Surname	Centre Number	Candidate Number
First name(s)		0



# **GCSE**

3310U40-1



# THURSDAY, 7 NOVEMBER 2019 - MORNING

# MATHEMATICS – NUMERACY UNIT 2: CALCULATOR-ALLOWED INTERMEDIATE TIER

1 hour 45 minutes

#### **ADDITIONAL MATERIALS**

A calculator will be required for this paper.

A ruler, a 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 or use the  $\pi$  button on your calculator.

#### INFORMATION FOR CANDIDATES

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

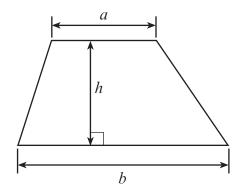
In question 7(a), the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.



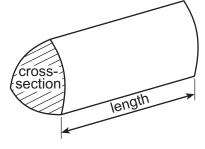
For Ex	For Examiner's use only			
Question	Maximum Mark	Mark Awarded		
1.	3			
2.	5			
3.	4			
4.	5			
5.	4			
6.	5			
7.	8			
8.	10			
9.	9			
10.	8			
11.	10			
12.	9			
Total	80			

## Formula List - Intermediate Tier

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



**Volume of prism** = area of cross-section × length



Who has th	e higher result in now all your work	this mathema	tics test?		[3]
Tod mast si	low all your work	ing.			[٥]
•••••				 	•••••
•••••				 	



1.

Turn over. © WJEC CBAC Ltd. (3310U40-1)

2. Barrels are used to store liquid.
Glass containers are filled with liquid from a barrel.

The table below gives the capacity of some glass containers and their traditional names.

(a) Complete the table to give the number of bottles equivalent to all the traditional sizes.



[2]

Capacity	in litres	Number of bottles	Traditional name	е
0.7	5	1	Bottle	
1.5	5	2	Magnum	
3			Jéroboam	
4.5	5		Réhoboam	
6		8	Methuselah	
9		12	Salmanazar	
12	2		Balthazar	
Which of	contains just end the following ar ur answer.	ough liquid to fill 3 Salmanaza nounts does the barrel hold?	ars and 1 Magnum.	
4 bottles	28·5 bottles	10⋅5 bottles	36 bottles 38 bo	ottles



	(c)	A different barrel contains just enough liquid to fill 30 Magnums. How many Salmanazars can be filled from this barrel?	[2]	Examiner only
	•••••	<del>-</del>		
	•····			
3.	Five	oupils attended a dance class every Thursday.		
	For the	nese five pupils: the median of their ages is 17 years, the mode is 18 years, the range of their ages is 8 years, one pupil is 2 years older than the youngest pupil.		
	Colee She i	en now joins this class. s two years younger than the mean age of the other 5 pupils.		
		old is Coleen? nust show all your working.	[4]	3310 0401
	•			
	•			
	•			
	•			
	······			

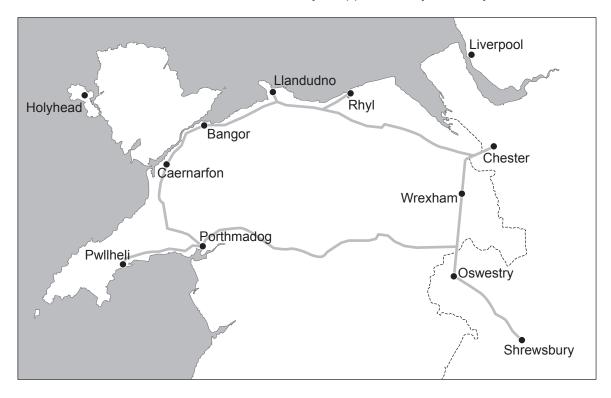


	Examiner only
[2]	
[2]	
•••••	
[1]	
• • • • • • • •	

(a)	$\frac{6}{11}$ of	Jenna's friends have pets.	
	Of th	nese friends with pets, $\frac{2}{3}$ of them have a dog.	
	Use	this information to answer each of the following questions.	
	(i)	Jenna has 33 friends. How many of her friends have a pet?	[2
	(ii)	What fraction of Jenna's friends have a dog?	[2
(b)	They	people were surveyed.	
(b)	They The	were each asked which is their favourite pet: dog, cat or fish.	[
(b)	They The	were each asked which is their favourite pet: dog, cat or fish. numbers who answered dog, cat and fish were in the ratio 63:39:18.	
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**5.** A map of north Wales and the border with England is shown below. The distance between Wrexham and Oswestry is approximately 22km by road.



(a) The straight-line distance between Wrexham and Oswestry on the map is 2·2 cm. Which of the following represents the scale of the map? Circle your answer.

[1]

1:10 1:1000 1:10000 1:100000 1:1000000

(b) Lauren travels by road directly from Wrexham to Oswestry.

This journey takes 25 minutes.

Calculate the average speed for Lauren's journey.

Give your answer in km/h.

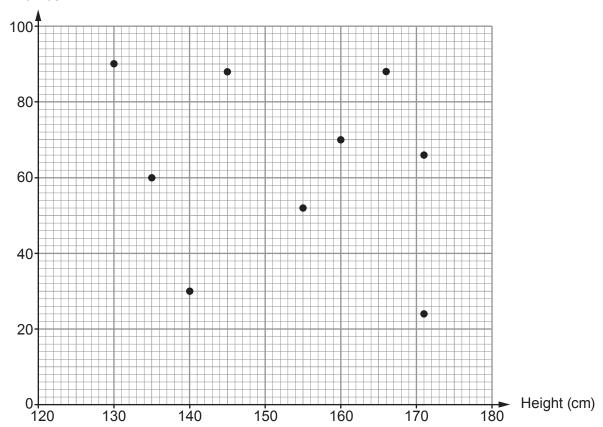
[3]

Average speed .....km/h



6. Some students were asked to select an even number between 0 and 100. The heights of these students and the number they each selected are shown in the scatter diagram below.

Number



- (a) Describe the correlation shown by the scatter diagram. [1]
- (b) Gwenda and Daniel selected the same number.Gwenda is shorter than Daniel.Lotte is the shortest student.Iona and Steffan are both the same height.

Iona selected a number greater than 40.

Complete the table.

[4]

Name	Height (cm)	Number
Gwenda		
Daniel		
Lotte		
Iona		
Steffan		



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0	
4	
$\supset$	
0	
$\overline{}$	
က	6
$^{\circ}$	0

	Ario	anna's p	pizzeria	
	All p	izzas £8	3.80 each	
	s	Special o	ffers	
	Buy 1 pizza, get 1 pizza free	OR	35% off the price of every pizza	
(a)	In this part of the question, yo communication and accuracy in		assessed on the quality of your organis	at
	Lowri orders 3 pizzas. She wants to pay the least amo Which offer should Lowri ask fo		ble.	
	Buy 1 pizza, get 1 pizza free		35% off the price of every pizza	
	You must give the total cost of e You must show all your working		ne offers. [5 + 2 0	C
(b)	Noah wants to order 10 pizzas. Explain why 'buy 1 pizza, get 1 Do not use any calculations.	pizza fre	e' would be the better of the 2 offers.	



Rowan lives in New Zealand. 8. (a)

Rowan wants to post a number of packages. He has 10 of each of the following stamps.















[2]

## 1 New Zealand dollar (\$1) = 100 cents (100c)

Rowan wants to:

put the correct postage on each package, use as **few** of his stamps as possible.

Documents, postage \$3.60

Select the stamps he needs to post each of the following packages.

	٠.
ii) Birthday present, postage \$7.40 [2	]
	•



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(3310U40-1)

Rowan is coming to Wales on holiday.  The conversion rate at the exchange shop is \$1 = £0.53.  The exchange shop only has £10 and £20 notes.	
Rowan only has \$550 saved. He wants to exchange as close to \$550 as possible. He asks for as few notes as possible.	
Calculate: <ul> <li>how many of each British note Rowan gets,</li> <li>how much he pays for his currency, correct to the nearest cent.</li> </ul> <li>You must show all your working.</li>	[6]



**9.** The picture shows a solid concrete step.

The step:

- stands on horizontal ground,
- has all of its edges vertical or horizontal,
- has a uniform cross-section.

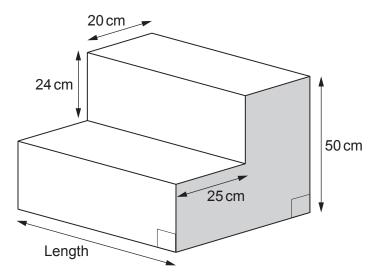


Diagram not drawn to scale

(a) Draw a sketch of the plan view of the concrete step.

[1]

- (b) The volume of concrete in the step is 66 000 cm<sup>3</sup>.
  - (i) The concrete to make the step costs 39p per litre.

A builder charges a rate of £27 per hour.

Any fraction of an hour is charged as that fraction of his hourly rate. (For example, half an hour is charged at half of £27.)

It takes him 1 hour 20 minutes to make the step.

There were no other costs.

Calculate the total cost of making the step.

[3]



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	••••••
(ii) Coloulate the length of the steep	
(ii) Calculate the length of the step. Give your answer in cm. You must show all your working.	
You must show all your working.	[5]



10.	(a)	40 people were asked how many mugs they have in their cupboards.
		The results are shown below



Number of mugs	Frequency
1 to 5	3
6 to 10	7
11 to 15	12
16 to 20	18

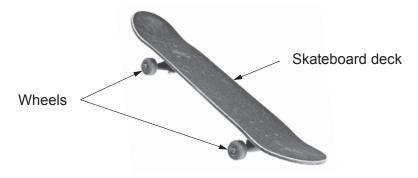
(i)	From this dat Circle your ar		p contains the	median numbe	er of mugs?	[1]
	Can't tell	1 to 5	6 to 10	11 to 15	16 to 20	
(ii)	Calculate an cupboards.	estimate of t		·	ese people have	[4]
						······
•••••						······································

1	Examiner
	Examiner only

		Examine
(b)	A cylindrical mug has an inner radius of 4·3 cm and an inner height of 11·8 cm.	only
	Tea is poured into the mug. The level of the tea is 2 cm below the top of the mug.	
	Calculate the volume of the tea in the mug. [3]	



### **11.** Finbar's skateboard is shown below.



(a) The diameter of each wheel on Finbar's skateboard is 6.4 cm. He uses his skateboard to go to visit his friend Sab. Sab lives 2340 metres from Finbar.

(i)	When Finbar visits Sab, how many times will each wheel on Finbar's sl rotate?	kateboard [4]
•••••		
•••••		
(ii)	What assumption did you make in answering (a)(i)?	[1]
•••••		



Examiner only

(b) A skateboard deck is usually made from one of maple wood, fibreglass or plastic. The density of these materials is given in the following table.

Skateboard deck material	Density (g/cm <sup>3</sup> )
Maple wood	0.7
Fibreglass	2.6
Plastic	1.8

Finbar and Sab compare their skateboards.

	Finbar's skateboard	Sab's skateboard
Area of the skateboard deck	1800 cm <sup>2</sup>	1600 cm <sup>2</sup>
Thickness of the skateboard deck	1·2 cm	1·4 cm
Material used to make the deck	Fibreglass	Maple wood

The wheels and the fittings on both their skateboards are identical.

How much heavier is Finbar's skateboard than Sab's skateboard? Give your answer in grams. You must show all your working.	[5]



12.	Roby	has 5 planks of wood each of length 2 m	and width 10 cm.	
		2 metr	es	
			10	) cm
		Diagram not dra	wn to scale	
	She I	ys the 5 planks horizontally on the floor. wn below.	She leaves a <b>15cm gap</b> between each	h plank,
		Diagram not dra	num to scale	
		Diagram not dra	WIT to Scale	
	Roby	is planning to make a gate. She uses the diagonally, as shown below.	nese 5 planks and one other plank that	is to be
	p.0.00	and generally, and once in the control		
		Diagram not dra	own to scale	
		·		
	(a)	(i) Calculate an estimate of the length Give your answer in metres.	of the plank that is to be placed diagona	ally. [4]
				••••••
				•••••••••••



(ii) 	What assumption did you make in calculating the length of the plank that is to be placed diagonally? [1
 o) Rol	byn finishes the gate with two end planks of wood.
	Diagram not drawn to scale
The	e costs of the different sizes of planks of wood are in the following ratio:
	e costs of the different sizes of planks of wood are in the following ratio:
Co An	e costs of the different sizes of planks of wood are in the following ratio: ost of 1 horizontal plank : cost of 1 diagonal plank : cost of 1 end plank
Co An	e costs of the different sizes of planks of wood are in the following ratio: ost of 1 horizontal plank : cost of 1 diagonal plank : cost of 1 end plank $= 3 : 4 : 5$ end plank costs £8.55.
Co An	e costs of the different sizes of planks of wood are in the following ratio: ost of 1 horizontal plank : cost of 1 diagonal plank : cost of 1 end plank $= 3 : 4 : 5$ end plank costs £8.55.
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Question number	Additional page, if required. Write the question number(s) in the left-hand margin.	Examine only

