OCR
Oxford Cambridge and RSA

F

Thursday 9 June 2016 – Morning

GCSE MATHEMATICS A

A503/01   Unit C (Foundation Tier)

Duration: 1 hour 30 minutes

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).
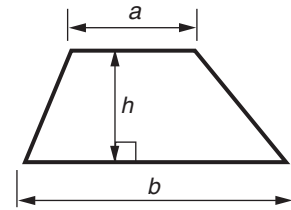* Do **not** write in the bar codes.

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
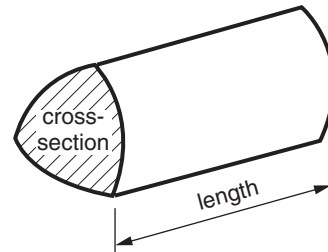
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Turn over
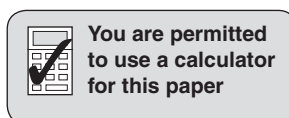
Formulae Sheet: Foundation Tier

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

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

PLEASE DO NOT WRITE ON THIS PAGE

Answer **all** the questions.

1   Alexis chooses a letter at random from this word.

$$A \quad D \quad D \quad E \quad D$$

Choose from the words below to complete each sentence.

| likely | impossible | certain | evens | unlikely |

It is .... that she chooses letter D.

It is .... that she chooses letter E.

It is .... that she chooses letter B.   **[3]**

2   **(a)** Mikolaj works out that $770 \div 22 = 35$.

Write a multiplication that will check his division is correct.

☐ **✕** ☐ **=** ☐   **[1]**

(b) Work out.

   (i) $9.5^2 - 3 \times 2.4$

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

   (ii) $\dfrac{3}{8} \times \dfrac{2}{9}$

Give your answer as a fraction in its simplest form.

(ii) .... **[1]**

   (iii) $\dfrac{5.2}{2.4 - 0.47}$

Give your answer correct to one decimal place.

(iii) .... **[2]**

Turn over

3 The grid shows the positions of a yacht and a lighthouse.
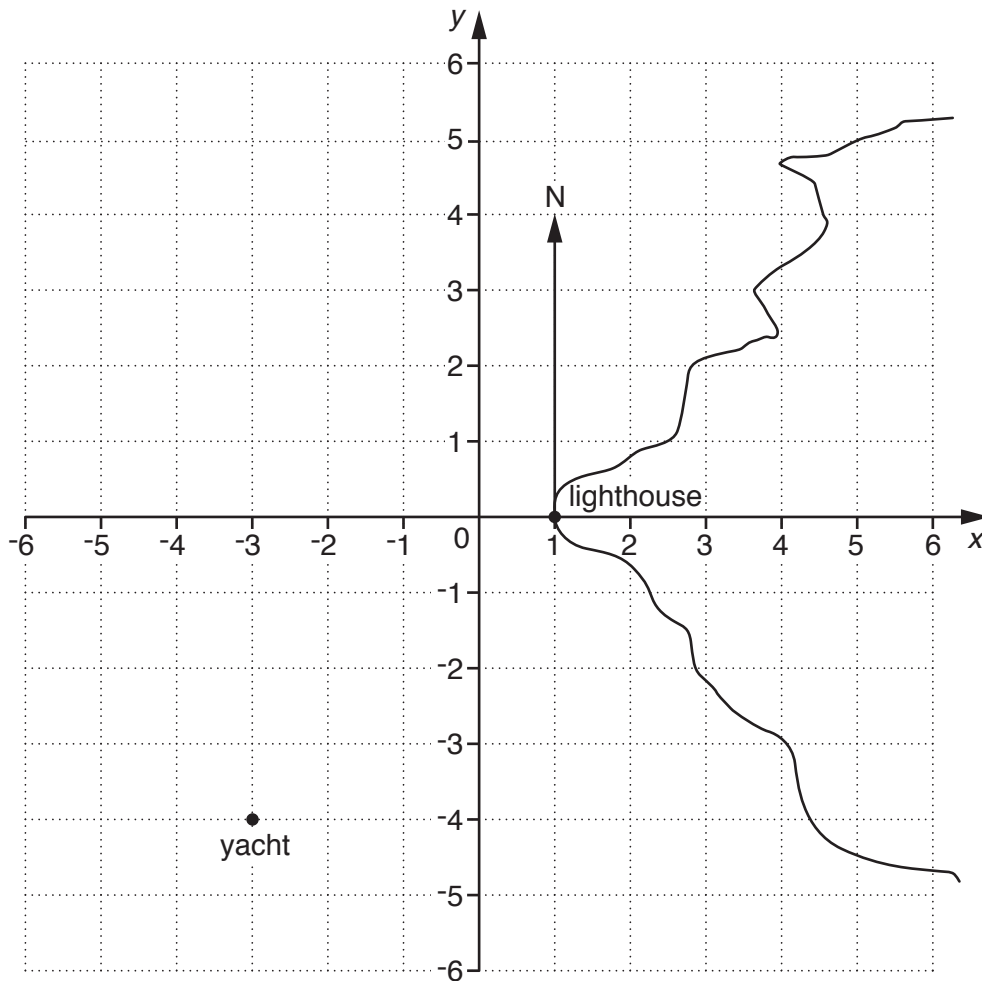
(a) Write down the coordinates of the yacht.

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

(b) A ferry is on a bearing of 180° from the lighthouse. It is closer to the yacht than the lighthouse.
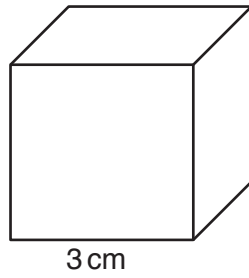
  (i) Plot a possible position for the ferry.
  Label the point F. **[2]**

  (ii) Write down the coordinates of your point F.

(b)(ii) (.......................... , ...) **[1]**

4 Here is a cube.

3 cm

(a) (i) Complete the isometric drawing of the cube.
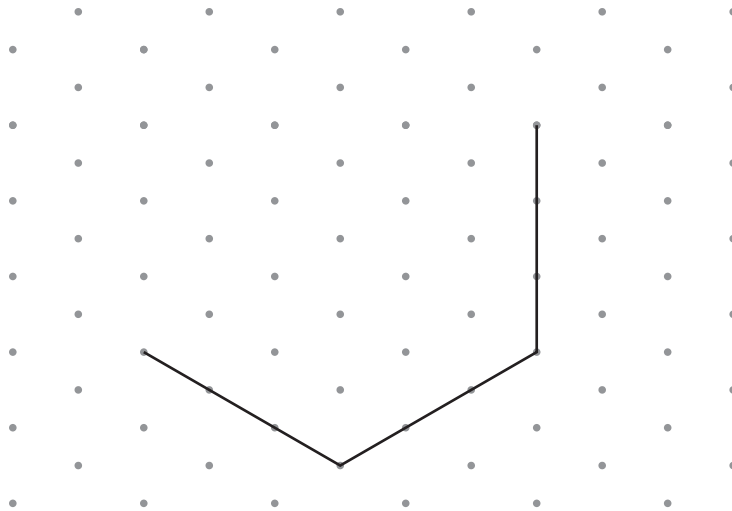
[2]

(ii) Aleisha tries to work out the volume of this cube.
Here is her working.

$$3 \times 3 \times 3 = 9\,cm^2$$

She has made two errors.

What are her errors?

1 ....

2 ....

[2]

(b) Complete the table below for any cube.

Number of faces	
Number of vertices	
Number of edges	

[3]

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

(i) -5 + ... = -9 **[1]**

(ii) £0.67 + ... p = £1 **[1]**

(b) Two numbers have a sum of 4 and a difference of 18. One of the numbers is positive and the other is negative.

Find the two numbers.

(b) .... and .... **[2]**

6 **(a)** **(i)** Convert 2.65 kilometres to metres.

(a)(i) .... m **[1]**

(ii) Convert 530 grams to kilograms.

(ii) .... kg **[1]**
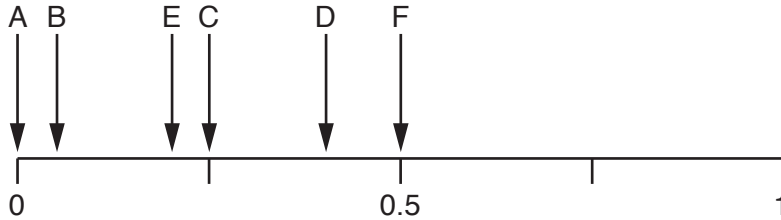
(b) Gemma has a full, 2-litre bottle of lemonade.

What is the largest number of cups, each holding 150 ml, she can fill from this bottle? How much lemonade is then left in the bottle?

(b) .... cups with .... ml left in the bottle **[3]**

7 Sarah has 80 sweets in a bowl.

- 16 are red
- 40 are green
- 20 are blue
- 4 are orange

(a) Sarah chooses a sweet at random from the bowl.

A B   E C   D   F

0   0.5   1

Which arrow shows the probability that the sweet is

(i) green,

(a)(i) Arrow .... **[1]**

(ii) red,

(ii) Arrow .... **[1]**

(iii) orange.

(iii) Arrow .... **[1]**

(b) The next day, 20 of the sweets have been eaten and there are now 60 sweets left in the bowl. Sarah now picks a sweet at random.

- It is impossible to choose an orange sweet.
- It is equally likely to be a red sweet or a blue sweet.

Work out a possible number of sweets of each colour in the bowl.

(b) Red .... , Green ....

Blue .... , Orange ....

[3]

Turn over

8 **(a)** Simplify fully.

    (i) $6 \times b \times 3$

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

    (ii) $\dfrac{24x}{3}$

(ii) .... **[1]**

    (iii) $4 \times m \times m$

(iii) .... **[1]**

    (iv) $7y + 3y - y$

(iv) .... **[1]**

(b) Solve these equations.

    (i) $\dfrac{x}{3} = 12$

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

    (ii) $5x = 17.5$

(ii) .... **[1]**

    (iii) $7x + 5 = {}^-23$

(iii) .... **[2]**

9 Triangle **A** and triangle **B** have been drawn on the one-centimetre grid.
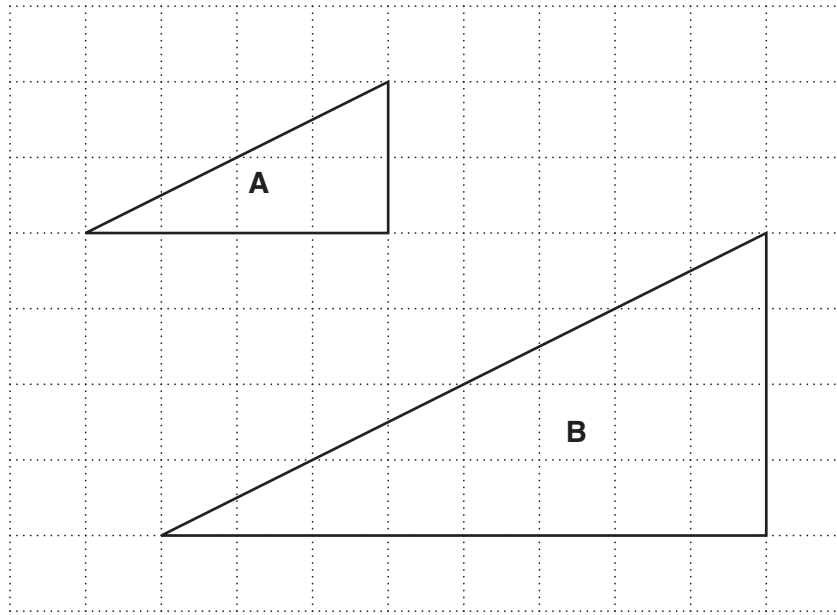
(a) (i) Find the area of triangle **A**.

(a)(i) .... cm² **[1]**

(ii) Measure the perimeter of triangle **A**.

(ii) .... cm **[1]**

(b) Triangle **B** is an enlargement of triangle **A**.

Select from the following to complete each sentence.
You may use a value more than once.

two	three	four	six

Each length of triangle **B** is .... times the corresponding length of triangle **A**.

The perimeter of triangle **B** is .... times the perimeter of triangle **A**.

The area of triangle **B** is .... times the area of triangle **A**.   **[3]**

(c) Name one property of triangle **A** which remains the same after enlargement to triangle **B**.

.... **[1]**

Turn over

10 A train leaves Edinburgh at 08 48 and arrives in London at 13 17.

Work out the time taken for this journey.
Give your answer in hours and minutes.

.... hours .... minutes **[2]**

11 A cuboid with a square base has a height of 8 cm.
The volume of the cuboid is 200 cm^3.

Calculate the length of one side of the square base.

.... cm **[3]**

12 (a) Find the value of $3a^2$ when $a = 4$.

(a) .... **[1]**

(b) Multiply out.

$$4(3x - 1)$$

(b) .... **[1]**

13 The table shows the conversion rates between pounds and euros used by a bank.

Conversion Rates

We sell	We buy
£1 = €1.19	£1 = €1.34

We sell – this is the rate the bank uses when changing pounds into euros.
We buy – this is the rate the bank uses when changing euros back into pounds.

The James family go on holiday to France and convert £720 into euros at this bank.
They spend €800 while on holiday.
They change the remaining euros back into pounds at the same bank when they return from holiday.

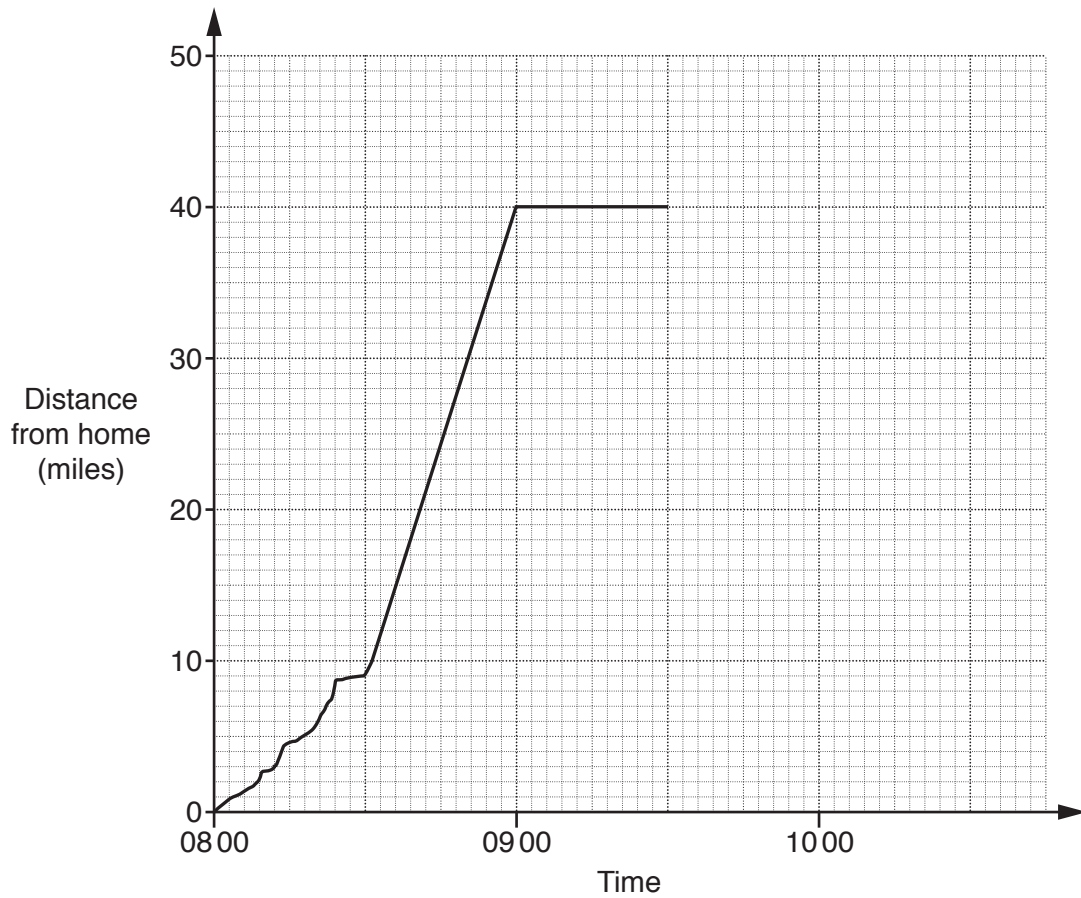Work out the amount that the James family receive from the bank.

£ .... **[5]**

14 (a) Fuel costs £1.12 per litre.
Helen pays £63 to fill up her car with this fuel.

Work out the number of gallons of fuel that she buys.
Use the conversion 4.5 litres = 1 gallon.

(a) .... gallons **[3]**

(b) The graph shows part of Helen's car journey.

(i) Between which times is Helen travelling through a busy city?
Give a reason for your answer.

from .... to ....

because .... **[2]**

(ii) How many miles did Helen drive between 08 30 and 09 00?

(b)(ii) ....miles **[1]**

(iii) Helen stopped at 09 00.

For how many minutes does the graph show she stopped?

(iii) .... minutes **[1]**

(c) Helen arrived home at 10 36.

Complete the graph of her journey. **[2]**

(d) (i) Show that 80 miles is approximately 128 km. **[1]**

(ii) Helen's car uses fuel at a rate of 1 litre every 12 km.

Calculate the number of litres of fuel that she used for the **total** journey.
Give your answer correct to the nearest litre.

(d)(ii) .... litres **[3]**

15 Terri travels to and from school by bus.
Here are the bus fares for different types of ticket.

Ticket type	Fare
1-way	£1.35
Return	£2.16
All week	£9.80

(a) One week, Terri travels to school and back by bus on 5 days.

How much cheaper is it to buy an 'All week' ticket rather than '1-way' tickets?

(a) £ .... **[1]**

(b) Express the ratio

cost of **two** '1-way' tickets : cost of **one** 'Return' ticket

in its simplest form.

(b) .... : .... **[2]**

16 (a) (i) Louise has these numbers of different types of teeth.

   8 incisors
   4 canine
   8 premolars
12 molars

What fraction of Louise's teeth are molars?
Give your answer in its simplest form.

(a)(i) .... **[2]**

(ii) Finn has 27 teeth.
About 18% of his teeth have fillings.

How many of Finn's teeth have fillings?

(ii) .... **[3]**

(iii) Kirsten has 30 teeth.

$\dfrac{2}{5}$ of her teeth have fillings.

How many of Kirsten's teeth have fillings?

(iii) .... **[2]**

Turn over

(b) A dentist has this information about her patients.

Number of fillings	0	1 or 2	3 or 4	More than 4
Probability	0.25	0.17		0.4

- **(i)** Complete the table. **[2]**

- **(ii)** One of the patients is chosen at random.

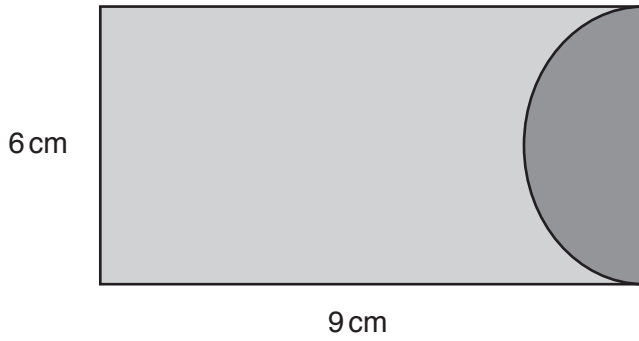 What is the probability that this person has 2 fillings or fewer?

  (b)(ii) .... **[2]**

- **(iii)** The dentist has 1500 patients altogether.

  How many of these patients have 1 or 2 fillings?

  (iii) .... **[2]**

17* The case shown below is used to store a travel card.

6 cm   **Not to scale**

9 cm

The case is two rectangles of leather joined together.
One of the rectangles has a semicircle cut away.
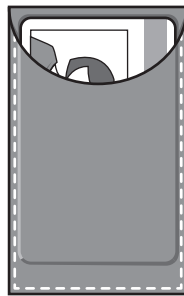
Work out the total area of leather in the case.

.... **[6]**

Turn over

18 A four-sided spinner is numbered 1 to 4.
The spinner is spun many times and, each time, the number it lands on is recorded.
The table shows the results.

Number	1	2	3	4
Frequency	132	117	128	123

(a) Explain why it is reasonable to use this information to work out an estimate of the probability of getting a 4 with this spinner.

....

.... **[1]**

(b) Use the values in the table to work out an estimate of the probability of getting a 4 with this spinner.

(b) .... **[2]**

(c) Is the spinner fair or biased?
Explain clearly how you decide.

....

.... **[2]**

END OF QUESTION PAPER

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