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Wednesday 5 November 2014 – 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

A50101

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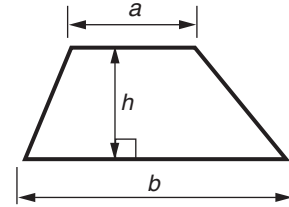* Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

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

You are permitted
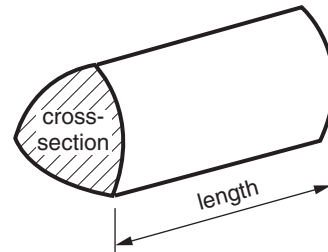to use a calculator
for this paper

OCR is an exempt Charity

Turn over
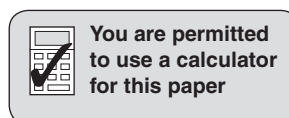
Formulae Sheet: Foundation Tier

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 **(a)** Here is a list of numbers.

8	12	13	16	30	33

From this list, choose

(i) a multiple of 5,

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

(ii) a factor of 56,

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

(iii) two numbers that give 14 when subtracted,

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

(iv) a prime number.

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

(b) Calculate $\sqrt{10}$.
Give your answer correct to 1 decimal place.

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

2 **(a)** Here is a star shape.
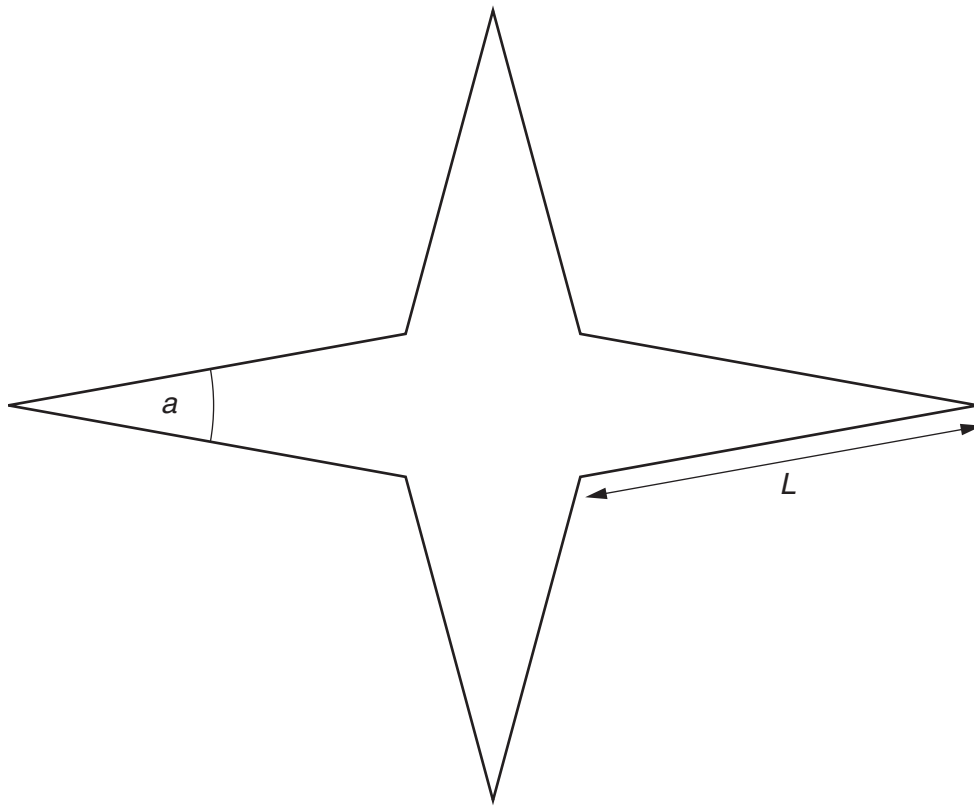
    (i) Measure angle *a*.

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

    (ii) Measure length *L*.
           State the units of your answer.

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

(b) At point A on the line below, draw an angle of 128°.

——————————————————————————————— A   **[1]**

3
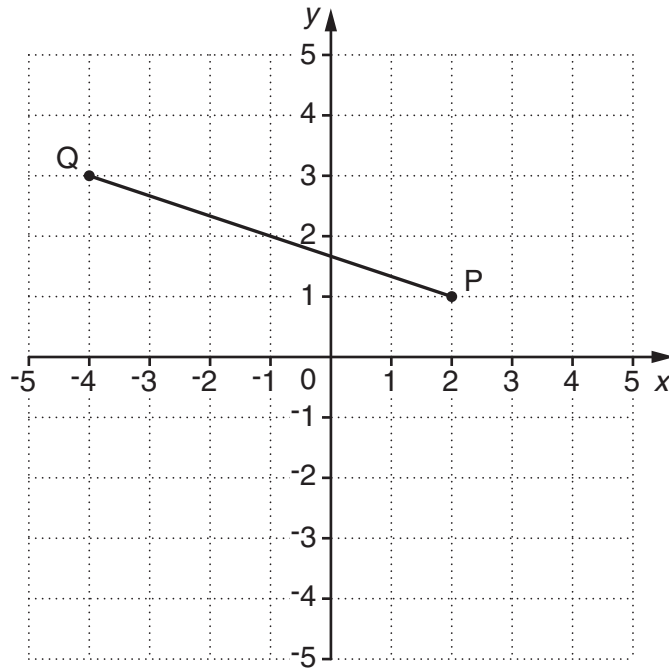
(a) Write down the coordinates of point P.

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

(b) Find the coordinates of the midpoint of line PQ.

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

(c) Plot the point (1, ⁻4). Label it R.   **[1]**

Turn over

4 **(a)** This bar chart shows the average maximum temperatures each month in Ottawa, Canada.
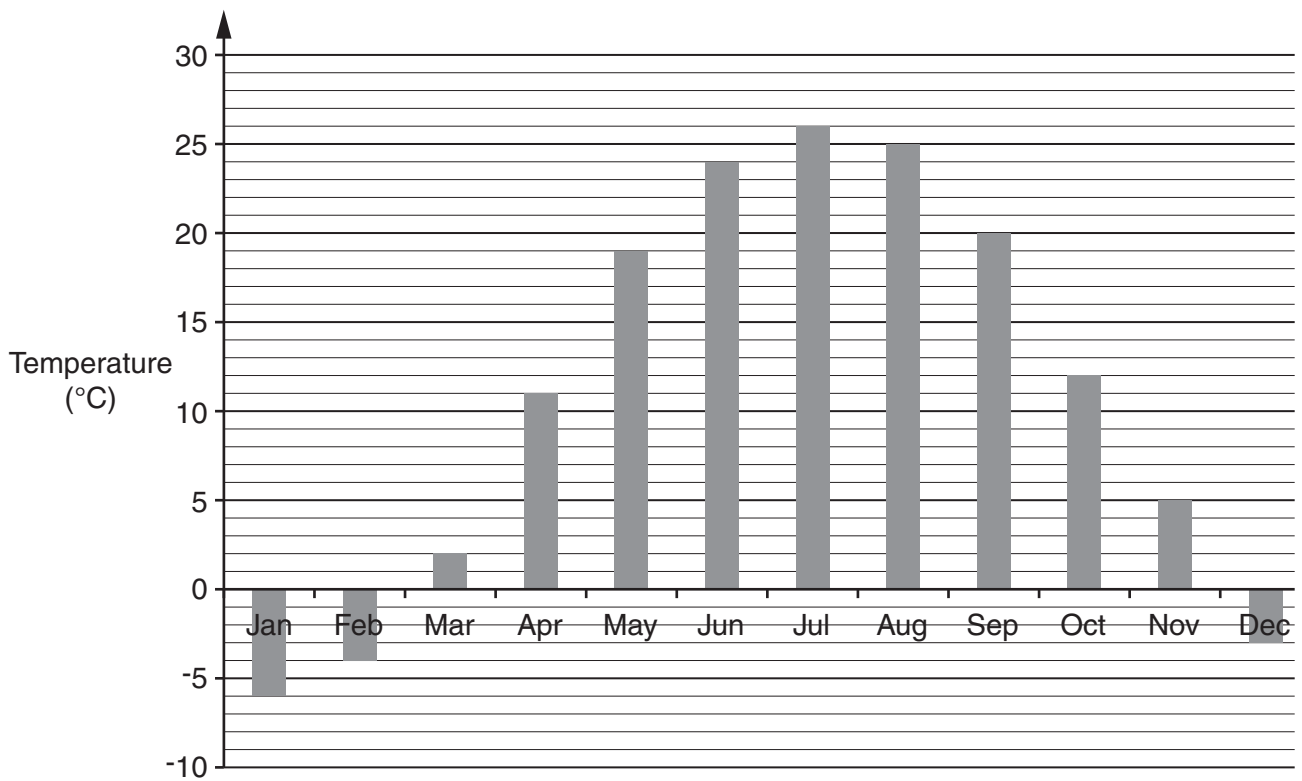
(i) For how many months is the temperature below zero?

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

(ii) Find the difference between the hottest and coldest of these twelve temperatures for Ottawa.

(ii) .... °C **[2]**

(iii) Gillian is planning a holiday to Ottawa in October.

What is the temperature on the bar chart for October?

(iii) .... °C **[1]**

(b) This table shows the average depth of snow on the ground in Ottawa each month.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Depth (cm)	21	25	20	2	0	0	0	0	0	0	1	5

(i) What is the average depth of snow on the ground for October?

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

(ii) Which month has the greatest average depth of snow on the ground?

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

5 At Millau, in France, there is a bridge over the Tarn valley.

The bridge is supported by seven tall pillars.

94.5 m   245 m   221 m   144 m   136.5 m   112 m   77.5 m

Not to scale
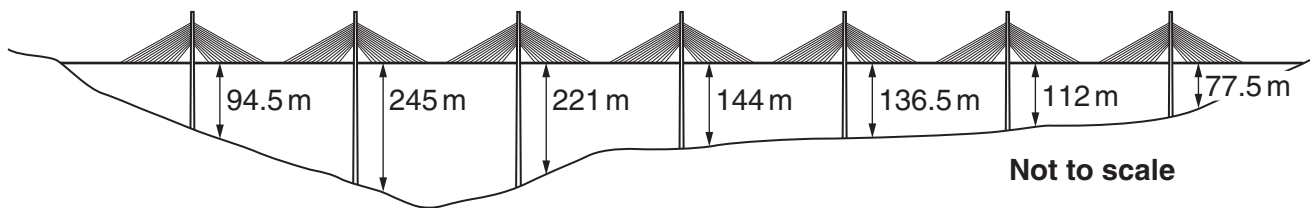
(a) The diagram shows the heights of the roadway of the bridge from the ground.

Write down the shortest of these heights.

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

(b) The height of the Eiffel Tower is 324 m.
The height of the tallest pillar is 343 m.

How much taller is this than the Eiffel Tower?

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

(c) 205 000 tonnes of concrete were used to build the bridge.
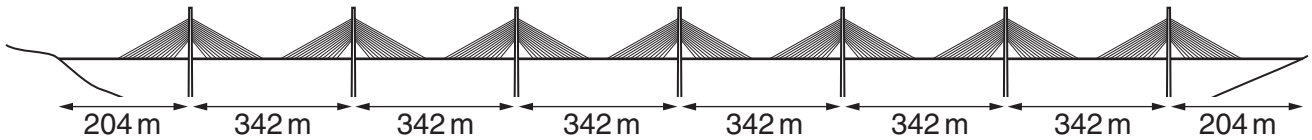
Write 205 000 in words.

.... **[1]**

(d) This diagram shows the distances along the roadway of the bridge.

| 204 m | 342 m | 342 m | 342 m | 342 m | 342 m | 342 m | 204 m |

Not to scale

Calculate the total length of the roadway.
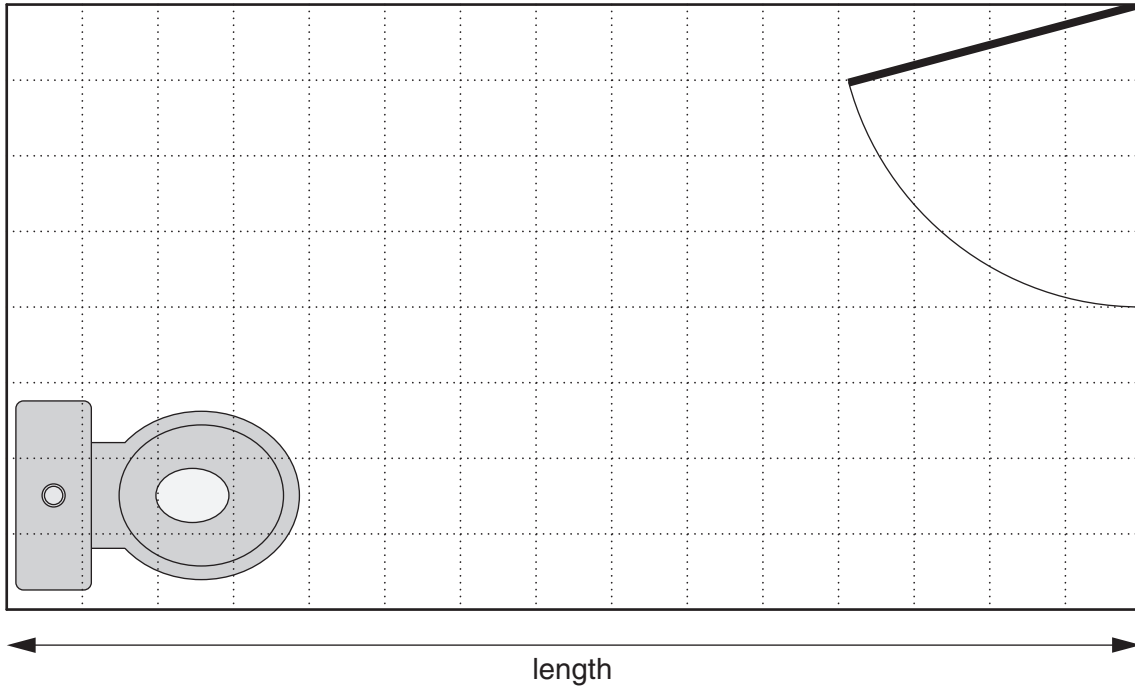
(d) .... m **[2]**

(e) The bridge is on the A75 in France.
The total length of the A75 is 340 km.

Roughly how many miles is 340 km?

(e) ....miles **[2]**

6 Russ is planning a new bathroom.
This scale drawing shows the size of the bathroom, the position of the toilet and the position of the door.

Scale: 1 cm represents 20 cm

length

(a) Find the actual length of the bathroom.
Give your answer in metres.

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

(b) The bath measures 180 cm by 80 cm.

On the scale drawing, draw the bath in a suitable position. **[2]**

7 **(a)** Here are the times, in seconds, taken by 6 girls in their 400 m hurdles race.

| 70.1 | 78.2 | 69.2 | 66.3 | 67.8 | 74.4 |

   (i) Calculate the mean of these times.

(a)(i) .... seconds **[3]**

   (ii) Work out the range of these times.

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

(b) In the boys' 400 m hurdles race, the 6 boys had a mean time of 63.2 seconds and a range of 13.4 seconds.

Jane says:

"The boys' times were more consistent than the girls' times."

Is Jane correct? Explain how you decide.

.... because ....

.... **[2]**

Turn over

8 Asima is a senior citizen.
She always goes to the same hairdressers.
They have two offers.

Haircut £41 Come for 8 haircuts then get the 9th one free!	Senior Citizens Special Offer Only £37.50 for a haircut!

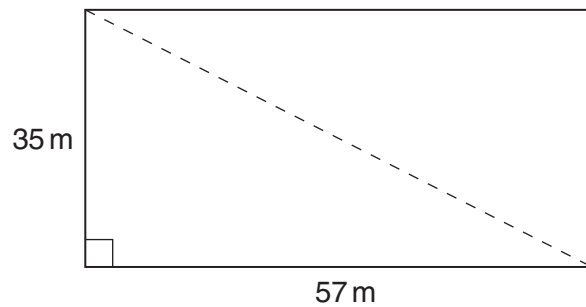Which offer will be cheaper for 9 haircuts?
Show how you decide.

[4]

9   Colin takes 40 strokes to swim 50 m.
Des takes 32 strokes to swim 50 m.

On average, how much further does Des swim in one stroke than Colin?

.... m **[2]**

10   A rectangular field has sides 57 m and 35 m.
A straight footpath goes diagonally across the field.

35 m

57 m

Not to scale

Calculate the length of the footpath.

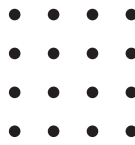... m **[3]**

Turn over

11 Here are the first four patterns in a sequence.

Pattern 1   Pattern 2   Pattern 3   Pattern 4

(a) How many dots are there in Pattern 10?

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

(b) Write an expression for the number of dots in Pattern *n*.

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

12 **(a)** Simplify fully.

$$3m + 2r - 5 + 7m - 6r + 8$$

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

(b) Solve this equation.

$$5x - 4 = 3x + 7$$

(b) .... **[3]**

TURN OVER FOR QUESTION 13

13 *In this question, you should use a ruler and a pair of compasses.*
Do not rub out your construction lines.

The scale drawing shows two warning posts, A and B, on rocks at sea.
It also shows the position of a buoy, C.

B •

A •

• C

Scale: 1 cm represents 50 m

For safety, boats should follow a course that keeps the same distance from A as from B.
The buoy at C makes a sound which can be heard up to 250 m away.

Construct the safe course for boats. Indicate clearly the part of the safe course where the sound from buoy C can be heard.

[4]

END OF QUESTION PAPER