OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GCSE

A503/01

MATHEMATICS A

Unit C (Foundation Tier)

THURSDAY 4 JUNE 2015: Morning
DURATION: 1 hour 30 minutes
plus your additional time allowance

MODIFIED ENLARGED

Candidate forename		Candidate surname	

Centre number						Candidate number				

Candidates answer on the Question Paper.

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

Scientific or graphical calculator
Geometrical instruments
Tracing paper (optional)

YOU ARE PERMITTED TO USE A CALCULATOR FOR THIS PAPER

READ INSTRUCTIONS OVERLEAF

DC (ST/JG) 6236540081 115719

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the boxes on the first page. 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).

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 (*).

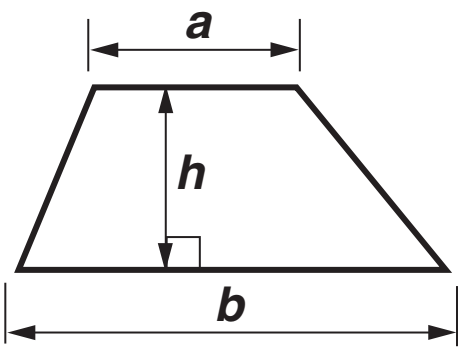
Use the π button on your calculator or take π to be 3.142 unless the question says otherwise.

The total number of marks for this paper is 100.

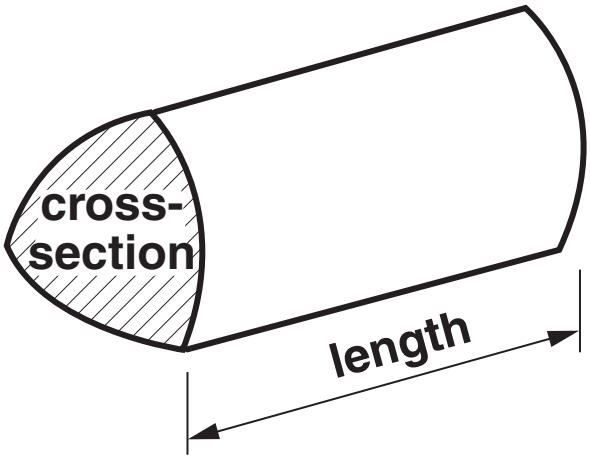
Any blank pages are indicated.

FORMULAE SHEET: FOUNDATION TIER

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



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



Answer ALL the questions.

1 A rectangular floor is covered by 54 identical square tiles.

(a) The floor has 9 tiles along its length.

How many tiles are along the width of the floor?

(a) _____ [1]

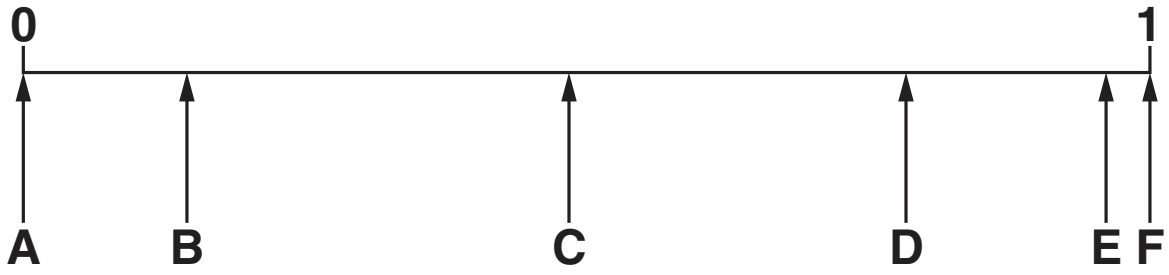
(b) Each tile is a square of side 50 cm.

Calculate the length and width of the floor in metres.

(b) Length = _____ m

Width = _____ m [3]

2 The probability line shows the probabilities of 6 events.



Choose the correct arrow that matches each of these events.

(a) Flipping a fair coin and getting a tail.

(a) _____ [1]

(b) Rolling a fair normal 6-sided dice and getting a 5.

(b) _____ [1]

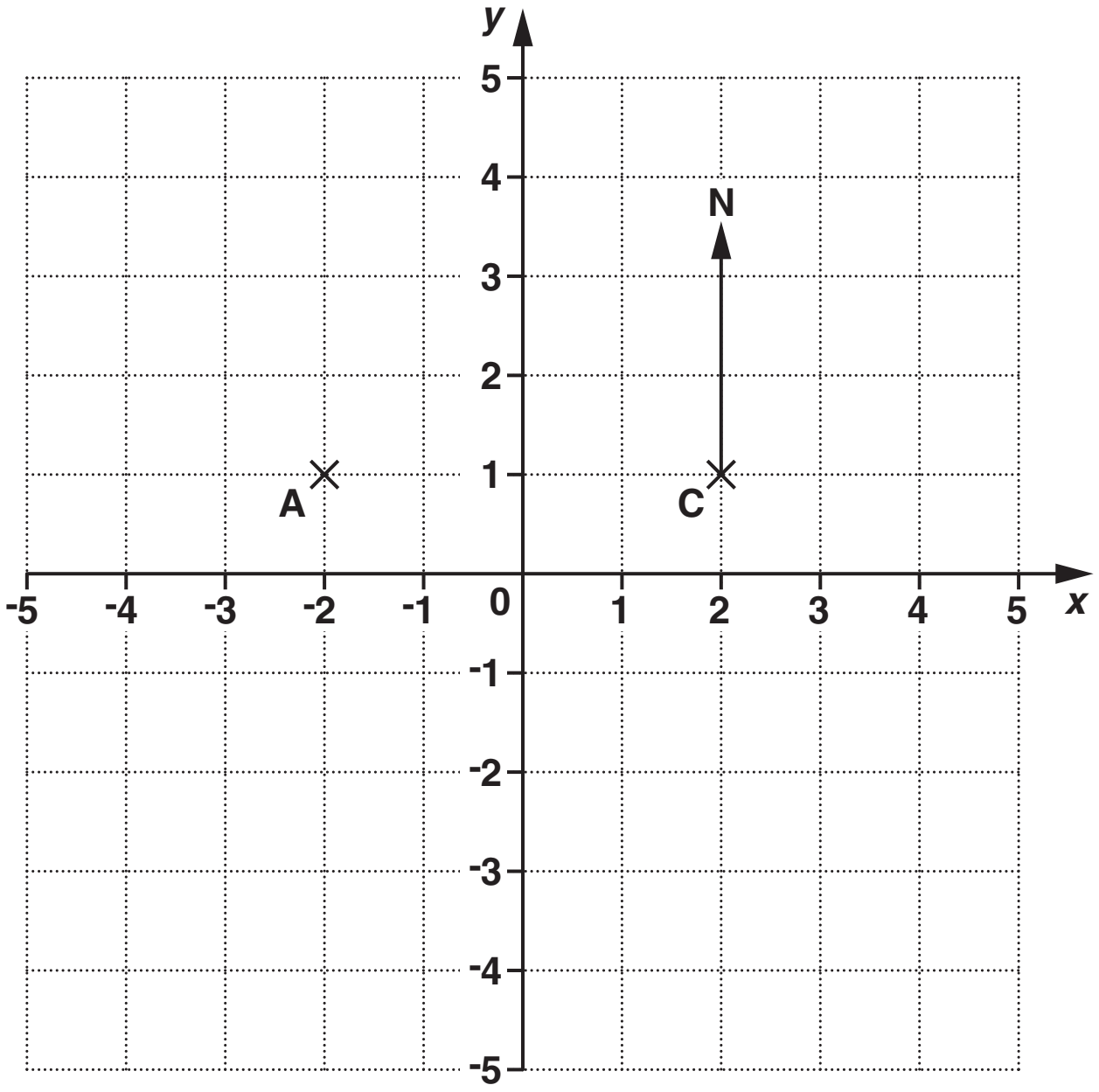
(c) Rolling a fair normal 6-sided dice and getting a multiple of 9.

(c) _____ [1]

(d) It will be sunny on at least one day in March.

(d) _____ [1]

3 Here is a coordinate grid.



(a) Write down the coordinates of C.

(a) (_____ , _____) [1]

(b) Plot the point (-4, 0). [1]

(c) What is the bearing of A from C?

(c) _____° [1]

4 Calculate each of the following.

(a) $2.6^3 - 0.42$

Give your answer correct to one decimal place.

(a) _____ **[2]**

(b) $\dfrac{70}{\sqrt{18.5}}$

Give your answer correct to the nearest whole number.

(b) _____ **[2]**

5 (a) Complete the following.

(i) 67 mm = _____ cm [1]

(ii) 7.05 kg = _____ g [1]

(iii) 53p + £ _____ = £1 [1]

(iv) 7 litres – 560 ml = _____ [2]

(b) Arrange the following in order of size, smallest first.

110 m 1 mile 10 000 cm 1 km

_____ _____ _____ _____

smallest **[2]**

6 Solve the equations.

(a) $3x = 15.6$

(a) _____ **[1]**

(b) $\frac{x}{4} = 24$

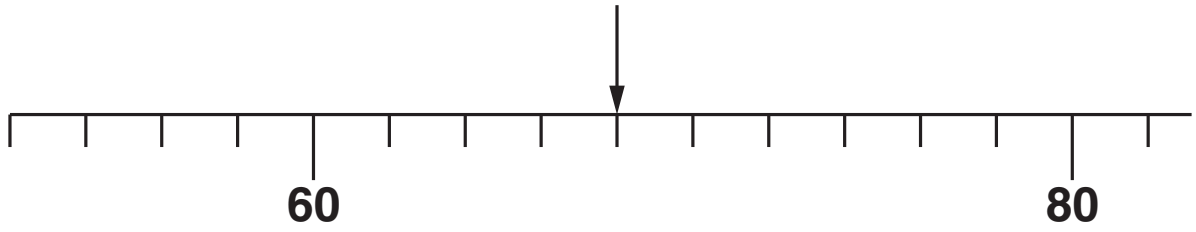
(b) _____ **[1]**

(c) $3x - 4 = 29$

(c) _____ **[2]**

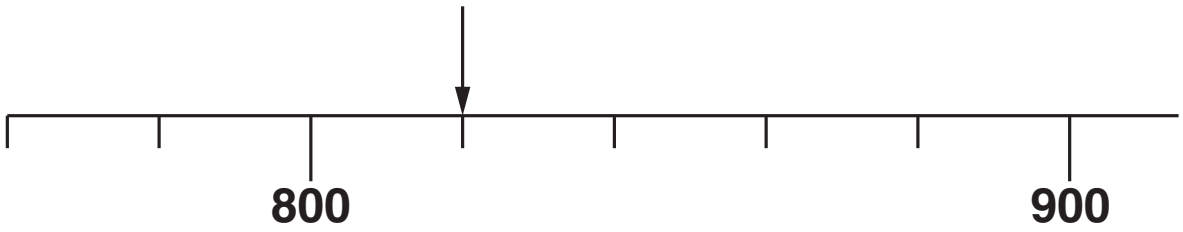
7 (a) Write down the value shown on these scales by each arrow.

(i)



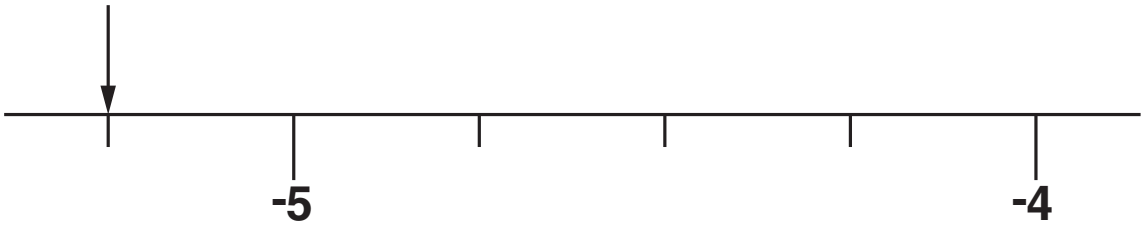
(a)(i) _____ [1]

(ii)



(ii) _____ [1]

(iii)



(iii) _____ [1]

(b) Complete the following statements.

(i) $6 - \square = -2$ **[1]**

(ii) $-3 - \square = 8$ **[1]**

8 **14 bottles of lemonade cost £12.04.**

Calculate the cost of 9 of these bottles of lemonade.

£ _____ [2]

9 (a) Giovanni has a bag containing 20 sweets.
5 are red, 4 are blue, 10 are green and 1 is orange.

He chooses a sweet at random from the bag.

Choose from the words below to complete each sentence.

likely	impossible	certain	evens	unlikely

It is _____ that he chooses a red sweet.

It is _____ that he chooses a sweet that is NOT YELLOW.

It is _____ that he chooses a blue sweet or a green sweet.

It is _____ that he chooses a green sweet. **[4]**

(b) Sophia has a bag of 18 sweets with the same four colours of sweets as Giovanni.

She chooses one sweet at random from her bag.

- **It is evens that she chooses a red sweet**
- **It is more likely that she chooses a green sweet than a blue sweet**
- **It is equally likely she chooses a blue sweet as choosing an orange sweet**

Write down one possible combination for the numbers of different colours of sweets that Sophia has in her bag.

(b) Sophia has _____ red sweets, _____

orange sweets, _____ blue sweets and

_____ green sweets [3]

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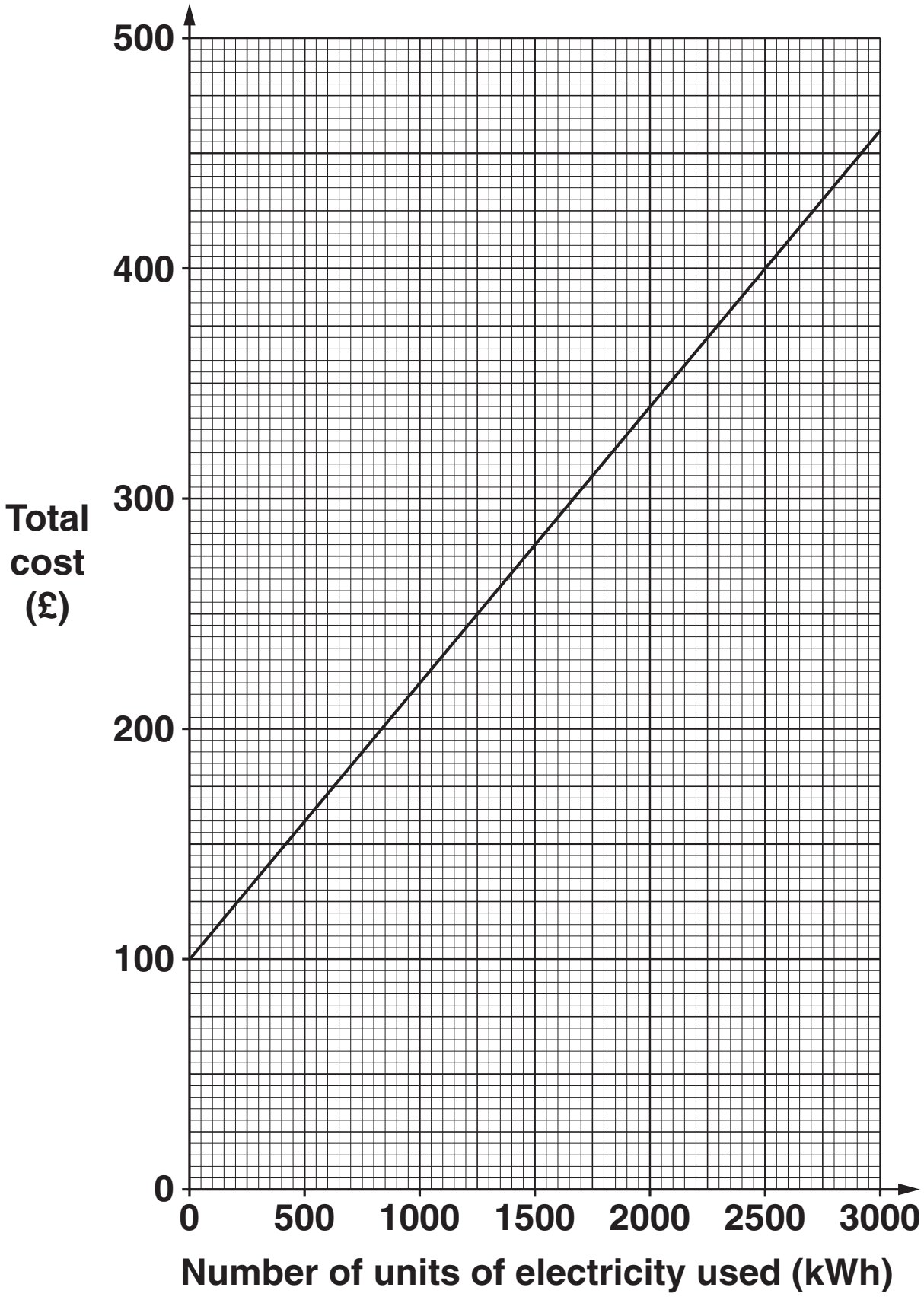
10 The graph shows the total cost of electricity for a year from the Electro2U company.



(a) (i) Find the total cost of using 1000 units of electricity.

(a)(i) £ _____ [1]

(ii) Find the cost per unit of electricity used.

(ii) _____ p [2]

(b) Another company, Power4less, has the following charges.

Fixed charge of £200 per year

Electricity price of 4p per unit used

(i) Complete the table below for Power4less charges.

Units of electricity used (kWh)	0	1000	2000	3000
Total cost (£)	200			

[2]

(ii) On the grid opposite, draw the graph of Power4less total costs. [2]

(c) The Roberts family use 2500 units of electricity in a year.

Which of the two companies will be cheaper for them to use for a year, and by how much?

(c) _____ is cheaper by £ _____

[2]

11 David and Paul are brothers.
David is four years older than Paul.
The product of their ages is 1221.

Use trial and improvement to find David's age.
Show all of your trials and their outcomes.

David's age _____ [3]

12 (a) Simplify fully.

(i) $5 \times a \times 4$

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

(ii) $\dfrac{15p}{3p}$

(ii) _____ **[1]**

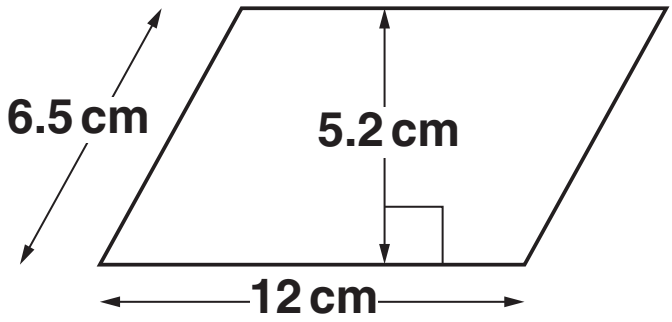
(iii) $4x + 3y - 3x + y$

(iii) _____ **[2]**

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

(b) _____ **[1]**

13 (a) Here is a parallelogram.



NOT TO SCALE

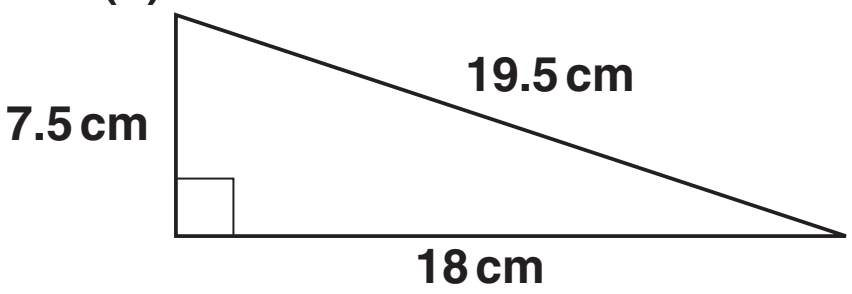
(i) Calculate the area of the parallelogram.

(a)(i) _____ cm^2 [2]

(ii) Work out the perimeter of the parallelogram.

(ii) _____ cm [1]

(b)



NOT TO SCALE

(i) Calculate the area of this triangle.

(b)(i) _____ cm^2 [2]

(ii) Write your answer to part (b)(i) in mm^2.

(ii) _____ mm^2 [1]

14 (a) Katie is buying a new car.
The car costs £14 700 to buy in a single payment.

Instead, Katie could buy the car using this credit option.

Initial payment of £2999

Then 47 payments of £199 each month

Then a final payment of £4673

How much more will the car cost using the credit option rather than buying in a single payment?

(a) £ _____ [4]

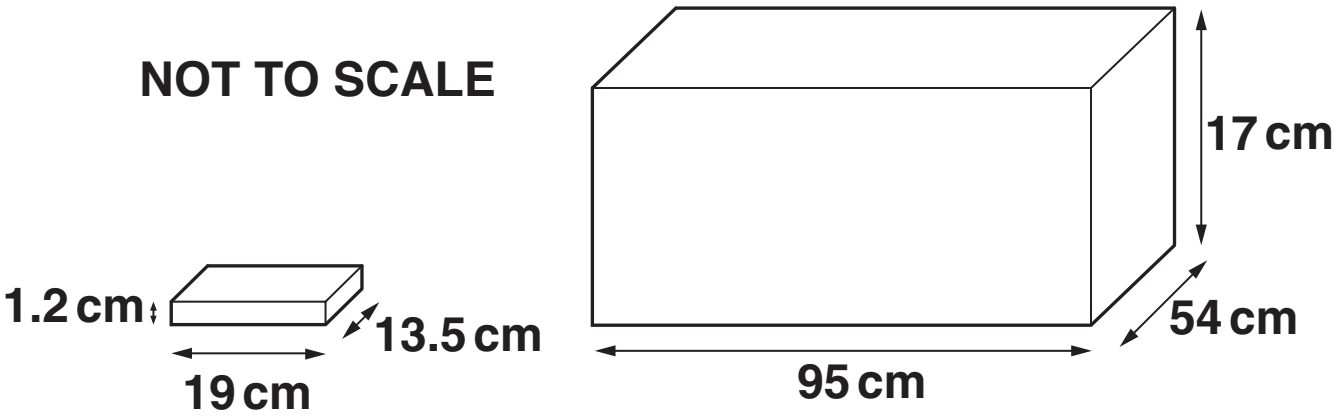
(b) The car will travel 15 miles for each litre of fuel. One litre of fuel costs £1.26.

How much will Katie pay for fuel in a year in which she travels 8000 miles?

(b) £_____ [3]

15*

NOT TO SCALE



Trevor is packing his DVD cases into a storage box.

Each DVD case is a cuboid measuring 19 cm by 13.5 cm by 1.2 cm.

The storage box is a cuboid measuring 95 cm by 54 cm by 17 cm.

Work out the maximum number of DVDs that Trevor can pack in the storage box.

_____ **[5]**

16 (a) At the supermarket, Sue bought 2.4 kg of apples and 1.9 kg of oranges.

She paid for these with a £20 note and received £12.66 change.

Given that the apples cost £1.95 per kilogram, work out the cost per kilogram of the oranges.

(a) £ _____ per kilogram [3]

(b) In a survey of 209 people at the supermarket, 83% said that the fruit being sold was of excellent quality.

How many of the 209 people could have said that the fruit was of excellent quality?

(b) _____ [3]

17 Tom takes a counter, at random, from a bag of counters.

He records the colour of the counter and replaces it into the bag.

He does this 2000 times.

The table below shows his results.

Colour of counter	Red	Blue	Yellow
Number of times	653	509	838

(a) Can Tom be certain that there are only red, blue and yellow counters in the bag?

Give a reason to support your answer.

_____ because _____

_____ [1]

(b) Tom is now told that there are only red, blue and yellow counters in the bag.

(i) Complete the relative frequency table below.

Give each of your answers as a decimal.

Colour of counter	Red	Blue	Yellow
Relative frequency			

[2]

(ii) Explain why these relative frequencies are reasonable estimates of the probabilities of randomly choosing the different colours of counters from the bag.

_____

_____ **[1]**

(iii) Tom chooses another counter from the bag at random.

Work out an estimate of the probability that it is either red or blue.

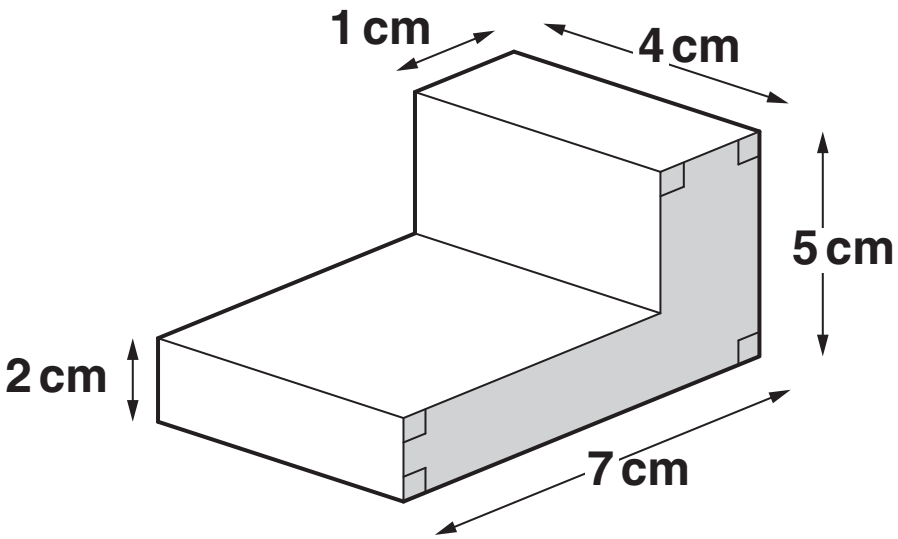
(b)(iii) _____ [2]

(iv) There are 24 counters altogether in the bag.

Work out an estimate of the number of yellow counters.

(iv) _____ [2]

18 This solid shape is a prism.



NOT TO SCALE

(a) Show that the area of the shaded face of the solid is 17 cm^2. [2]

(b) Work out the total surface area of the solid.

(b) _____ cm^2 [3]

19 (a) 25 g of sweets are taken from a 1 kg jar of sweets.

What fraction of the jar of sweets has been taken?

Give your answer as a fraction in its simplest form.

(a) _____ [2]

(b) Pam has two cats, Tibbs and Fluff.

Tibbs is fed $\frac{1}{4}$ of a tin of cat food, 3 times a day.

Fluff is fed $\frac{1}{3}$ of a tin of cat food, 2 times a day.

Pam has 13 tins of cat food.

How many days will the cat food last?

(b) _____ [4]

END OF QUESTION PAPER

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