

Surname	Centre Number	Candidate Number
Other Names		0



**GCSE**

3300U20-1



S18-3300U20-1

**MATHEMATICS  
UNIT 2: CALCULATOR-ALLOWED  
FOUNDATION TIER**

THURSDAY, 7 JUNE 2018 – 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 continuation page at the back of the booklet. Question numbers must be given for all work written on the continuation page.  
Take  $\pi$  as 3.14 or use the  $\pi$  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 3, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

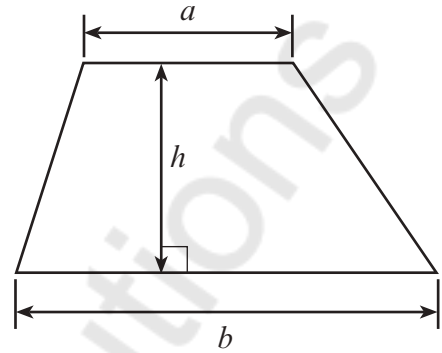
For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	4	
2.	2	
3.	4	
4.	3	
5.	2	
6.	3	
7.	2	
8.	3	
9.	2	
10.	4	
11.	3	
12.	6	
13.	3	
14.	4	
15.	3	
16.	2	
17.	4	
18.	4	
19.	3	
20.	4	
<b>Total</b>	<b>65</b>	



JUN183300U20101

## Formula List - Foundation Tier

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



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

[4]

$$\boxed{\text{£}3.26} + \boxed{89\text{p}} = \boxed{\text{£}4.15}$$

$$\boxed{78\text{p}} + \boxed{\text{£}4.67} = \boxed{\text{£}5.45}$$

$\text{£}5.45$   
 $- 0.78$

$$\boxed{7} \times \boxed{46\text{p}} = \boxed{\text{£}3.22}$$

$$\boxed{39} \times \boxed{25\text{p}} = \boxed{\text{£}9.75}$$

$\frac{\text{£}9.75}{25\text{p}}$

2. (a) Write 2453 correct to the nearest 10.

[1]

.....  
2450

(b) Write in figures the number that is one less than ten thousand.

[1]

.....  
9999



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

Books cost £2.80 each.

What is the greatest number of books that can be bought with £35?

You must show all your working.

[2 + 2 OCW]

$$£35 \div £2.80 = 12$$

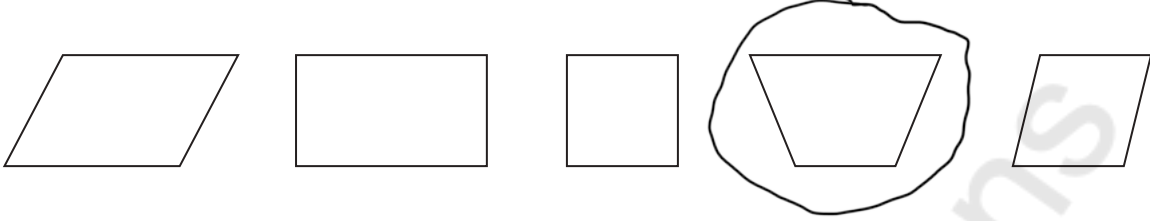
$$\therefore \frac{\text{Amount}}{\text{Cost of each book}} = \text{No of books}$$

$$\text{Ans} = \underline{\underline{12 \text{ books}}}$$



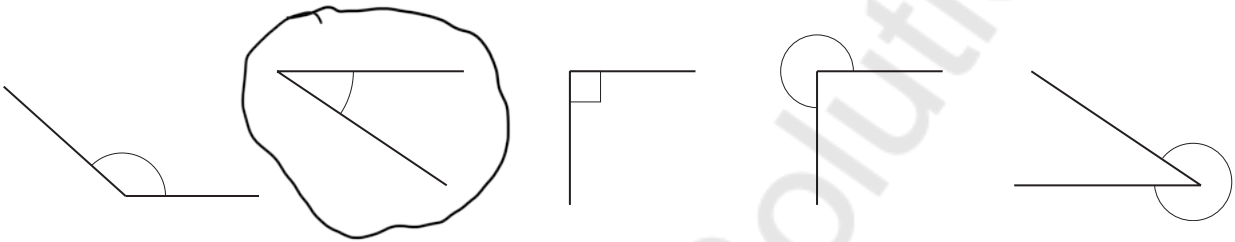
4. (a) The special name of one of the quadrilaterals below is *trapezium*.  
Circle the trapezium.

[1]



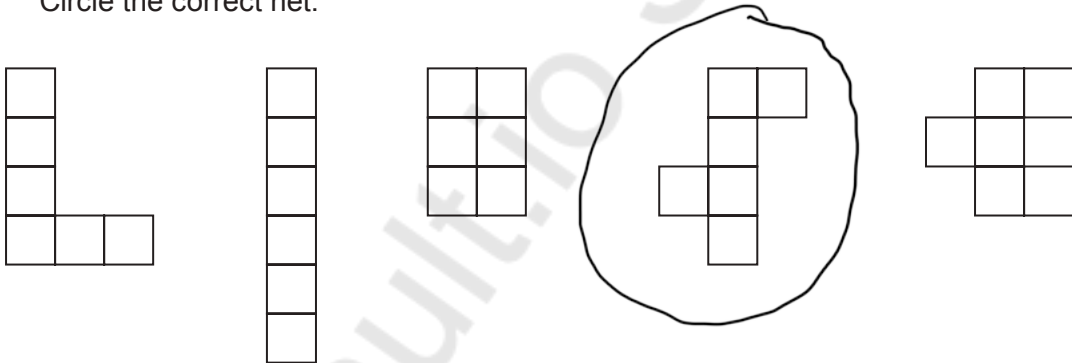
- (b) One of the angles marked below is an acute angle.  
Circle the acute angle.

[1]



- (c) Only one of the nets below can be folded to form a cube.  
Circle the correct net.

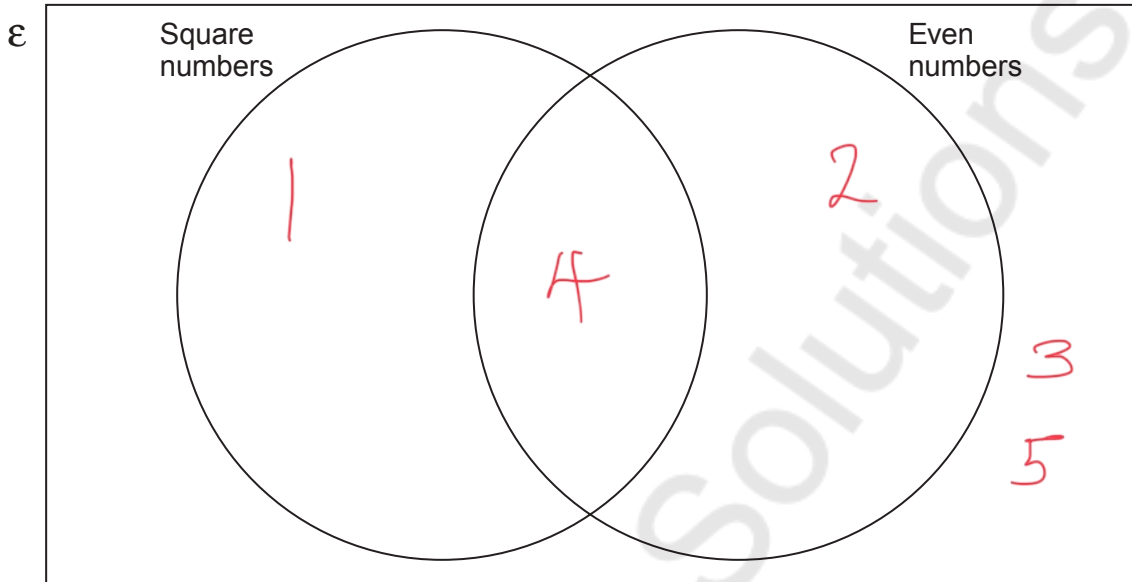
[1]



5. The Venn diagram below is used for showing square numbers and even numbers.

Place the numbers 1, 2, 3, 4 and 5 in the Venn diagram.

[2]



6. (a) Describe the rule for continuing each of the following sequences.

(i) 27, 32, 37, 42, 47, ...

[1]

Rule:

Add 5 to the previous term

(ii) 6, 12, 24, 48, 96, ...

[1]

Rule:

Multiply the previous term by 2

- (b) Write the next term in the sequence below.

[1]

0.2, 0.4, 0.6, 0.8, 1.0

+ 0.2



7. Find the value of each of the following.

(a)  $2.6^2$

$$(2.6)^2 = 2.6 \times 2.6 = 6.76$$

[1]

(b)  $\sqrt{21.16}$

$$= 4.6$$

[1]

8.

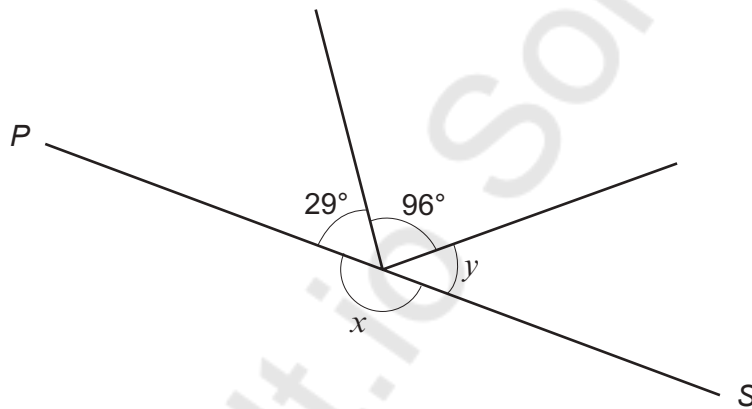


Diagram not drawn to scale

PS is a straight line.

(a) Write down the size of angle  $x$ .

$$x = \text{angle on straight line} = 180^\circ$$

[1]

(b) Find the size of angle  $y$ .

$$y = 360 - (29 + 96 + 180)$$

[2]

$$360 - 305$$

$$= 55^\circ$$



9. A number is multiplied by 5.  
3 is added to the answer to get 17.  
What was the number?  
You must show all your working.

[2]

let the number be  $x$

$$5x + 3 = 17$$

$$5x = 17 - 3$$

$$5x = 14$$

$$x = \frac{14}{5} \quad \text{Ans} = 2.8$$

10. Find the value of each of the following.

(a)  $\frac{4}{5}$  of 134

[2]

$$\frac{4}{5} \times 134 = 107.2$$

(b) 30% of 275

[2]

$$\frac{30}{100} \times 275 = 82.5$$



11. Rhys wrote down four whole numbers.

The mode of the four numbers is 7.  
The median of the four numbers is 6.  
The range of the four numbers is 5.

What are the four numbers that Rhys wrote down?  
You must show all your working.

[3]

$$\text{Mode} = 7$$

$\therefore$  at least 2 of the numbers is 7

$$7, 7, 5, 2$$

$$\text{Range} = 5 \text{ is highest no} - \text{smallest no} = 5$$

$$7 - 5 = 2 \text{ is smallest no is } 2$$

$$\text{Median is } \frac{7+x}{2} = 6 \quad x = 12 - 7 = 5$$

Rhys's numbers are 7, 7, 5 and 2



12. (a) Solve  $\frac{x}{4} = 7$ . [1]

$$x = 7 \times 4 = 28$$

(b) Simplify  $3f + 7g + f - 4g$ . [2]

$$3f + f + 7g - 4g = 4f + 3g$$

(c) Use the formula  $5p + 2q = t$  to find the value of  $q$  when  $p = 4$  and  $t = 24.6$ . [3]

$$5(4) + 2q = 24.6$$

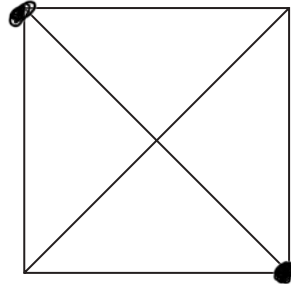
$$2q = 24.6 - 20$$

$$2q = 4.6$$

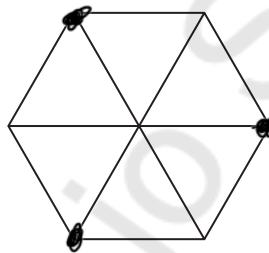
$$q = \frac{4.6}{2} = 2.3$$



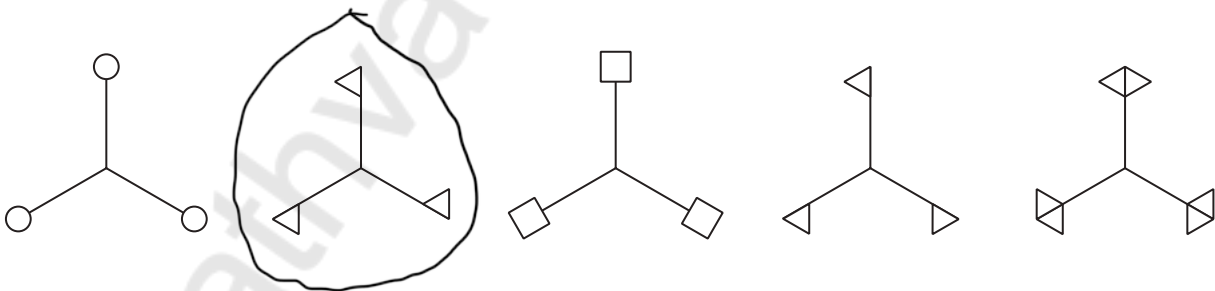
13. (a) The square drawn below has rotational symmetry of order 4.  
Place **two** identical dots (•) on the square so that it will have rotational symmetry of order 2. [1]



- (b) The regular hexagon drawn below has rotational symmetry of order 6.  
Place **three** identical dots (•) on the regular hexagon so that it will have rotational symmetry of order 3. [1]



- (c) Which of the following shapes has rotational symmetry of order 3, but has **no** line symmetry?  
Circle the correct shape. [1]



14. A travel company offers the following holiday options.

Time	Accommodation	Transport
Summer or Winter	Cottage or Hotel	Train or Bus or Car

- (a) List all the possible different combinations of holiday options that the company offers. One has been done for you. [3]

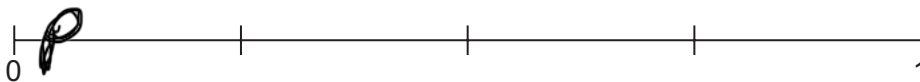
<u>Time</u>	<u>Accommodation</u>	<u>Transport</u>
Summer	Cottage	Train *
Summer	Cottage	Bus
Summer	Cottage	Car
Summer	Hotel	Train
Summer	Hotel	Bus
Summer	Hotel	Car
Winter	Cottage	Train
Winter	Cottage	Bus
Winter	Cottage	Car
Winter	Hotel	Train
Winter	Hotel	Bus
Winter	Hotel	Car

- (b) A holiday is chosen at random from all the different combinations on offer. **P** is the probability that the chosen holiday is a

**Summer holiday, staying in a Cottage and travelling by Train.**

Mark the point **P** on the probability scale shown below.

[1]



15. Which of the following fractions is nearest to  $\frac{1}{4}$ ?

$$\frac{1}{5}$$

$$\frac{7}{25}$$

$$\frac{13}{50}$$

You must show all your working.

[3]

$$\frac{1}{5}, \frac{7}{25}, \frac{13}{50}, \frac{1}{4}$$

$$\frac{10, 14, 13, 12.5}{50}$$

$$\text{Closest to } \frac{1}{4} \text{ is } \frac{13}{50}$$

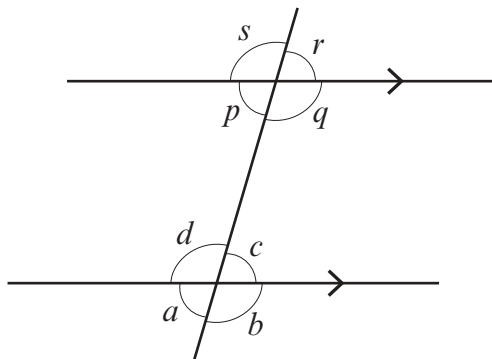
$$\text{Answer } \frac{13}{50}$$



16. Circle the correct equation for each of the following.  
All the lines shown are straight lines.

(a)

[1]



$$a + c + s + q = 360^\circ$$

$$p + a = 180^\circ$$

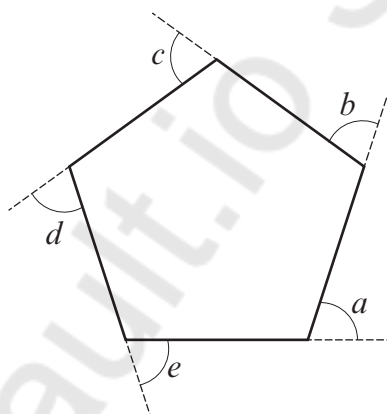
$$c = q$$

$$d = r$$

$$p + q + d + c = 180^\circ$$

(b)

[1]



$$\frac{a + b + c + d + e}{5} = 360^\circ$$

$$a + b + c + d + e = \frac{360^\circ}{5}$$

$$a + b + c + d + e = 180^\circ$$

$$a + b + c + d + e = 540^\circ$$

$$a + b + c + d + e = 360^\circ$$



17. Calculate the mean of these four time periods.  
You must give your answer in hours and minutes.

[4]

5 hours 20 minutes    2 hours 44 minutes    6 hours 18 minutes    4 hours 34 minutes

$$5 + 2 + 6 + 4 = 17 \text{ hours}$$

$$20 + 44 + 18 + 34 = 116 \text{ minutes}$$

$$17 \text{ hours to minutes} = 17 \times 60 = 1020 \text{ minutes}$$

$$+ 116$$

$$= 1136 \text{ minutes}$$

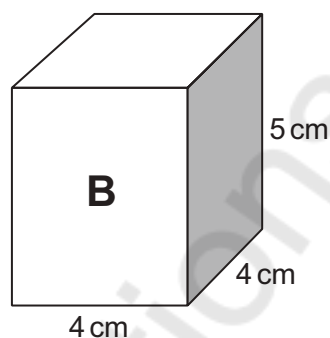
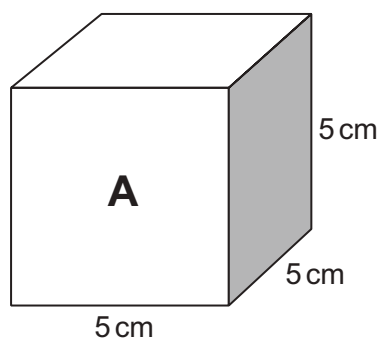
$$\text{Mean} = \frac{1136}{4} = 284 \text{ minutes}$$

$$\text{Convert to hrs} = \frac{284}{60} = 4 \text{ hours } 44 \text{ mins}$$

Mean time = 4 hours 44 minutes



18. Cube **A** and cuboid **B** are shown below.



Diagrams not drawn to scale

Express the volume of **B** as a percentage of the volume of **A**.  
You must show all your working.

[4]

$$\begin{aligned} \text{Volume of A} &= 5 \times 5 \times 5 \text{ cm}^3 = 125 \text{ cm}^3 \\ \text{Vol of B} &= 4 \times 4 \times 5 \text{ cm}^3 = 80 \text{ cm}^3 \end{aligned}$$

$$\begin{aligned} \text{Vol B as a \% of A} \\ &= \frac{80}{125} \times 100\% \\ &= 64\% \end{aligned}$$



19. The diagram below shows an equilateral triangle  $ABC$  with  $AB = (4x - 7)$  cm.

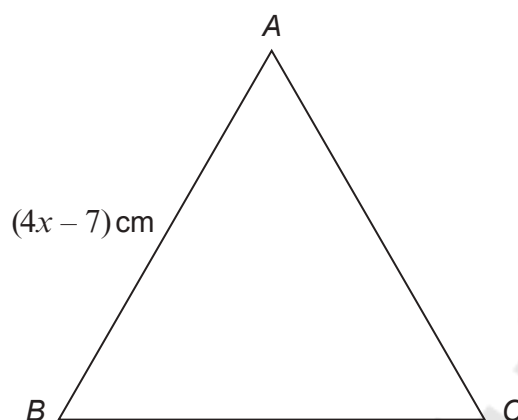


Diagram not drawn to scale

The perimeter of the triangle is 27 cm.  
Calculate the value of  $x$ .

[3]

$$3(4x - 7) = 27$$

$$12x - 21 = 27$$

$$12x = 27 + 21$$

$$12x = 48$$

$$x = \frac{48}{12} = 4 \quad x = \underline{\underline{4}}$$



20. A box contains many discs, identical in shape and size.  
A picture of one of four Welsh castles is printed on each disc.

- (a) A disc is chosen at random from the box.  
Complete the table below to find the probability of choosing a disc showing Dinefwr Castle. [2]

Picture	Caernarfon Castle	Harlech Castle	Rhuddlan Castle	Dinefwr Castle
Probability	0.36	0.12	0.24	0.28

$$1 - (0.36 + 0.12 + 0.24)$$

$$1 - 0.72$$

$$= 0.28$$

- (b) In the box, there were 522 discs showing a picture of Caernarfon Castle.  
How many of the discs showed a picture of Harlech Castle? [2]

$$522 \div 0.36 \times 0.12$$

$$1450 \times 0.12 = \underline{\underline{174}}$$

END OF PAPER

Thank you!



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