OCR

Oxford Cambridge and RSA

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Tuesday 14 June 2016 – Morning

GCSE METHODS IN MATHEMATICS

B391/01   Methods in Mathematics 1 (Foundation Tier)

Duration: 1 hour
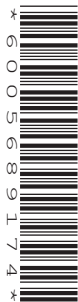
Candidate forename		Candidate surname	

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.
* Write your answer to each question in the space provided. If additional space is required, you should use the lined page(s) at the end of this booklet. The question number(s) must be clearly shown.
* 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.
* Quality of written communication will be assessed in questions marked with an asterisk (*).
* The total number of marks for this paper is **60**.
* This document consists of **16** pages. Any blank pages are indicated.

WARNING

No calculator can be used for this paper

OCR is an exempt Charity

Turn over

Formulae Sheet: Foundation Tier

Area of trapezium = $\frac{1}{2}(a+b)h$
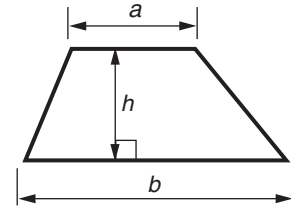
Volume of prism = (area of cross-section) × length
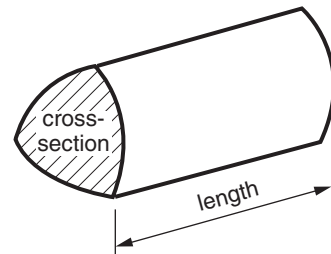
PLEASE DO NOT WRITE ON THIS PAGE

Answer **all** the questions.

1 Put these numbers in order of size, starting with the smallest.

(a) 159 450   158 929   159 700

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

(b) 0.4   0.358   0.36

(b) ...., ..., ... [1]
smallest

(c) $\dfrac{8}{9}$ $\dfrac{2}{3}$ $\dfrac{1}{4}$

(c) ...., ..., ... [1]
smallest

Turn over

2 Choose from the following words to complete the sentences below.

impossible   certain   evens   likely   unlikely

(a) It is .... that you will get the number 2 when you roll an ordinary 6-sided dice. **[1]**

(b) It is .... that you will get the number 7 when you roll an ordinary 6-sided dice. **[1]**

(c) It is .... that it will rain at least once in London in November. **[1]**

3 Calculate.

(a) 72×8

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

(b) $138 \div 6$

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

4 Solve.

(a) $10x = 20$

(a) $x=$ .... **[1]**

(b) $\dfrac{x}{3} = 7$

(b) $x=$ .... **[1]**

(c) $4x + 5 = 37$

(c) $x=$ .... **[2]**

5 This table shows equivalent fractions and decimals.

Fill in the blank spaces.

Decimal	Fraction
0.2	$\dfrac{1}{5}$
0.5	
	$\dfrac{1}{10}$
0.15	

[3]

6
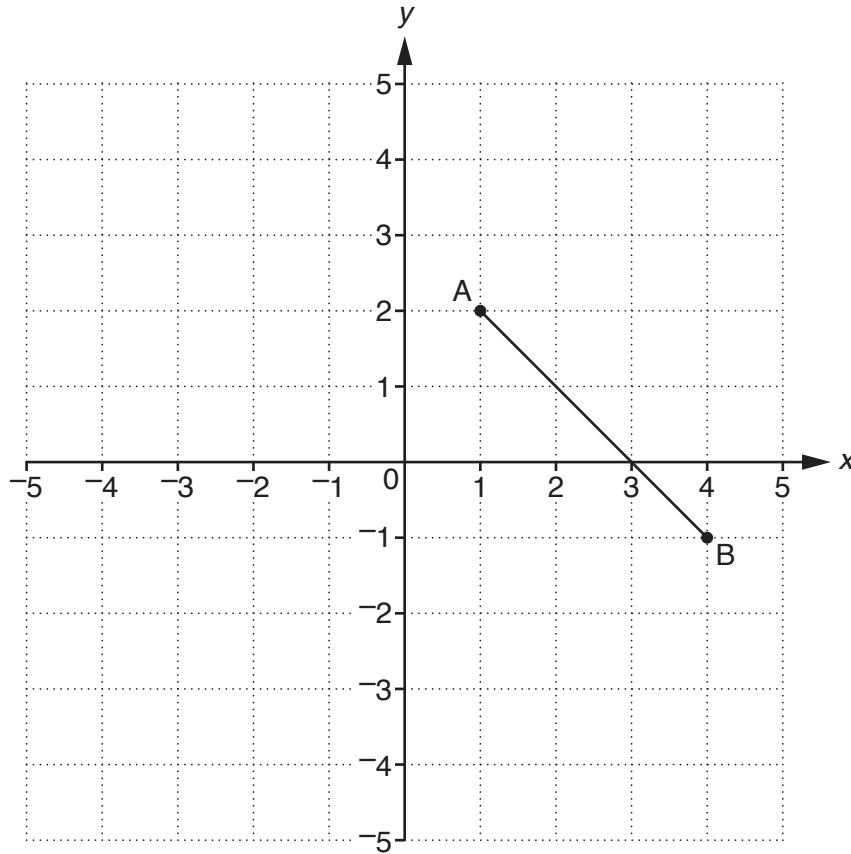
(a) Write down the coordinates of point A.

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

(b) Write down the coordinates of point B.

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

(c) Write down the coordinates of the point where the line AB crosses the *x* axis.

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

(d) Plot the point (⁻2, 4) on the grid. Label it C. **[1]**

7 **(a)** Anna walks 1.2 km to school.
Bikram walks 0.3 km to school.
Caitlin walks 3 km to school.

  (i) Find the total of these distances.

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

  (ii) How much further than Anna does Caitlin walk?

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

  (iii) Complete the following sentence.

  Anna walks .... times as far as Bikram. **[1]**

(b) Mrs Diamond drives 8 km to school.
Mr Evans drives twice this distance.
Mrs Diamond, Mr Evans and Mr Faruk drive a total distance of 46 km to school.

How far does Mr Faruk drive to school?

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

8 **(a)** Draw the reflection of the shape in the mirror line.
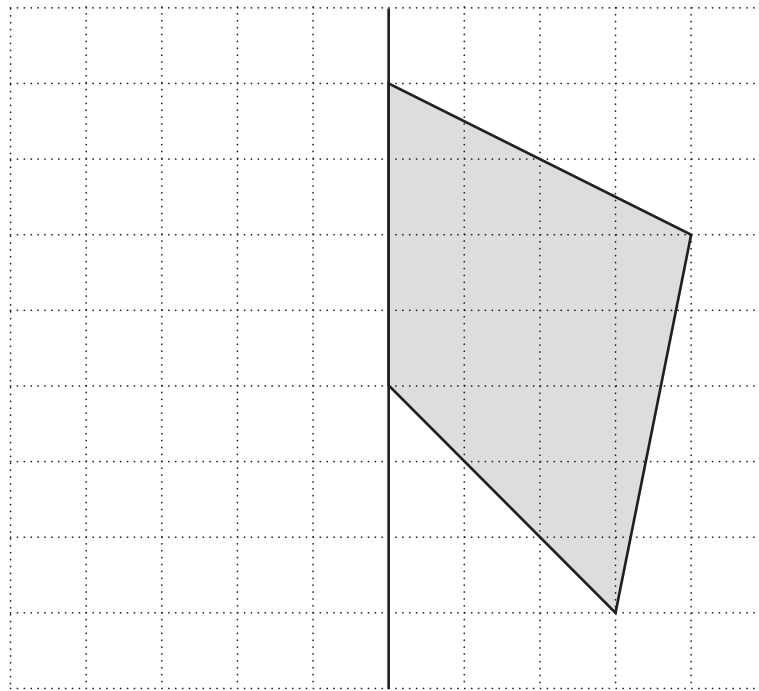
mirror line

[2]

(b) The following shape has rotational symmetry.
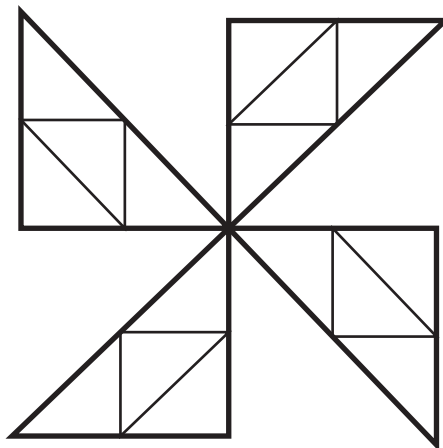
(i) What is the order of rotational symmetry of the shape?

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

(ii) Shade 8 of the smaller triangles so that the shape still has rotational symmetry. **[1]**

9* Here are some prices at an ice skating rink.

A	
Adult entrance	£9
Child entrance	£7
Skate hire per person	£1.50

B	
Family entrance for 2 adults and 2 children	£30
Skate hire per person	£1.50

C
Special Offer
Family ticket for 2 adults and 2 children **including** skate hire for only £34

A family of 2 adults and 2 children are going ice skating.
Both of the children have their own skates, but the adults need to hire skates.

What is the cheapest way the family could go ice skating, and what is the total cost?

....
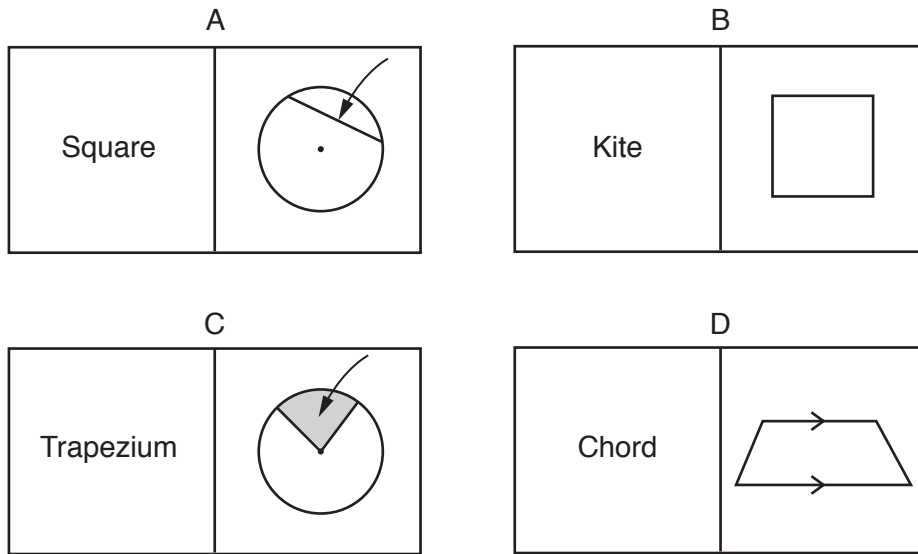
....

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....

....

The cheapest way is ....

....

.... and the total cost is £ .... **[4]**

10 (a) Here are some shape dominoes from a set. They are labelled A, B, C and D.

A

| Square | |

B

| Kite | |

C

| Trapezium | |

D

| Chord | |

Dominoes have to be placed end to end so that the diagram on the right of each domino matches the word on the left of the domino placed next to it.

Write the letters A, B, C and D in the spaces below to show the order in which the four dominoes should be placed.

| | Radius | | .... | Sector |
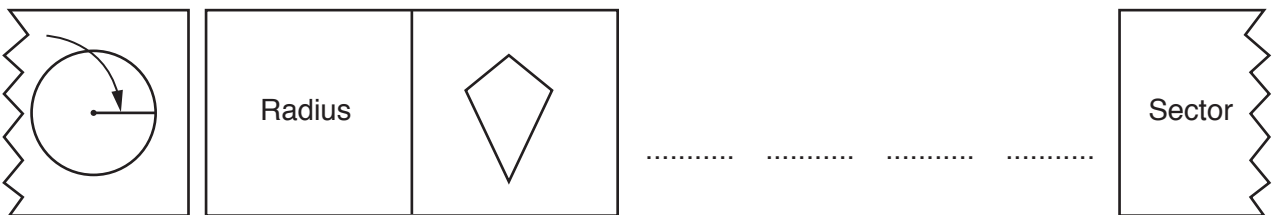
[3]

(b) In a **different** set of shape dominoes, the description of the shape is used instead of a diagram.

Here is the description of a shape on a domino.
Give the names of **three** possible shapes that could match up with this description.

Quadrilateral with both pairs of opposite sides parallel

....

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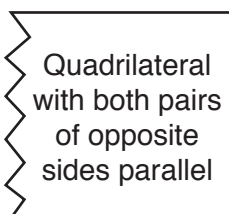
.... **[3]**

11 There are 25 chocolates in a box.
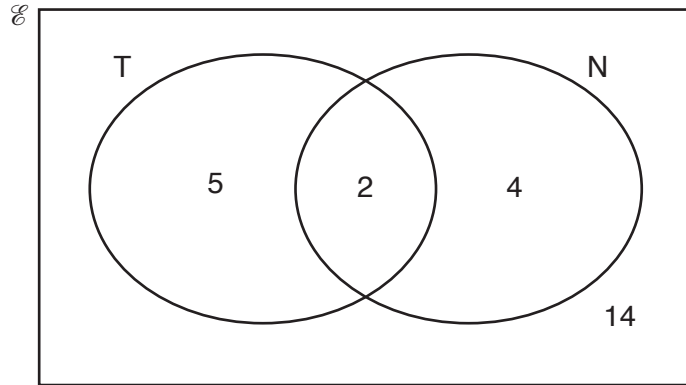 The Venn diagram shows the number of each type of chocolate.

  T represents chocolates that contain toffee.
  N represents chocolates that contain nuts.

  A chocolate is picked at random from the box.

  Give the probability that the chocolate

  (a) contains toffee,

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

  (b) contains nuts but not toffee,

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

  (c) does not contain nuts or toffee,

  (c) .... **[1]**

  (d) is a member of T ∩ N.

  (d) .... **[2]**

12 (a) Circle the value in each list that is **not** equivalent to the other three.

(i) 2^3 16 $\sqrt{64}$ 8

[2]

(ii) 8^2 2^5 4^3 64

[2]

(b) Fill in possible values for the powers to make the statement correct.

$$\frac{3^5 \times 3^{\square}}{3^{\square}} = 3^8$$

[1]

(c) Kyle says, 'If I square a number the answer will always be bigger than the number'.

Use an example to show that Kyle is not correct.

....

....

.... [2]

13 (a) Work out.

    (i) 0.3×0.2

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

    (ii) $\dfrac{4}{0.2}$

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

(b) Work these out.
Give your answers as mixed numbers.

    (i) $\dfrac{2}{3} + \dfrac{4}{5}$

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

    (ii) $1\dfrac{1}{2} \times \dfrac{3}{4}$

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

14 Here are some circles, rectangles and triangles.
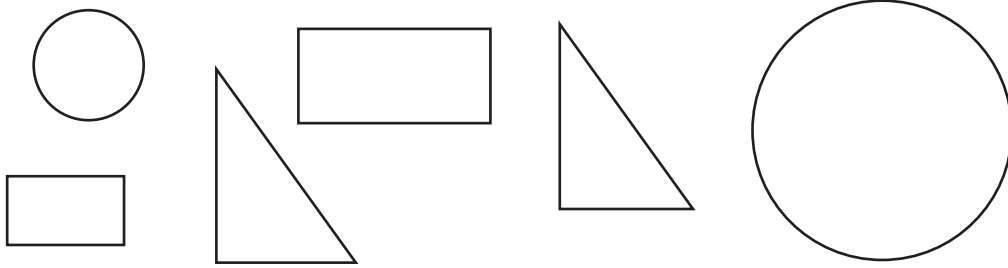
Without knowing any measurements, which of the pairs of shapes **must** always be mathematically similar? Ring the correct answer below.

<div align="center">

circles / rectangles / triangles

</div>

[1]

15 ABDE is a parallelogram. EDC is a straight line.
ED = 6 cm and DC = 5 cm.
The height of the shape ABCDE is h cm.
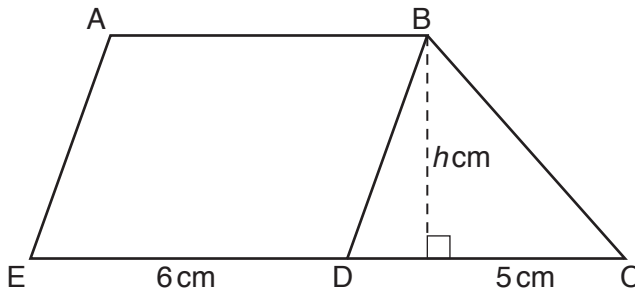
Not to scale

The total area of the shape ABCDE is 34 cm².

Find h.

$h =$ .... [3]

<div align="center">

END OF QUESTION PAPER

</div>

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ADDITIONAL ANSWER SPACE

If additional space is required, you should use the following lined page(s). The question number(s) must be clearly shown in the margin(s).

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