $ED$  is 6 cm.  
 The area of the rectangle  $ABCF$  is  $91$  cm<sup>2</sup>.

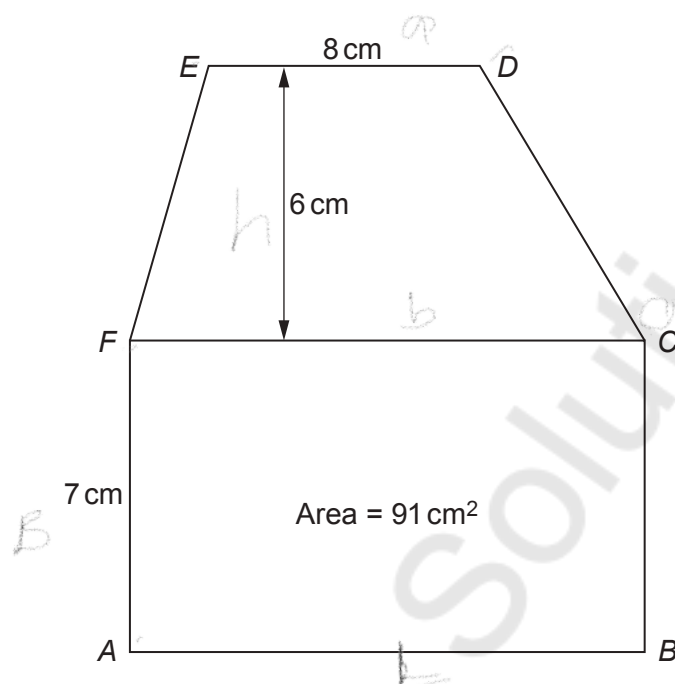


Diagram not drawn to scale

Calculate the area of the trapezium  $CDEF$ .  
 You must show all your working.

[4]

$$A = L \times B$$

$$91 = L \times 7$$

$$L = \frac{91}{7}$$

$$L = 13 \text{ cm}$$

$$A = \frac{1}{2} (a + b) \times h$$

$$= \frac{1}{2} \times (8 + 13) \times 6$$

$$= \frac{1}{2} \times 21 \times 6$$

$$A = 63 \text{ cm}^2$$



20. 200 young people are taking part in a conference held at Aberystwyth.

- (a) One of the young people is chosen at random to be the chairperson.

Complete the table below to find the probability that the person chosen lives outside the United Kingdom (UK). [2]

	North Wales	Mid Wales	South Wales	Elsewhere in the UK	Outside the UK
Probability	0.2	0.3	0.25	0.15	

$$0.2 + 0.3 + 0.25 + 0.15$$

$$= 0.9$$

$$1 - 0.9$$

$$= 0.1$$

- (b) How many of the 200 young people live in Mid Wales? [2]

$$n_w = p$$

$$n_w = 0.3$$

$$n_w = 0.3 \times 200$$

$$n_w = 60$$

END OF PAPER



