OCR
RECOGNISING ACHIEVEMENT

F

Friday 8 November 2013 – Morning

GCSE MATHEMATICS A

A503/01 Unit C (Foundation Tier)

A516830313

Candidates answer on the Question Paper.

OCR supplied materials:
None

Other materials required:
- Scientific or graphical calculator
- Geometrical instruments
- Tracing paper (optional)

Duration: 1 hour 30 minutes

A503 01

Candidate forename		Candidate surname	

Centre number						Candidate number				

INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Your answers should be supported with appropriate working. Marks may be given for a correct method even if the answer is incorrect.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Do **not** write in the bar codes.

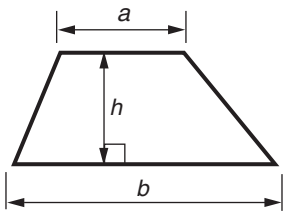
INFORMATION FOR CANDIDATES

- The number of marks is given in brackets **[ ]** at the end of each question or part question.
- Your quality of written communication is assessed in questions marked with an asterisk (*).
- Use the π button on your calculator or take π to be 3.142 unless the question says otherwise.
- The total number of marks for this paper is **100**.
- This document consists of **20** pages. Any blank pages are indicated.

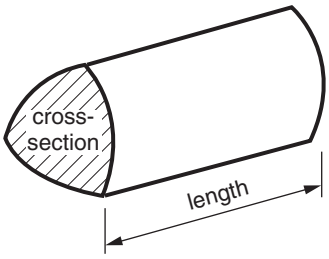
You are permitted to use a calculator for this paper

Formulae Sheet: Foundation Tier

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



Volume of prism = (area of cross-section) × length



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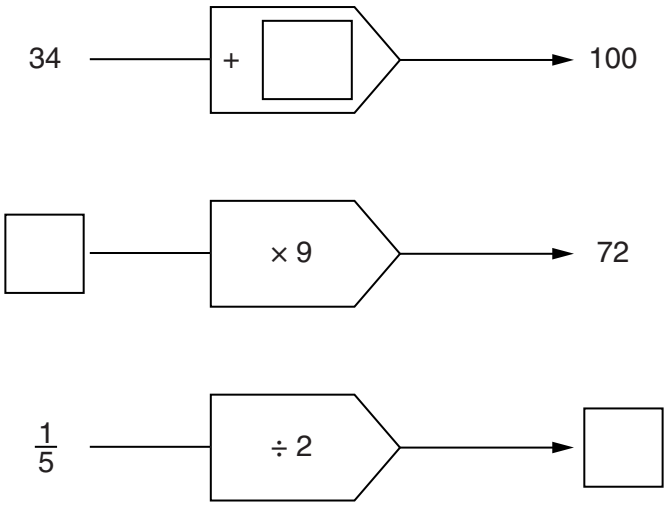
Answer **all** the questions.

1 **(a)** Complete each of these number machines.



[3]

(b) Write 12 out of 20 as a fraction.
Give your answer in its simplest form.

(b) _____ **[2]**

(c) Calculate.

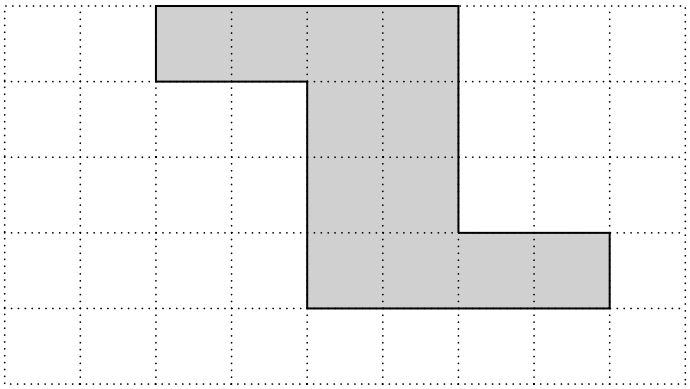
(i) $3.7 + 2.5^2$

(c)(i) _____ **[1]**

(ii) $\dfrac{7.6 - 0.35}{0.25}$

(ii) _____ **[1]**

2 This shape is drawn on a one-centimetre square grid.



Find the area and the perimeter of the shape.

Area = _____ cm^2

Perimeter = _____ cm **[2]**

3 **(a)** Complete the following.

(i) 40 cm = _____ m **[1]**

(ii) 1.35 kg = _____ g **[1]**

(b) Complete the following.
Give the units with your answer.

70 cm – 86 mm = _____ **[2]**

(c) A water dispenser contains 12 litres of water.
Plastic cups, each holding 140 ml, are filled from the water dispenser.

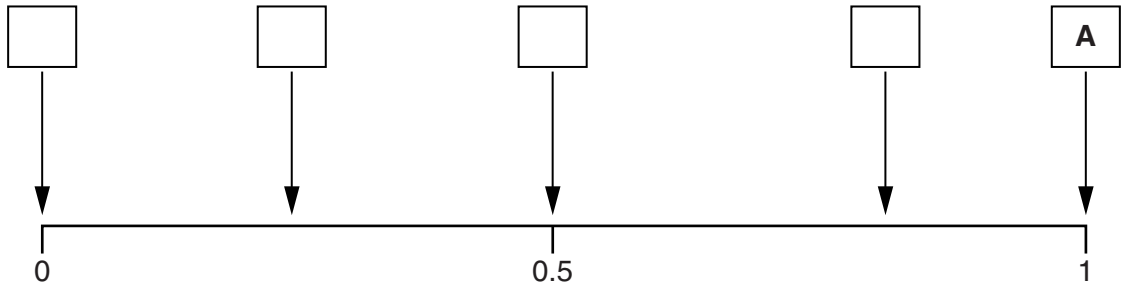
How many of these cups can be completely filled from the water dispenser?

(c) _____ **[3]**

4 Twenty cards, numbered 1 to 20, are placed in a bag.
A card is chosen at random from the bag.

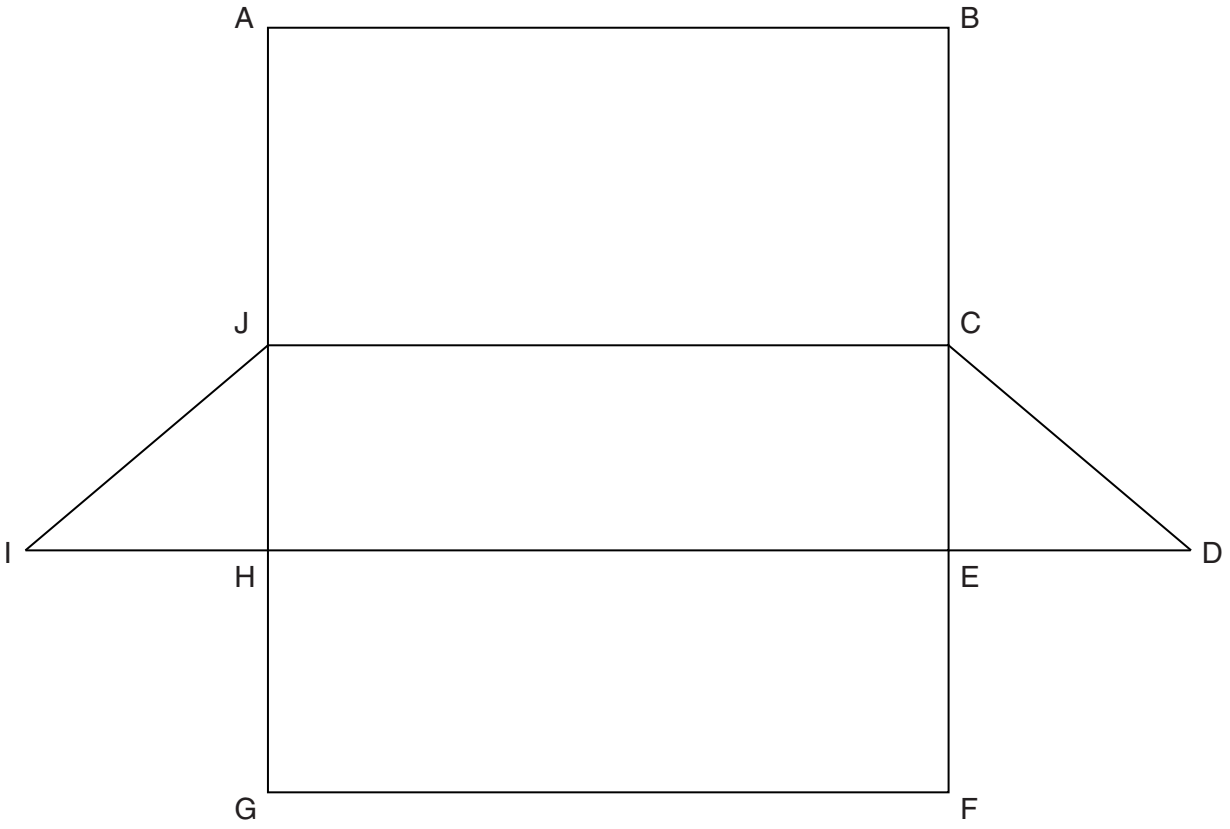
Write the letter in the box above an arrow on the probability line for each of these events.
Event **A** has been done for you.

A A positive number is chosen.
B An odd number is chosen.
C A negative number is chosen.
D A multiple of 4 is chosen.
E A number less than 17 is chosen.



[4]

5 The diagram shows the net of a 3D shape.



(a) Which 2 corners on the net will join to G at one vertex when the 3D shape is made?

(a) _____ **[1]**

(b) What is the name of the 3D shape?

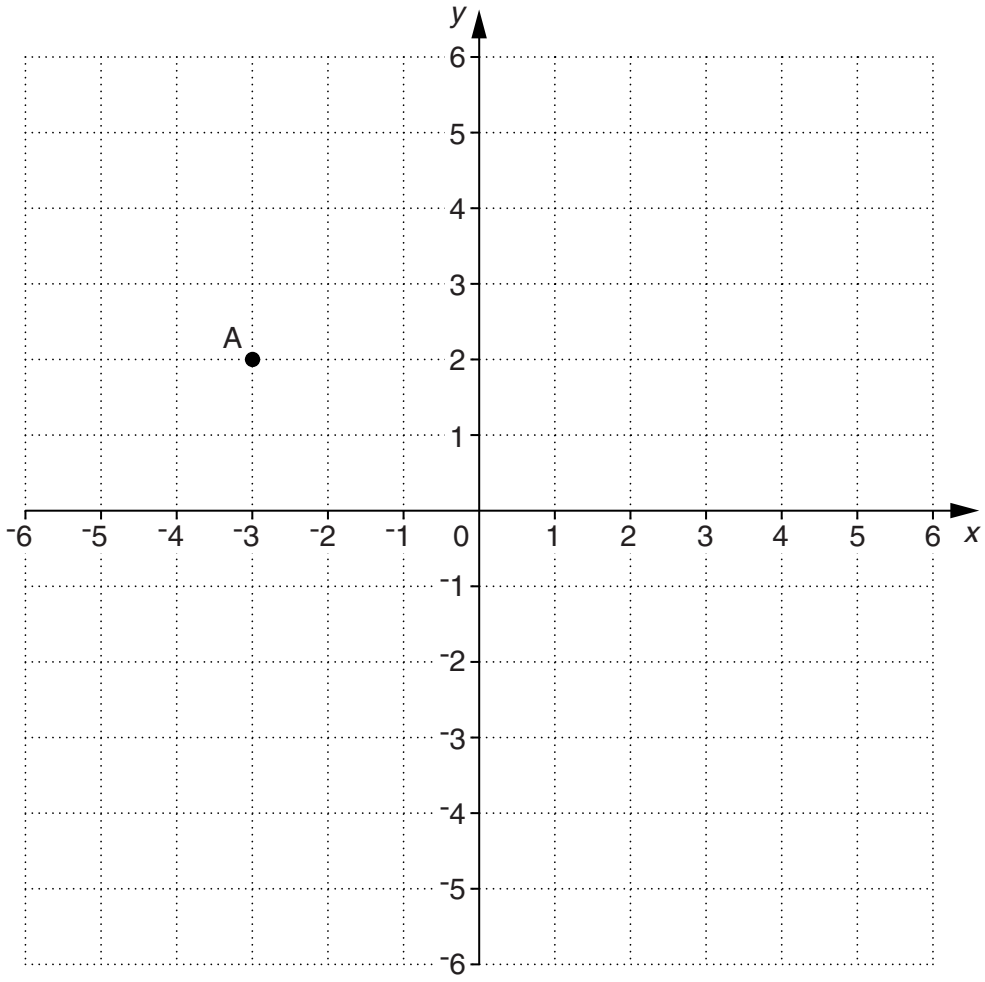
(b) _____ **[1]**

(c) Complete the following.

The 3D shape has _____ edges.

The 3D shape has _____ faces. **[2]**

6 Here is a grid.



(a) Write down the coordinates of point A.

(a) (_____ , _____) **[1]**

(b) Plot the point (5, 2) and label it B. **[1]**

(c) Plot and label a point C so that ABC is an isosceles triangle.
Write down the coordinates of point C.

(c) (_____ , _____) **[2]**

7 The table shows the temperature at midnight in some cities on two days.

	Friday	Saturday
London	2 °C	7 °C
Winnipeg	-18 °C	-21 °C
Singapore	27 °C	33 °C
Washington	-3 °C	5 °C
Moscow	-12 °C	-22 °C

(a) Which city had the lowest temperature on **Saturday**?

(a) _____ **[1]**

(b) What was the difference in the midnight temperature in Washington between Friday and Saturday?

(b) _____ °C **[1]**

(c) Complete the following sentence.

The temperature in _____ was 14 °C colder on **Friday** than the temperature in _____ on **Friday**. **[1]**

(d) Which city had the **smallest** difference in temperatures between Friday and Saturday? What was this difference?

The city of _____ with a difference of _____ °C **[2]**

8 **(a)** Draw a line from each expression on the left to its equivalent expression on the right.

$4d - d$	$4d$
$4d \times d$	$3d$
$2d \times 2$	$5d$
$8d \div 2d$	$4d^2$
	4

[4]

(b) Work out the value of $x^2 + 3x$ when $x = 5$.

(b) _____ **[1]**

9* Sarah is looking for a flight to Barcelona for herself and Matthew.
She will pay by credit card.
The table shows the costs for three airlines.
Matthew and Sarah will take one bag each on the flight.

Name of airline	Cost per person for flight	Luggage cost	Credit card charge	Special offers
Flyaway	£190	Free	None	None
Budget Lines	£150	£35 for each bag	£15	None
Dream Carriers	£230	Free	£10	Buy one ticket and get another on the same flight at half price

Which airline offers them the lowest total cost? **[5]**

10 Solve the equations to find each value of x.

(a) $5x = 17.5$

(a) _____ **[1]**

(b) $\frac{x}{2} = 21$

(b) _____ **[1]**

(c) $4x + 2 = 17$

(c) _____ **[2]**

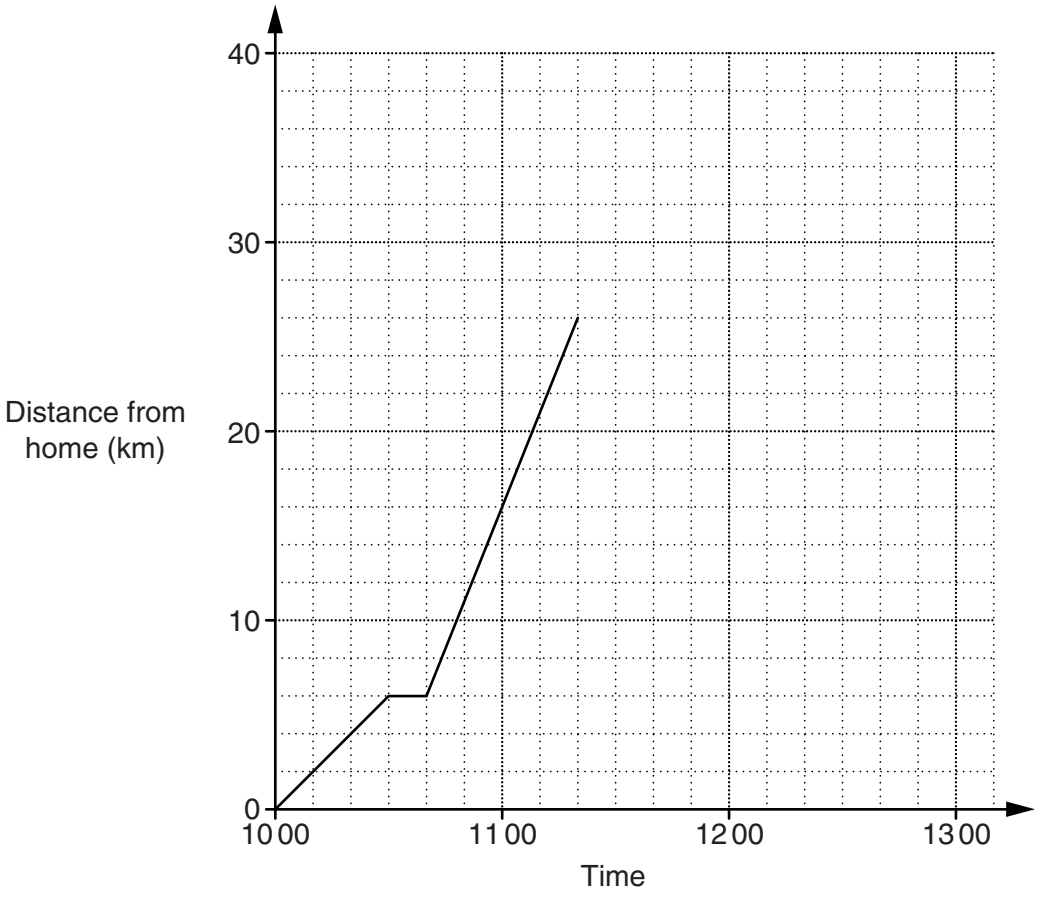
11 One day in winter, Stefan is filling the windscreen washer tank in his car.
The screen wash bottle gives the following information.

Winter mix	1 part screen wash with 2 parts water
Summer mix	1 part screen wash with 5 parts water

How much screen wash should Stefan use with 2.5 litres of water?

_____ litres **[2]**

12 The graph shows Liam's journey from his home to his uncle's house.



(a) How far did Liam travel to his uncle's house?

(a) _____ km **[1]**

(b) How far did he travel in the first 30 minutes of his journey?

(b) _____ km **[1]**

(c) Liam made one stop on his journey to his uncle's house.

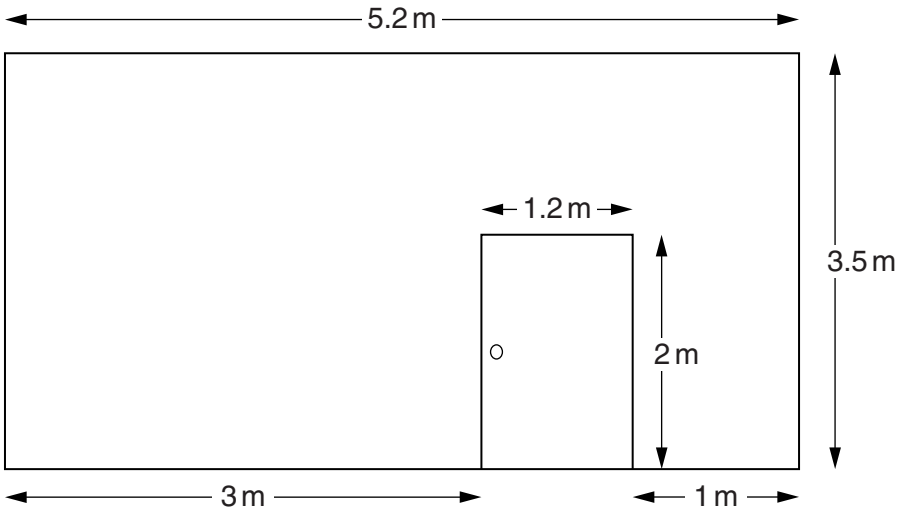
For how many minutes did he stop?

(c) _____ minutes **[1]**

(d) Liam spends exactly one hour at his uncle's house and then travels home without stopping. His journey home takes 30 minutes.

Complete the graph of Liam's journey. **[2]**

13 One wall of a house is shown below.



Not to scale

The rectangular wall is 5.2 m long and 3.5 m high.
The wall has a rectangular door of height 2 m and width 1.2 m.
The wall is painted at a cost of £12.50 per square metre.
The door is **not** painted.

Calculate the cost of painting the wall.

£ _____ **[5]**

14 Aisha pays the following costs for using her mobile phone.

9 p for each text

17 p for each minute of a call

(a) In September, Aisha sends 160 texts and makes calls totalling 70 minutes.

Calculate the total cost for using the phone in September.

(a) £ _____ **[3]**

(b) In October, the total costs are £38.79.
Aisha makes calls totalling 135 minutes.

How many texts does she send in October?

(b) _____ **[3]**

15 Otis flips two coins.
He records heads (H) or tails (T) for each of the two coins.

(a) Complete the table to show the possible results when the two coins are flipped.

Coin 1	Coin 2

[2]

(b) What is the probability that the two coins

(i) both show heads,

(b)(i) _____ **[1]**

(ii) show one head and one tail?

(ii) _____ **[1]**

16 In an office there are 36 men and 54 women.

$\frac{3}{4}$ of the men and $\frac{1}{3}$ of the women attended the office party.

What fraction of the total office staff attended the party?
Show how you decide.

_____ **[4]**

17 Tim's maths homework is about factorising.

Complete these questions.

(a) $18x + 27 = 9$ (_____ + 3) **[1]**

(b) _____ $y - 8 = 4$ ($3y$ – _____) **[2]**

18 Annabel has two fair spinners.
One spinner is numbered 1, 3, 5, 7 and the other is numbered 2, 4, 6, 8.
Both spinners are spun and the scores are added together.

(a) Complete the table to show all possible totals.

	2	4	6	8
1	3	5	7	
3	5			
5				
7				

[2]

(b) Choose a word from this list to complete each sentence.

impossible	*unlikely*	*evens*	*likely*	*certain*

It is _____ that the total will be an odd number.

It is _____ that the total will be 7 or less.

[2]

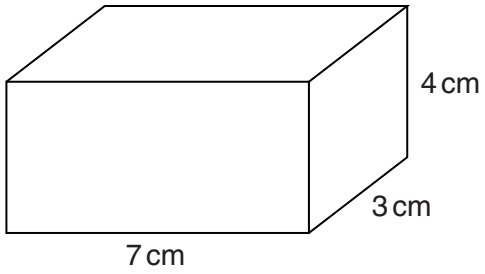
(c) Work out the probability that the total will be 9.
Give your answer as a fraction in its simplest form.

(c) _____ **[2]**

(d) Work out the probability that the total will be a multiple of 5.

(d) _____ **[1]**

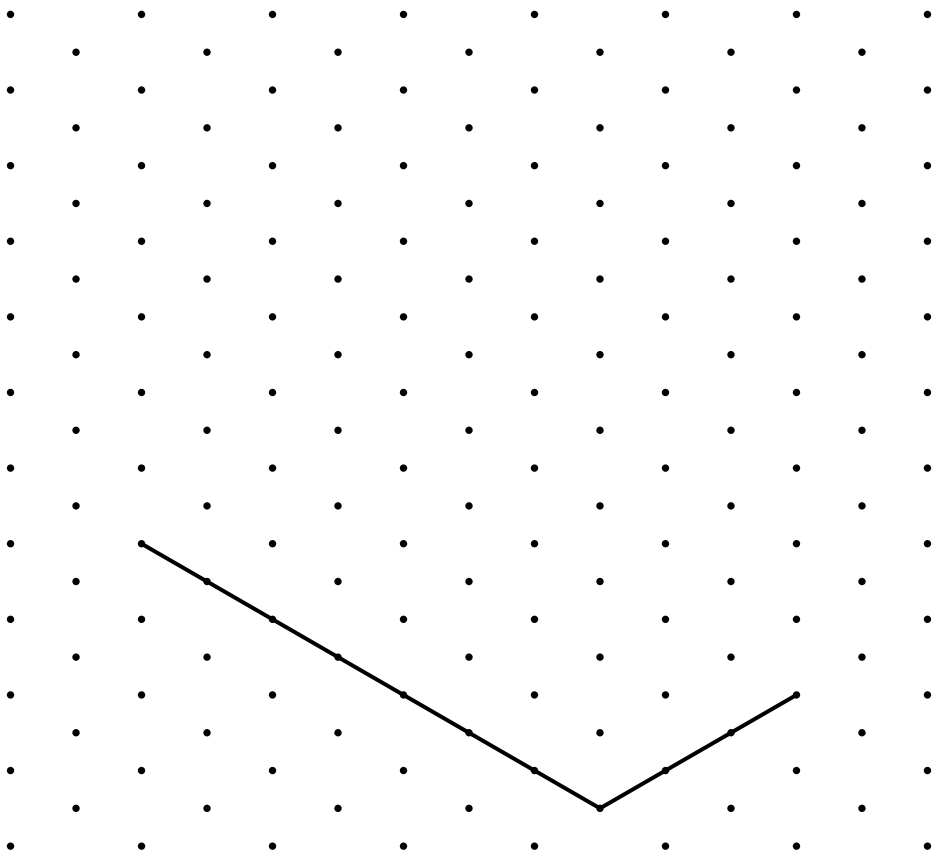
19 Here is a cuboid.



(a) Calculate the volume of the cuboid.

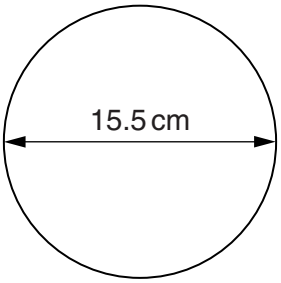
(a) _____ cm^3 **[2]**

(b) On the grid below, make an accurate isometric drawing of the cuboid.
Two of the edges have already been drawn.



[3]

20 A circular tea plate has a diameter of 15.5 cm.



(a) Work out the circumference of this plate.

(a) _____ cm **[2]**

(b) A circular dinner plate is an enlargement of the circular tea plate.
The dinner plate has a diameter of 27.9 cm.

Complete the following sentences.

The scale factor of the enlargement is _____ .

The circumference of the dinner plate is _____ times the circumference of the tea plate.

[3]

TURN OVER FOR QUESTION 21

21 Complete this multiplication grid by filling in the shaded squares.

×	$\frac{1}{6}$	
$\frac{1}{5}$		1
	$\frac{1}{16}$	

[4]

22 An athletics competition is held between four schools.
The table shows the probability of each school winning the competition.

School	1	2	3	4
Probability	0.15	0.37	x	$2x$

Work out the probability, x, of School 3 winning the athletics competition.

_____ **[3]**

END OF QUESTION PAPER