



General Certificate of Secondary Education
January 2020

Centre Number

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Candidate Number

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Mathematics

Unit M1
(With calculator)
Foundation Tier



[GMC11]

GMC11

MONDAY 13 JANUARY, 9.15am–11.00am

TIME

1 hour 45 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Do not write outside the boxed area on each page or on blank pages.

Complete in black ink only. **Do not write with a gel pen.**

Answer **all twenty-seven** questions.

All working should be clearly shown in the spaces provided. Marks may be awarded for partially correct solutions.

You **may** use a calculator for this paper.

INFORMATION FOR CANDIDATES

Functional Mathematics is assessed in this unit.

The total mark for this paper is 100.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

You should have a calculator, ruler, compasses and a protractor.

The Formula Sheet is on page 2.

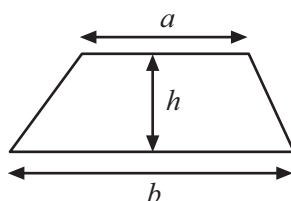
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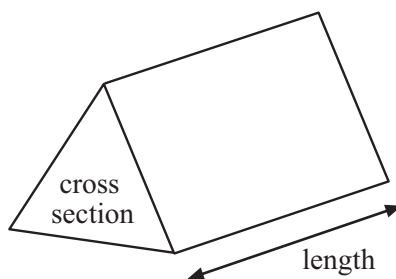
32GMC1101

Formula Sheet

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



$$\text{Volume of prism} = \text{area of cross section} \times \text{length}$$



1 Choose a number from the box below to complete the statements which follow.

Each number should be used once.

6	25	330	1360	40 000
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(a) A packet of crisps weighs _____ grams.



[1]

(b) A can of cola contains _____ millilitres.



[1]

(c) The capacity of a household oil tank is _____ litres.



[1]

(d) Tom walks _____ kilometres in one hour.



[1]

(e) A cruise ship weighs _____ tonnes.



[1]

[Turn over



2 (a) 1 kg of potatoes costs £1.50

Alan buys 2.5 kg of potatoes.

How much does he pay?

Answer £ _____ [2]

(b) A tin of tuna costs £1.20

Beth has £10

What is the greatest number of tins of tuna she can buy?

Answer _____ [2]



3 The cost of hiring a bouncy castle is given below.



cost of hire = number of days × £55 + delivery charge

(a) Heidi hired a bouncy castle for 7 days and the delivery charge was £20

What was the cost of hire?

Answer £ _____ [2]

(b) Colin hired a bouncy castle for 3 days and the cost of hire was £200

What was the delivery charge?

Answer £ _____ [2]

[Turn over



4 The Giant's Causeway visitor centre is open from 9 am to 7 pm.

(a) For how many hours is the visitor centre open?

Answer _____ hours [1]

The table shows the number of visitors to the Giant's Causeway in 2016 and 2017

Year	Number of visitors
2016	589 000
2017	666 000

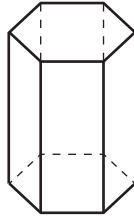
(b) How many **more** visitors were there in 2017 than in 2016?

Answer _____ visitors [1]



(c) The Giant's Causeway is famous for its stone columns.

One of them is shown below.



What is the name of this shape?

Circle the correct answer.

cylinder pentagonal pyramid cuboid hexagonal prism cone

[1]



5 The table shows information about eight different cameras.

Name of camera	Price (£)	Weight (g)	Battery life (shots)	Resolution (megapixels)	Touchscreen
Tinon 10	479	460	260	24	Yes
Tinon 20	605	510	400	28	No
Fiji F1	345	390	366	12	No
Fiji F2	380	360	450	18	Yes
Nika N400	750	625	300	20	No
Nika N500	879	775	365	24	No
Olympia OL	399	375	240	16	Yes
Olympia OM	549	390	275	20	No

(a) Write down the name of the camera with a battery life of 365 shots.

Answer _____ [1]

(b) Write down the name of the cheapest camera that has a touchscreen.

Answer _____ [1]

(c) Stan wants to buy a camera with
a resolution of at least 20 megapixels and
a weight under 500 g.

Write down the names of the two cameras that he could buy.

Answer _____ and _____ [1]



6 The chart shows the distance in miles between some towns in Northern Ireland.

Ballymena	26					
Coleraine	18	28				
Larne	47	21	47			
Limavady	31	38	14	57		
Portrush	18	31	7	52	20	
Strabane	61	56	43	81	31	48
	Ballycastle	Ballymena	Coleraine	Larne	Limavady	Portrush

(a) What is the distance in miles between Coleraine and Ballymena?

Answer _____ miles [1]

(b) Which two towns are furthest apart?

Answer _____ and _____ [1]

[Turn over



7 Giant's Causeway ticket prices are shown below.

Adult	£11.50
Child (5–18 years)	£5.75
Child (under 5 years)	Free
Family (2 adults and up to 3 children)	£28.50

(a) Eric buys tickets for himself and his two daughters, aged 10 and 13

How much does he pay altogether?

Answer £ _____ [2]

(b) Fiona buys a family ticket for herself, her husband and three children, aged 8, 11 and 15

How much does she save by buying a family ticket rather than two adult and three child tickets?

Answer £ _____ [2]



(c) Gary spends £9.65 in the café.

He pays with a £10 note.

He receives three coins in change.

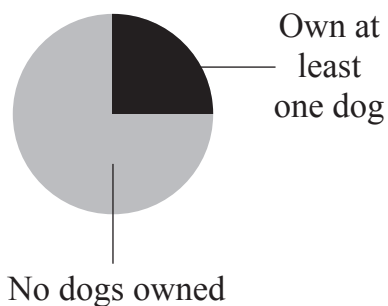
What are these coins?

Answer _____ [1]

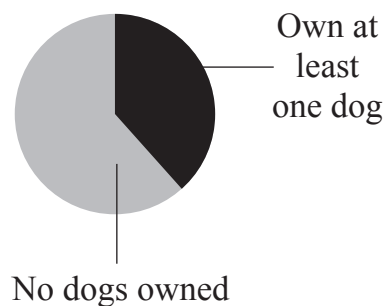


- 8 The pie charts show the proportion of households in the UK in 2017 that owned dogs. The number of households in each country is also shown.

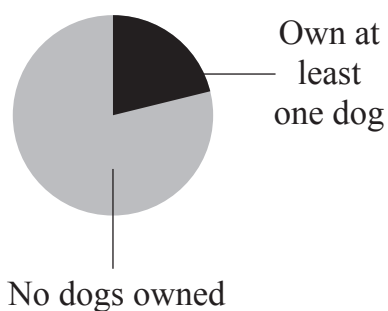
England
(22 million households)



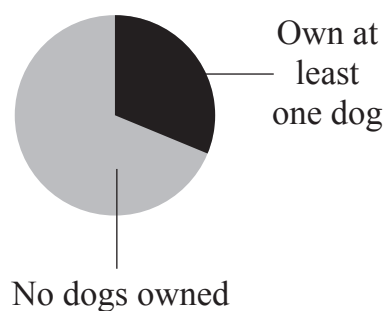
Northern Ireland
(800 000 households)



Scotland
(2.4 million households)



Wales
(1.3 million households)



- (a) What percentage of households in England own at least one dog?

Answer _____ % [1]

- (b) About what fraction of households in Wales own at least one dog?

Answer _____ [1]



(c) $\frac{3}{8}$ of the households in Northern Ireland own at least one dog.

How many households is this?

Answer _____ households [1]

(d) Three friends were asked which country in the UK has the most households owning dogs.

Northern Ireland, since its pie chart shows the most



Orla

There is not enough information to tell



Paul

England, as it has far more households



Rebecca

Circle the person you agree with.

Orla

Paul

Rebecca

[1]

[Turn over



9 Below are some of Denzel's school exam results.

English $\frac{13}{20}$

Maths $\frac{46}{50}$

Science $\frac{7}{10}$

LLW $\frac{21}{25}$

(a) Write Denzel's English result as a percentage.

Answer _____ % [1]

(b) Put his results in order, starting with his **highest** result.

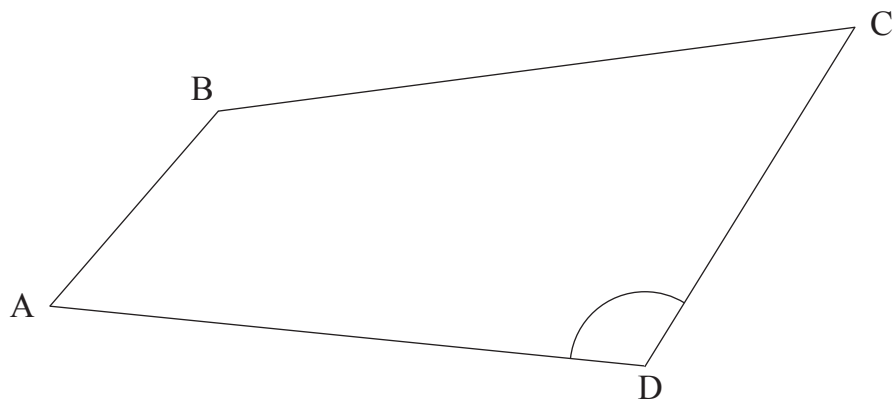
You must show all your working.

Answer _____, _____, _____, _____ [3]

↑
highest



12



(a) Measure the length of the line BC in mm.

Answer _____ mm [2]

(b) Measure the size of angle CDA.

Answer _____ ° [1]



13 Insert the correct symbol in each box below.

< > =

(a) 375 mm 37.5 cm

(b) 600 g 6 kg

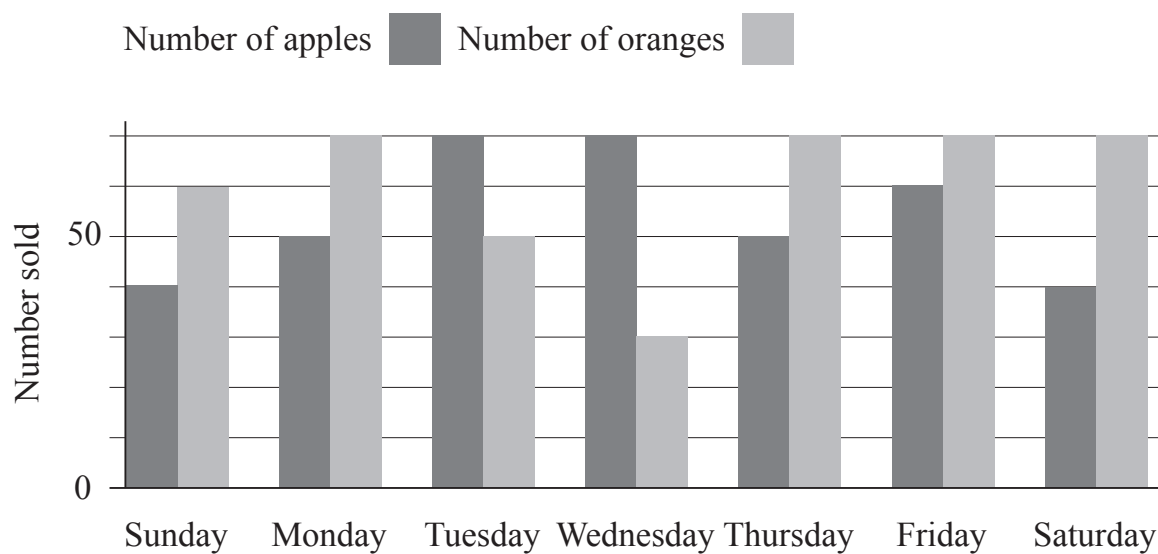
(c) 27 litres 26 900 ml

(d) 310 mins 5 hours

[4]



- 14 The dual bar chart shows how many apples and oranges were sold in a fruit shop last week.



The owner says

“I sold 50 more oranges than apples last week.”

Is he correct?

You must explain your answer.

Answer _____ because _____ [3]



15 8500 tickets for a concert are sold.

The organisers think that 40% of the ticket holders will turn up more than an hour before the start.

How many ticket holders will this be?

Answer _____ [2]

16	Silverside	costs	£4.90 per kg
	Topside	costs	£5.75 per kg
	Fillet	costs	£13.00 per kg

Martin buys 4.5 kg of Fillet.

He also buys some Silverside.

The total cost is £92.31

How much Silverside does he buy?

Answer _____ kg [4]

[Turn over



17 (a) Calculate the value of $\frac{2}{0.4^2}$

Answer _____ [2]

(b) Calculate the cube of 6

Answer _____ [1]

(c)

36	1	19	49	10	39	15	31
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From the numbers in the list, write down all the

(i) prime numbers,

Answer _____ [1]

(ii) square numbers.

Answer _____ [1]

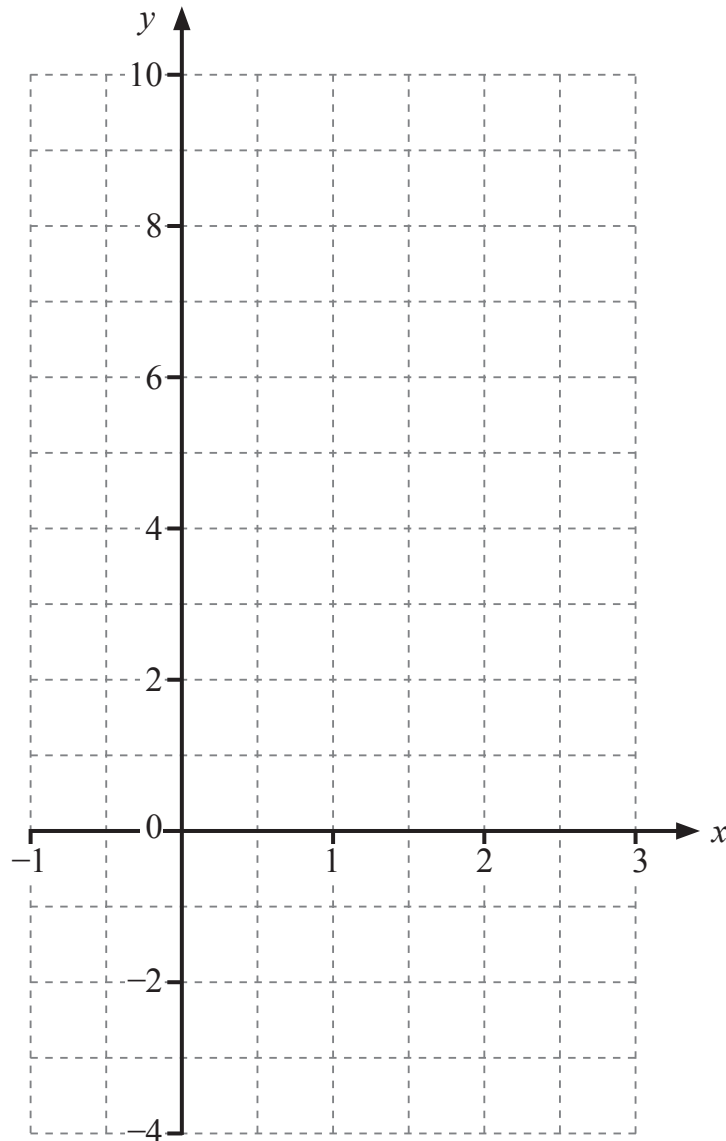


18 (a) Complete the table below for $y = 4x - 3$

x	1	2	3
y			

[1]

(b) Draw the line $y = 4x - 3$ on the grid below



[2]

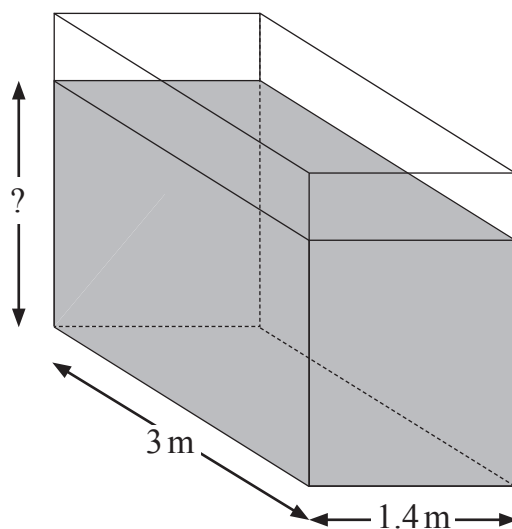
[Turn over



19 A tank is in the shape of a cuboid, as shown below.

The tank is used to store 11.13 m^3 of liquid.

How deep is the liquid in the tank?



Answer _____ m [3]



20 Work out the size of the angle marked x in the diagram below.

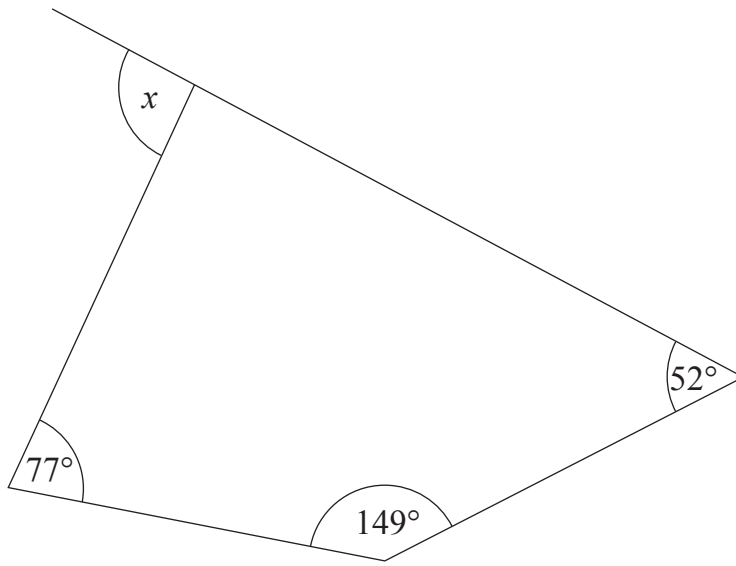


diagram not
drawn accurately

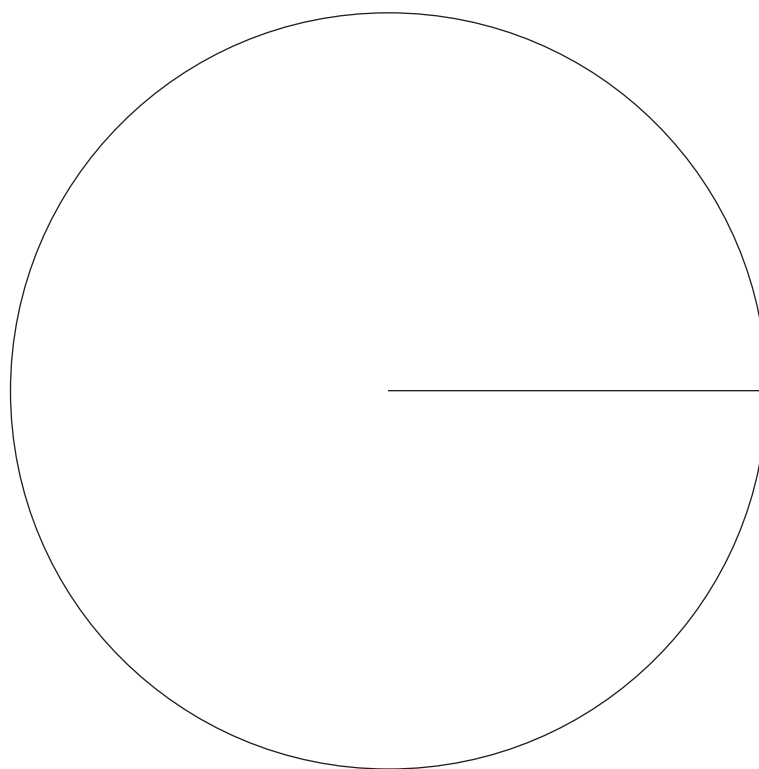
Answer _____ $^\circ$ [3]



21 The total sales figures for a supermarket one month are shown below.

Department	Total Sales (£1000s)	
Food	65	
Electrical	32	
Clothing	46	
Household	23	
Health & Beauty	14	

Draw a pie chart to show this information.



[4]



22 A hotel has single, twin and family rooms.

It offers room only, bed and breakfast (B&B) or half board.

On Saturday night, all the rooms in the hotel were booked.

Some information is shown in this two-way table.

	Room only	B&B	Half board	
Single	2	1		4
Twin		4	3	
Family	1		6	10
	7			

How many rooms are in the hotel?

Answer _____ [3]



23 Streetwise Youth Club has 86 members.

59 of the members attended last week.

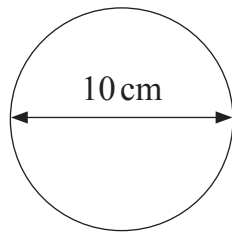
What percentage attended last week?

Give your answer to 1 decimal place.

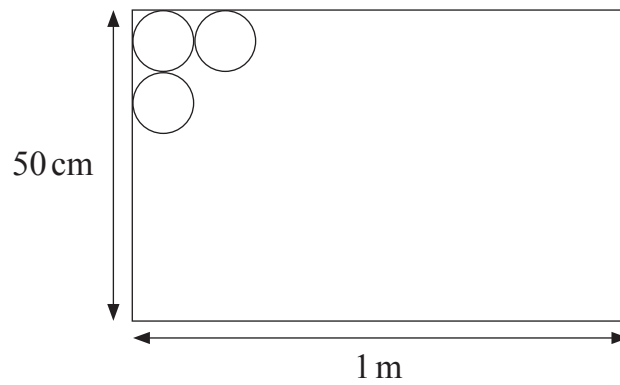
Answer _____ % [3]



24 Circles with diameter 10 cm are cut from a sheet of plastic as shown below.



diagrams not
drawn accurately



(a) Calculate the area of each circle.

Answer _____ cm^2 [2]

(b) How many circles can be cut from the sheet of plastic?

Answer _____ [2]

(c) What is the area of the plastic left over after the maximum number of circles have been cut out?

Answer _____ cm^2 [3]

[Turn over



25 Julie works on a market stall.
One Saturday she has 42 boxes of candles to sell.
Each box cost her £2.40
There are 18 candles in each box.

During the day she sells 34 boxes at £3.60 each.
In the last hour she starts to sell the remaining candles individually at 35p each.

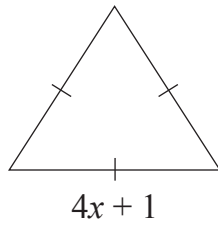
At the end of the day she has only 12 candles left.
Calculate the profit she made that day.

Answer £ _____ [6]

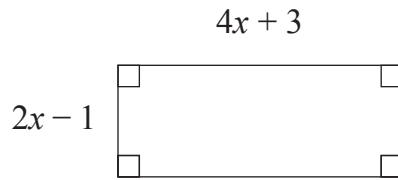


26 Which of these shapes has the greatest perimeter?

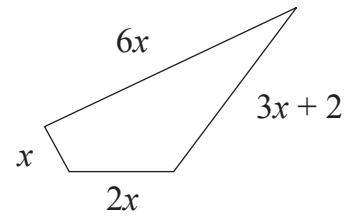
Show all your working.



Shape A



Shape B



Shape C

Answer Shape _____ [4]

[Turn over



- 27 A shop sells 80 gift vouchers valued at £5, £10, £20, £50 or £100
The table shows the number of each sold one weekend.

Price of gift voucher	Number of vouchers sold	
£5	34	
£10	26	
£20	9	
£50	7	
£100	4	

The shopkeeper states “on average people spend at least £15 on a gift voucher”.

By finding all three averages (mode, median, mean), which average makes her statement correct?

Answer _____ because _____

_____ [5]





THIS IS THE END OF THE QUESTION PAPER

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For Examiner's use only	
Question Number	Marks
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Examiner Number

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