

## Wednesday 2 November 2016 – Morning

### GCSE MATHEMATICS A

A501/01 Unit A (Foundation Tier)

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



Candidate forename		Candidate surname	
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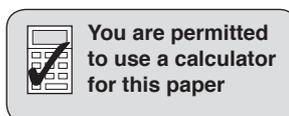
Centre number						Candidate number				
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### INSTRUCTIONS TO CANDIDATES

- 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

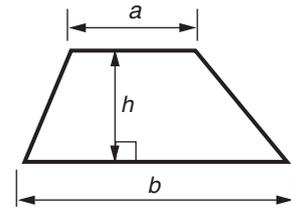
- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is **60**.
- This document consists of **16** pages. Any blank pages are indicated.



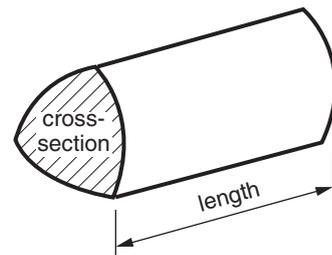
You are permitted to use a calculator for this paper

## Formulae Sheet: Foundation Tier

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



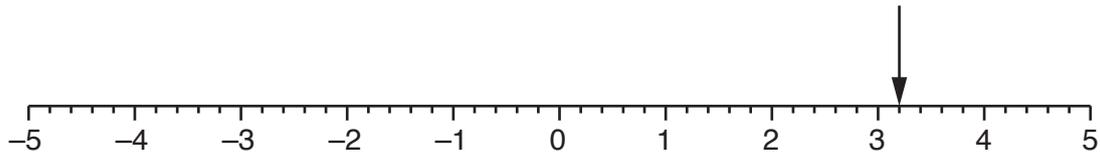
**Volume of prism** = (area of cross-section) × length



**PLEASE DO NOT WRITE ON THIS PAGE**

Answer **all** the questions.

1 (a) Here is a number line.



(i) What number is the arrow pointing to?

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

(ii) Draw an arrow pointing to  $-2.7$  on the number line. [1]

(b) Write 16.2761 correct to two decimal places.

(b) ..... [1]

(c) Work out the square of  $-5$ .

(c) ..... [1]

- 2 (a) Mr and Mrs Shail take their grandchildren to visit the Brooklands Transport Museum. The ages of their grandchildren are 7, 5 and 3 years. Mr and Mrs Shail are both Senior Citizens.

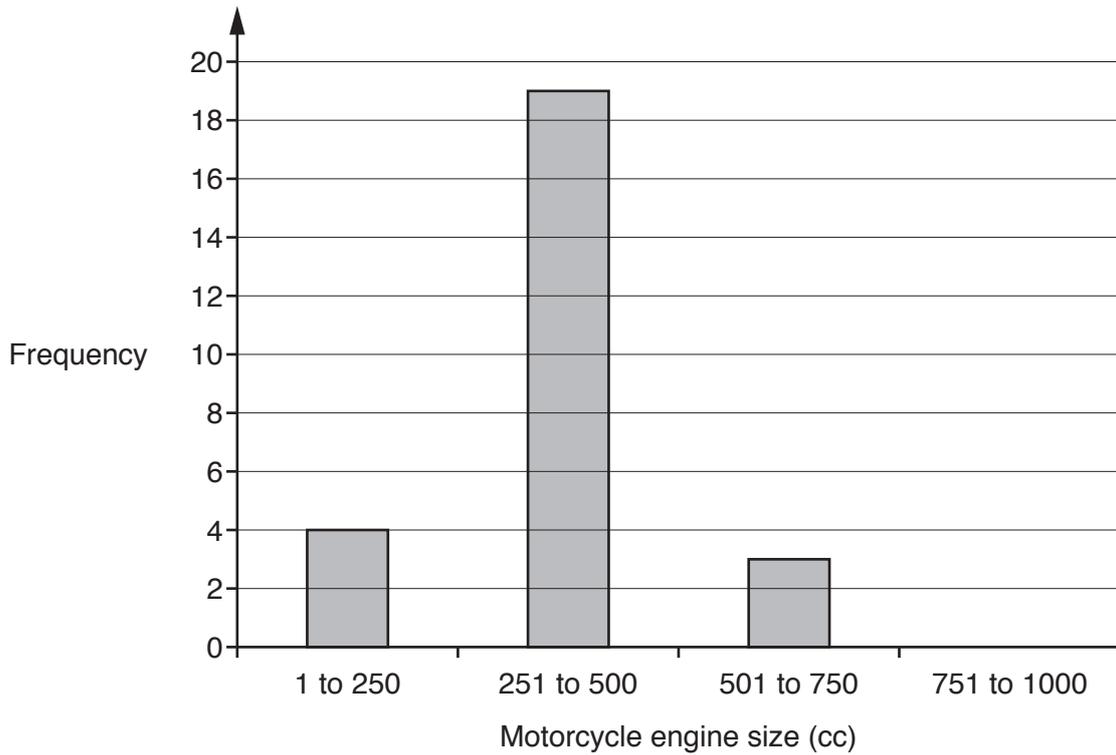
Here are the ticket prices.

Adult .....	£11.00
Senior Citizen/Student .....	£10.00
Children (5–16) .....	£6.00
Children under 5 .....	FREE
Family ticket (2 adults and up to 3 children) .....	£30.00

How much do they save if they buy a family ticket instead of individual tickets?

(a) £ ..... [3]

(b) This bar chart gives information about the engine size of the motorcycles at the museum.



(i) How many motorcycles have an engine size 251 to 500 cc?

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

(ii) There was just one motorcycle with an engine size of 751 to 1000 cc.

Complete the bar chart to show this information. [1]

(c) Here are the ages, in years, of the six motorcycles displayed in the clubhouse.

94      105      95      88      93      91

Find the mean of these ages.

(c) ..... years [3]

3 Here is a list of some units.

kilograms	grams	tonnes	
centimetres	metres	litres	millilitres

Choose an appropriate unit from the list above to complete each of these sentences.

The length of a desk is 120 .....

A hen's egg weighs 80 .....

A full bucket of water contains 10 .....

A lorry weighs 12 .....

[4]

4 The first term in a sequence is 47.

Here is the rule to get from one term of this sequence to the next.

**subtract 3**

(a) Find the next three terms of the sequence.

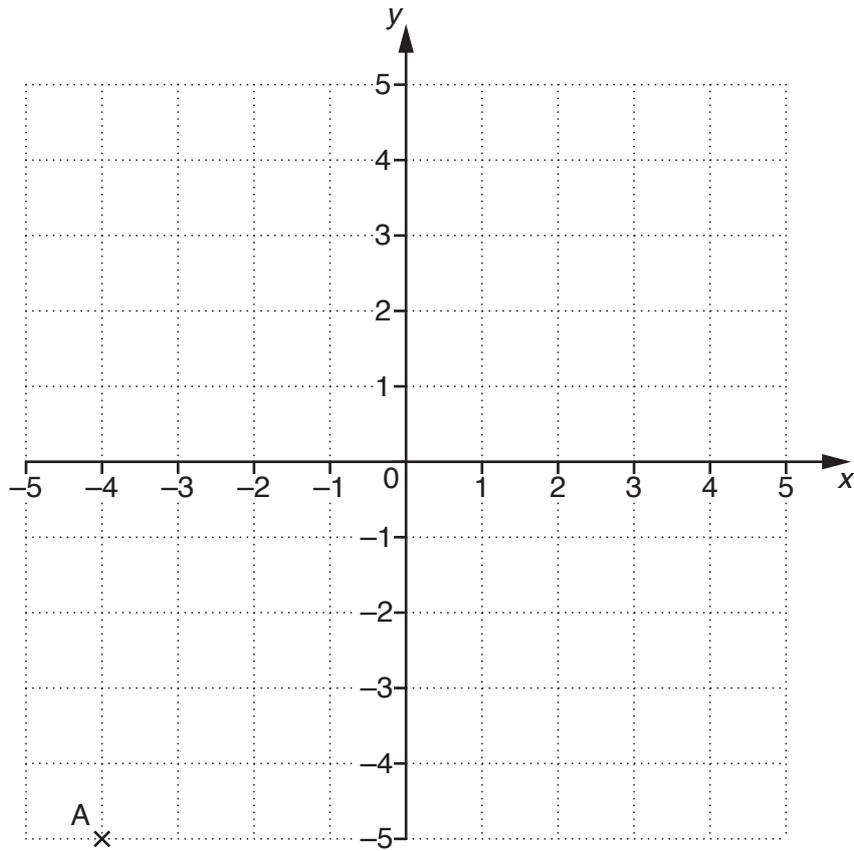
(a) ..... [2]

(b) Is -21 in the sequence? Explain how you can tell without working out lots of terms.

..... because .....

..... [2]

5 Here is a coordinate grid.



(a) Write down the coordinates of point A.

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

(b) The midpoint of the line AB is  $(0, -4)$ .

Find the coordinates of B.

(b) ( ..... , ..... ) [2]

6 (a) Simplify fully.

$$3c - 4c + 9c$$

(a) ..... [1]

(b) Solve this equation.

$$2y - 3 = 4$$

(b) ..... [2]

7 Jacinda needs a total of exactly 4.5 kg of vegetables to make some soup for a party.

She already has

- 1.5 kg potatoes
- 400 g carrots
- 700 g onions.

She wants to use all of these together with **two or three** other types of vegetable.

Here are the prices of some other types of vegetable at her local shop. They can be bought in any weight.

Leeks £2.90 per kg
-----------------------

Parsnips £1.60 per kg
--------------------------

Courgettes £1.80 per kg
----------------------------

She does not want to buy more than 1 kg of any type of vegetable.

Show that Jacinda can buy what she needs and spend less than £3.50.

You must state the weight of each type of vegetable bought and the money spent on each of them. **[6]**

- 8 Brian and Cerys each grow a different type of runner bean. They want to compare them. They each measure the length of 30 of their runner beans.

(a) This stem and leaf diagram shows the lengths of Brian's beans.



Key: 2 | 3 represents 23 cm

Find the median and the range for Brian's beans.

median = ..... cm

range = ..... cm [3]

(b) The median for Cerys' beans was 24 cm and the range was 35 cm.

Whose runner beans were more consistent in length?  
Give evidence to support your answer.

..... because .....

..... [2]

(c) Cerys said:

'Next year we should measure 100 beans each.'

Write one advantage and one disadvantage of using 100 beans instead of 30.

Advantage .....

.....

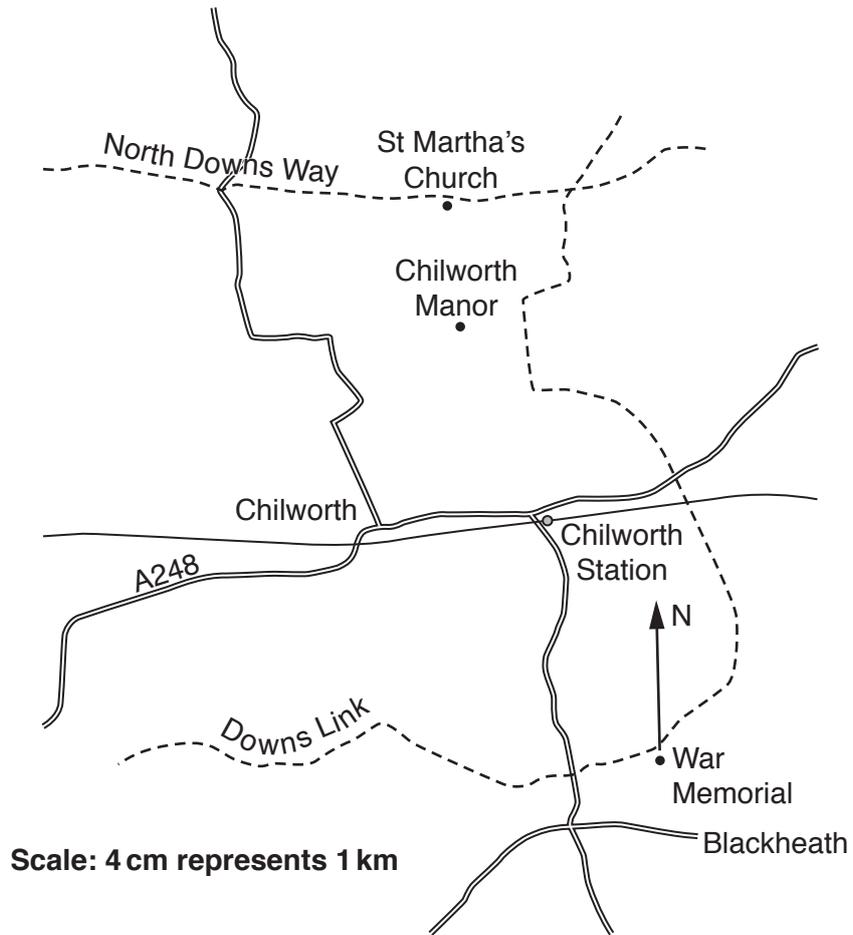
.....

Disadvantage .....

.....

..... [2]

9 (a) Jean is at the Blackheath War Memorial.



From the War Memorial she can see St Martha's Church.

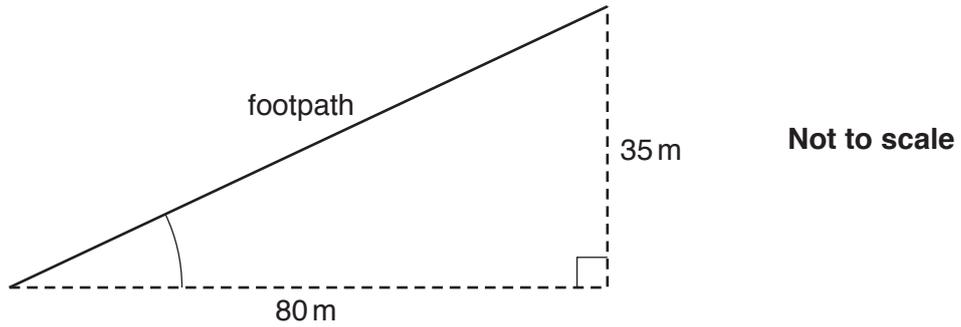
(i) Measure the bearing of St Martha's Church from the War Memorial.

(a)(i) ..... ° [1]

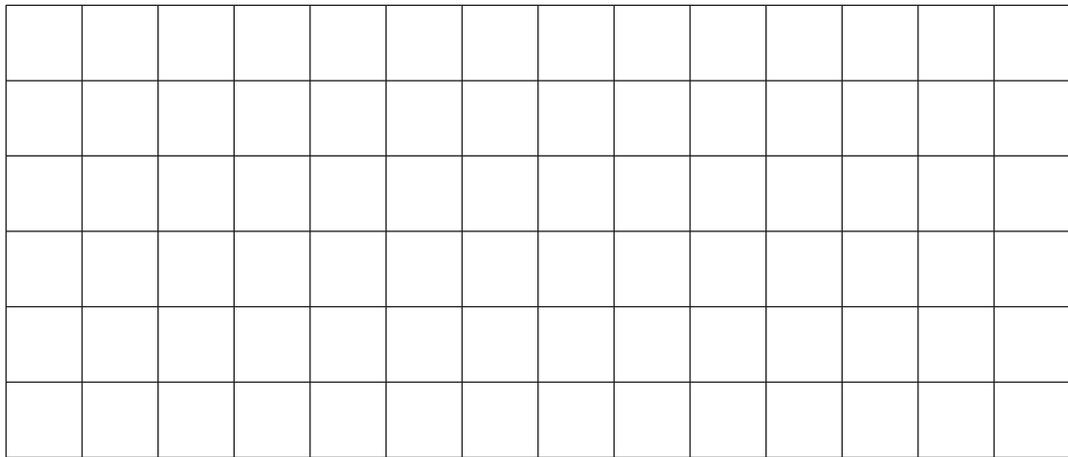
(ii) Find the distance a bird would fly when going directly from the War Memorial to St Martha's Church.

(ii) ..... km [2]

(b) Part of the Downs Link footpath goes up 35 m in a horizontal distance of 80 m, as shown in this sketch.



(i) Make a scale drawing of this part of the footpath on this grid of one-centimetre squares. Use a scale of 1 cm to represent 10 m.



[2]

(ii) Use your scale drawing to complete these sentences.

The angle between the footpath and the horizontal is .....°.

The length of this part of the footpath is ..... m.

[3]

10 Sarah and Abi share a flat.

(a) They pay the rent in the ratio Sarah : Abi = 250 : 300.

What **fraction** of the total rent does Sarah pay?  
Give your answer in its simplest form.

(a) ..... [2]

(b) Sarah and Abi share the heating bill in the ratio Sarah : Abi = 5 : 4.  
Sarah pays £85.

Work out the total cost of the heating bill.

(b) £ ..... [3]

11 (a) Express 84 as the product of its prime factors.

(a) ..... [2]

(b) Find the least common multiple (LCM) of 84 and 30.

(b) ..... [3]

12 The area,  $A$ , of a trapezium is given by this formula.

$$A = \frac{1}{2}(a + b)h$$

(a) Find  $A$  when  $a = 3.2$  cm,  $b = 7.6$  cm and  $h = 5.5$  cm.

(a) ..... cm<sup>2</sup> [1]

(b) Rearrange this formula to make  $c$  the subject.

$$M = \frac{c + f}{2}$$

(b) ..... [2]

**END OF QUESTION PAPER**

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