



Rewarding Learning

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



**MV18**

[GMC11]

MONDAY 13 JANUARY, 9.15am–11.00am

### Time

1 hour 45 minutes, plus your additional time allowance.

### 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 on blank pages.**

Complete in black ink only. 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.

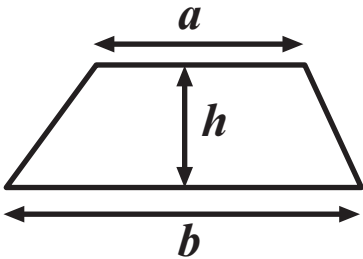
Figures in brackets printed at the end of each question indicate the marks awarded to each question or part question.

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

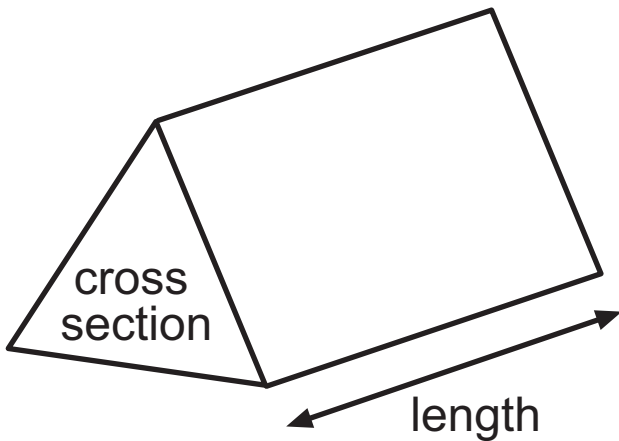
The Formula Sheet is on page 2.

# 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 list below to complete the statements which follow. [1 mark for each]

Each number should be used once.

6

25

330

1360

40 000

**(a)** A packet of crisps weighs \_\_\_\_\_ grams.

**(b)** A can of cola contains \_\_\_\_\_ millilitres.

**(c)** The capacity of a household oil tank is \_\_\_\_\_ litres.

**(d)** Tom walks \_\_\_\_\_ kilometres in one hour.

**(e)** A cruise ship weighs \_\_\_\_\_ tonnes.

**2 (a)** 1 kg of potatoes costs £1.50

Alan buys 2.5 kg of potatoes.

How much does he pay? [2 marks]

Answer £ \_\_\_\_\_

**(b)** A tin of tuna costs £1.20

Beth has £10

What is the greatest number of tins of tuna she can buy? [2 marks]

Answer \_\_\_\_\_

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

$$\text{cost of hire} = \text{number of days} \times \text{£55} + \text{delivery charge}$$

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

What was the cost of hire? [2 marks]

Answer £ \_\_\_\_\_

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

What was the delivery charge? [2 marks]

Answer £ \_\_\_\_\_

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?  
[1 mark]

Answer \_\_\_\_\_ hours

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

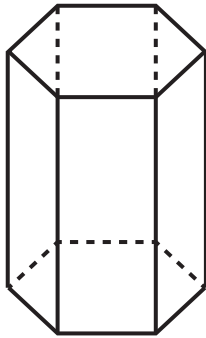
Year	Number of visitors
2016	589 000
2017	666 000

(b) How many **more** visitors were there in 2017 than in 2016? [1 mark]

Answer \_\_\_\_\_ visitors

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

One of them is shown below.



What is the name of this shape? [1 mark]

Circle the correct answer.

cylinder

pentagonal pyramid

cuboid

hexagonal prism

cone

**5** The table shows information about eight different cameras.

<b>Name of camera</b>	<b>Price (£)</b>	<b>Weight (g)</b>	<b>Battery life (shots)</b>	<b>Resolution (megapixels)</b>	<b>Touchscreen</b>
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. [1 mark]

Answer \_\_\_\_\_

**(b)** Write down the name of the cheapest camera that has a touchscreen. [1 mark]

Answer \_\_\_\_\_



**(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. [1 mark]

Answer \_\_\_\_\_ and \_\_\_\_\_



**(a)** What is the distance in miles between Coleraine and Ballymena? [1 mark]

Answer \_\_\_\_\_ miles

**(b)** Which two towns are furthest apart? [1 mark]

Answer \_\_\_\_\_ and \_\_\_\_\_

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? [2 marks]

Answer £ \_\_\_\_\_

(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?  
[2 marks]

Answer £ \_\_\_\_\_

(c) Gary spends £9.65 in the café.

He pays with a £10 note.

He receives three coins in change.

What are these coins? [1 mark]

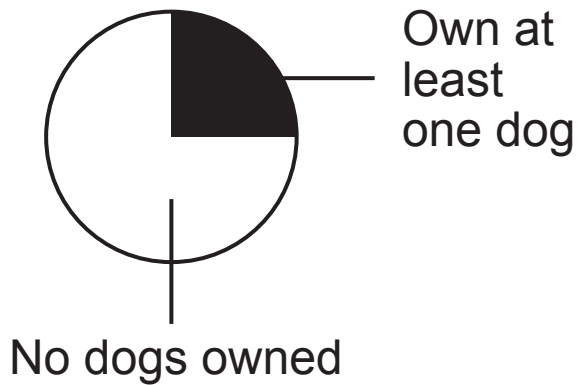
Answer \_\_\_\_\_

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.

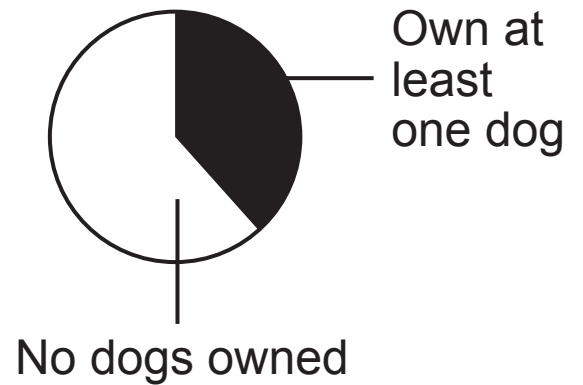
**England**

(22 million households)



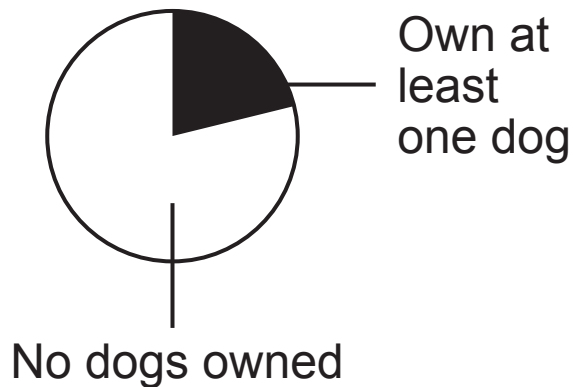
**Northern Ireland**

(800 000 households)



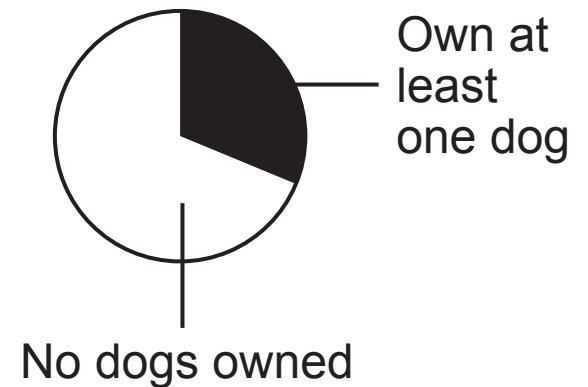
**Scotland**

(2.4 million households)



**Wales**

(1.3 million households)



(a) What percentage of households in England own at least one dog? [1 mark]

Answer \_\_\_\_\_ %

(b) About what fraction of households in Wales own at least one dog? [1 mark]

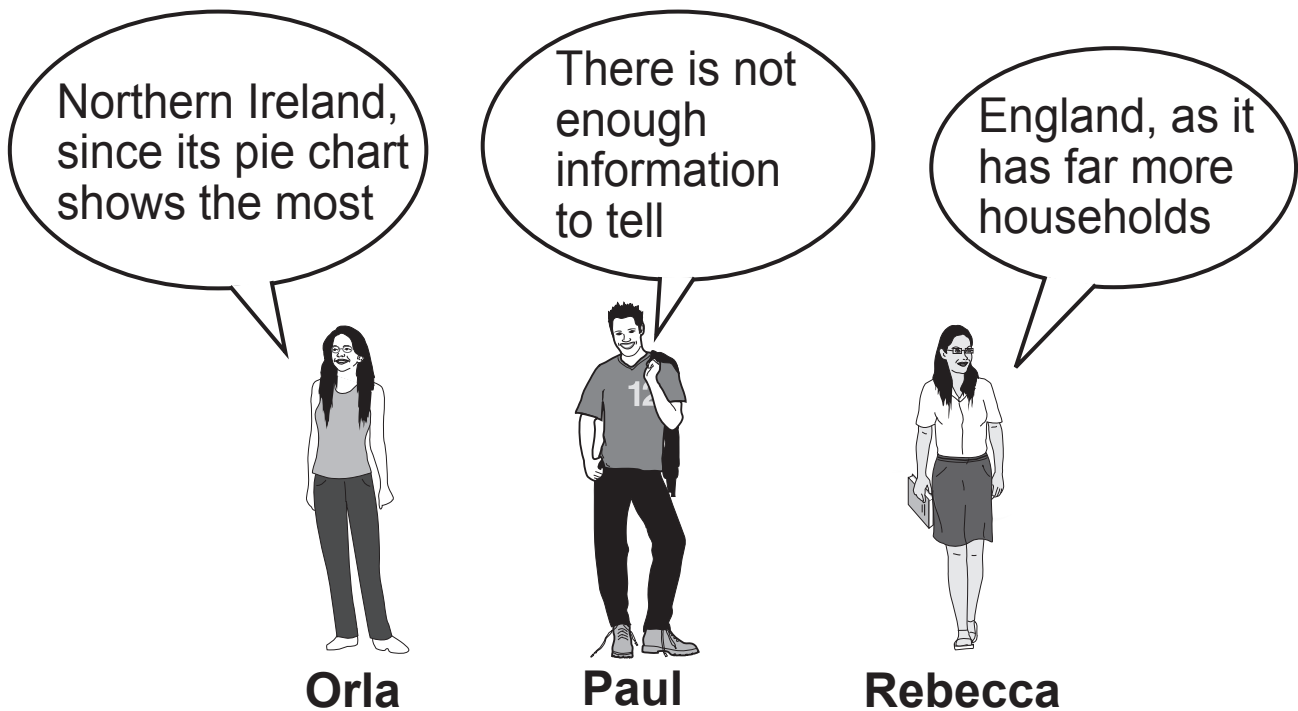
Answer \_\_\_\_\_

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

How many households is this? [1 mark]

Answer \_\_\_\_\_ households

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



Circle the person you agree with. [1 mark]

Orla

Paul

Rebecca





**10 (a)** What is the value of the digit 4 in the number 3.04?  
[1 mark]

Circle the correct answer.

$$\frac{4}{10}$$

40

4

400

$$\frac{4}{100}$$

**(b)** Put these decimals in order of size, starting with the **smallest**. [1 mark]

3.024

3.1

3.24

3.124

Answer \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_  
                  ↑  
                  smallest

**11** Ciara bought four burgers.

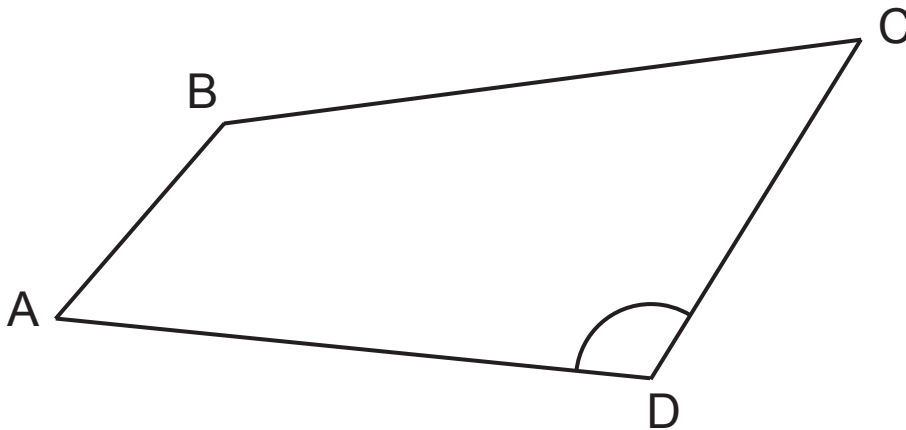
She paid with a £20 note and got £6 change.

How much did each burger cost? [2 marks]

Answer £ \_\_\_\_\_

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**12**



(a) Measure the length of the line BC in mm. [2 marks]

Answer \_\_\_\_\_ mm

(b) Measure the size of angle CDA. [1 mark]

Answer \_\_\_\_\_ °

**13** Insert the correct symbol in each box below. [4 marks]

<

>

=

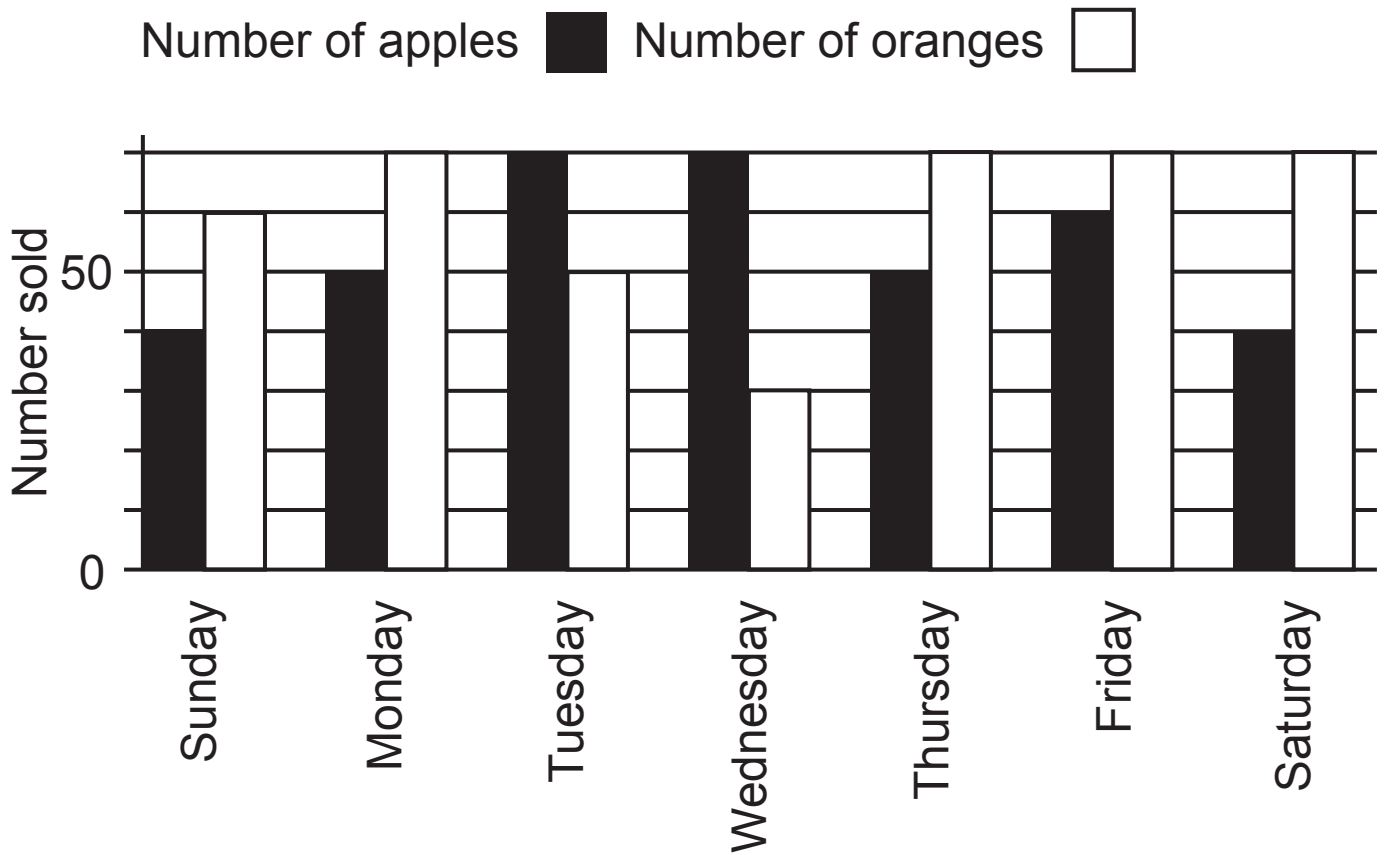
(a) 375 mm  37.5 cm

(b) 600 g  6 kg

(c) 27 litres  26 900 ml

(d) 310 mins  5 hours

**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? [3 marks]

You must explain your answer.

Answer \_\_\_\_\_ because \_\_\_\_\_

**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? [2 marks]

Answer \_\_\_\_\_

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**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? [4 marks]

Answer \_\_\_\_\_ kg

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

Answer \_\_\_\_\_

**(b)** Calculate the cube of 6 [1 mark]

Answer \_\_\_\_\_

**(c)** 36

1

19

49

10

39

15

31

From the numbers in the list, write down all the

**(i)** prime numbers, [1 mark]

Answer \_\_\_\_\_

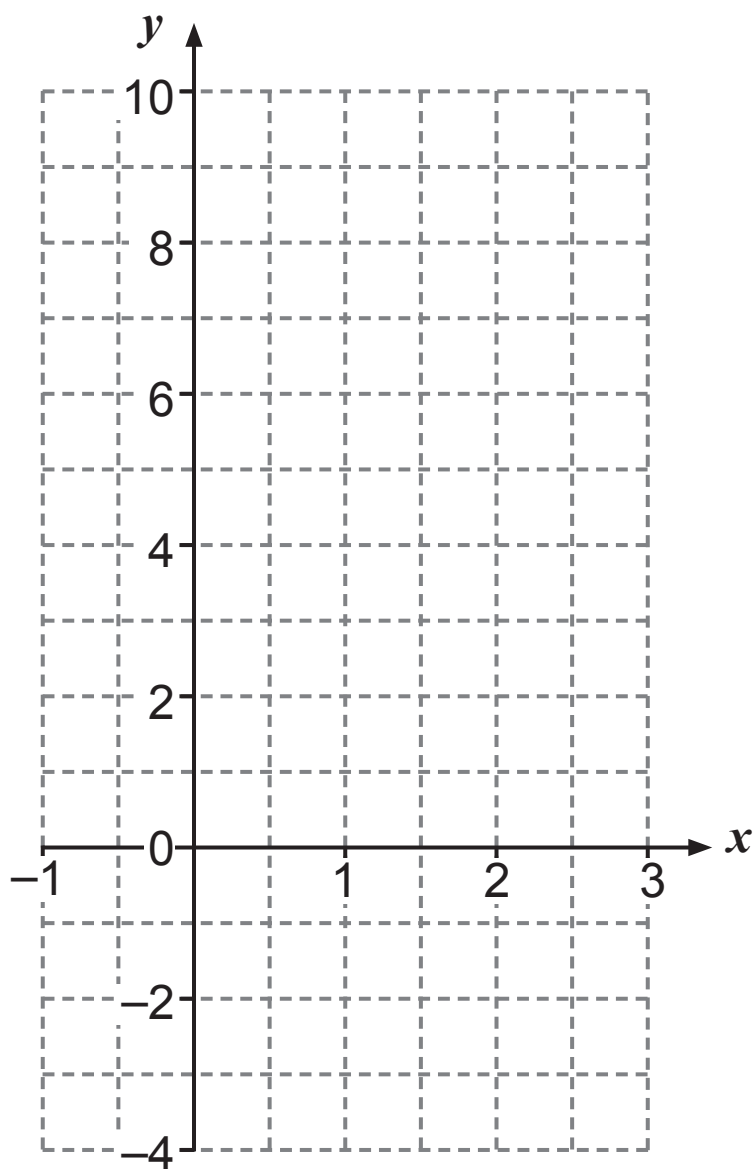
**(ii)** square numbers. [1 mark]

Answer \_\_\_\_\_

- 18 (a)** Complete the table below for  
 $y = 4x - 3$  [1 mark]

$x$	1	2	3
$y$			

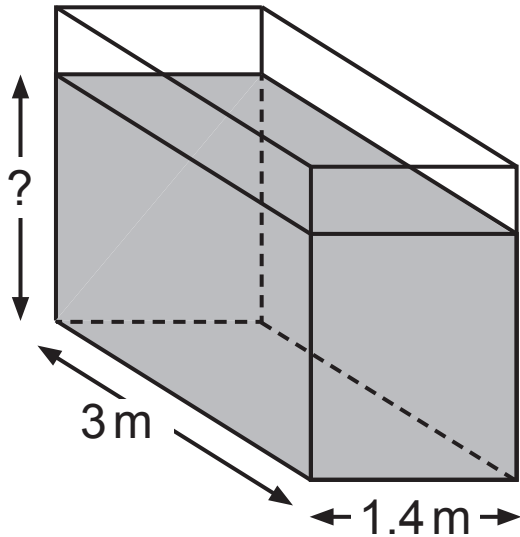
- (b)** Draw the line  $y = 4x - 3$  on the grid below  
[2 marks]



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

The tank is used to store  $11.13\text{ m}^3$  of liquid.

How deep is the liquid in the tank? [3 marks]



Answer \_\_\_\_\_ m



**20** Work out the size of the angle marked  $x$  in the diagram below. [3 marks]

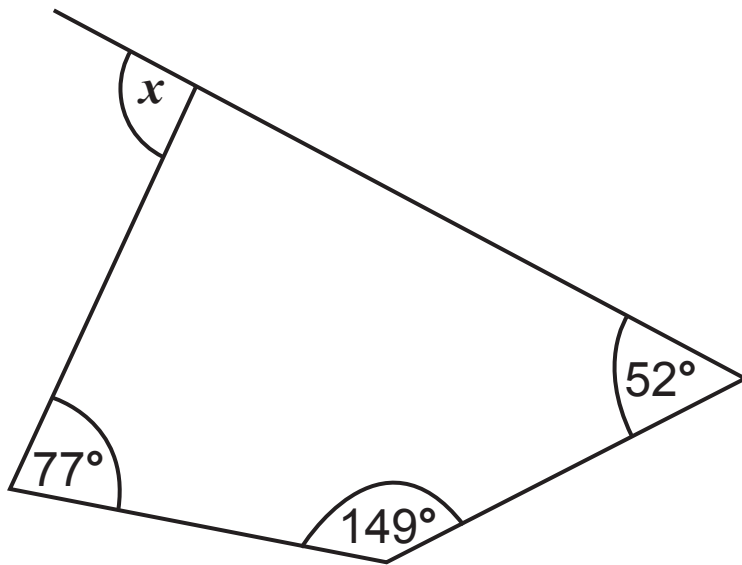


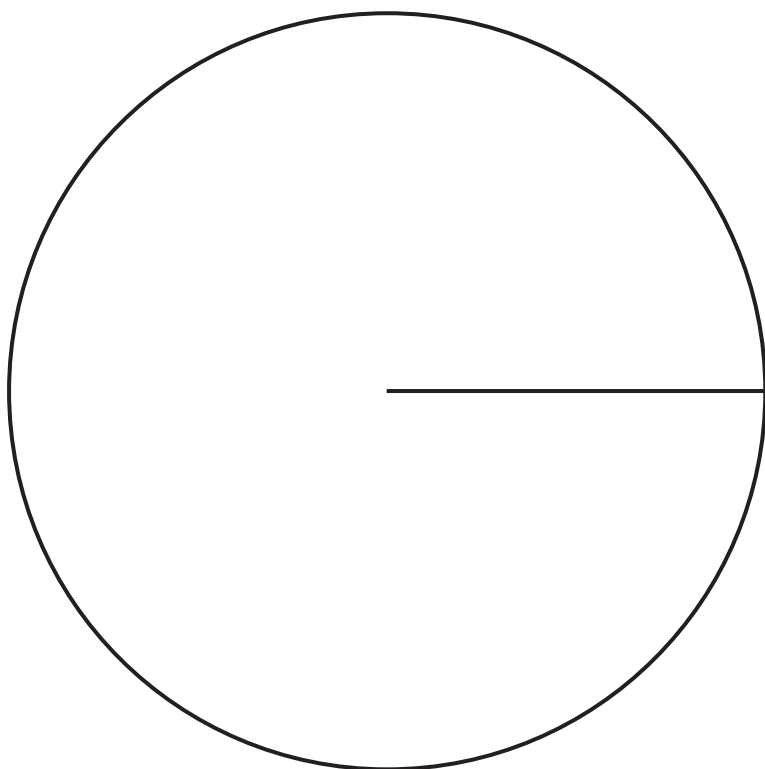
diagram not  
drawn accurately

Answer \_\_\_\_\_ $^\circ$

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

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

Draw a pie chart to show this information. [4 marks]



**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.

	<b>Room only</b>	<b>B&amp;B</b>	<b>Half board</b>	
<b>Single</b>	2	1		4
<b>Twin</b>		4	3	
<b>Family</b>	1		6	10
	7			

How many rooms are in the hotel? [3 marks]

Answer \_\_\_\_\_

**23** Streetwise Youth Club has 86 members.

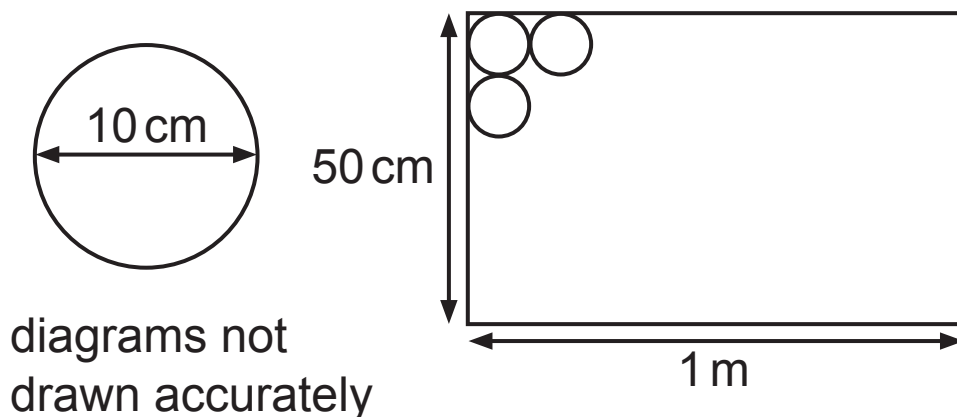
59 of the members attended last week.

What percentage attended last week? [3 marks]

Give your answer to 1 decimal place.

Answer \_\_\_\_\_ %

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



**(a)** Calculate the area of each circle. [2 marks]

Answer \_\_\_\_\_  $\text{cm}^2$

**(b)** How many circles can be cut from the sheet of plastic? [2 marks]

Answer \_\_\_\_\_

**(c)** What is the area of the plastic left over after the maximum number of circles have been cut out? [3 marks]

Answer \_\_\_\_\_  $\text{cm}^2$

**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.

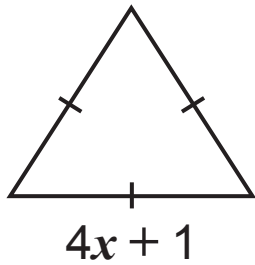
At the end of the day she has only 12 candles left.

Calculate the profit she made that day. [6 marks]

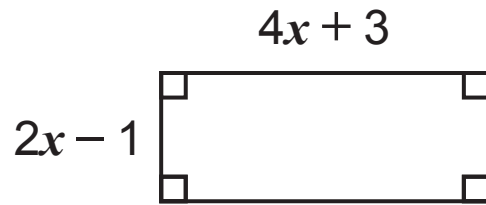
Answer £ \_\_\_\_\_

**26** Which of these shapes has the greatest perimeter?  
[4 marks]

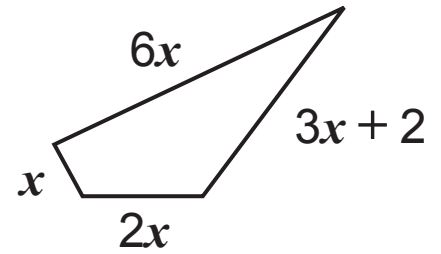
**Show all your working.**



Shape A



Shape B



Shape C

Answer Shape \_\_\_\_\_

**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.

<b>Price of gift voucher</b>	<b>Number of vouchers sold</b>	
£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? [5 marks]

Answer \_\_\_\_\_ because \_\_\_\_\_

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**This is the end of the question paper**

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For Examiner's use only	
Question Number	Marks
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<b>Total Marks</b>	
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Examiner Number

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