OCR
Oxford Cambridge and RSA

F

Thursday 7 November 2019 – Morning

GCSE (9–1) Mathematics

J560/02 Paper 2 (Foundation Tier)

Time allowed: 1 hour 30 minutes

7779153125

You may use:
- geometrical instruments
- tracing paper

Do not use:
- a calculator

J560602

Please write clearly in black ink. **Do not write in the barcodes.**

Centre number | | | | | | Candidate number | | | | |

First name(s) _____

Last name _____

INSTRUCTIONS
- Use black ink. You may use an HB pencil for graphs and diagrams.
- Answer **all** the questions.
- Read each question carefully before you start to write your answer.
- Where appropriate, your answers should be supported with 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 required but you must clearly show your candidate number, centre number and question number(s).

INFORMATION
- The total mark for this paper is **100**.
- The marks for each question are shown in brackets **[ ]**.
- This document consists of **20** pages.

No calculator can be used for this paper

Answer **all** the questions.

1 Work out.

(a) $89 + 14$

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

(b) 17×21

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

2 The table shows some temperatures, in °C.

Monday	Tuesday	Wednesday	Thursday	Friday
-5	-1	5	6	-3

(a) Find the difference between the temperatures on Thursday and Friday.

(a) ..... °C **[1]**

(b) On Saturday the temperature was 7 °C higher than on Friday.

Find the temperature on Saturday.

(b) ..... °C **[1]**

3 Complete each statement by writing the missing value in the box.

(a) $\frac{2}{5} = \frac{4}{\square}$ **[1]**

(b) $2\frac{1}{3} = \frac{\square}{3}$ **[1]**

(c) $7 \times 7 \times 7 \times 7 \times 7 = 7^{\square}$ **[1]**

4 Work out.

(a) $\frac{5}{6}$ of 18 kg

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

(b) £5 – £1.49

(b) £ ..... **[1]**

(c) 0.15 ÷ 5

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

5 **(a)** Write 0.3 as a fraction.

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

(b) Write $\frac{1}{4}$ as a decimal.

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

6 Write the following in order of size, smallest first.

5.9 0.61 5.977 5.099 5.98

.... **[2]**

smallest

7 Work out the following, giving each answer as a fraction.

(a) $1\frac{3}{4}+\frac{1}{2}$

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

(b) $\frac{3}{8}\div 2$

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

(c) $\frac{1}{3}\times\frac{1}{2}$

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

8 Hannah saves an amount of money each week.
Here are the amounts, in pounds, that she saved in the first 5 weeks of 2019.

13 58 11 22 11

(a) Find

(i) the median of the five amounts,

(a)(i) £ ..... **[2]**

(ii) the range of the five amounts.

(ii) £ ..... **[2]**

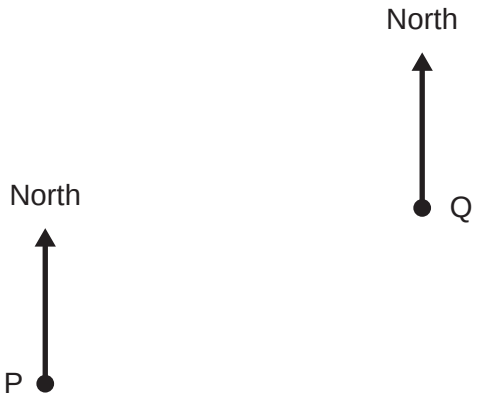
(b) In the 6th week, she also saved some money.
The mean amount that Hannah saved each week over the 6 weeks was £22.

How much did she save in the 6th week?

(b) £ ..... **[3]**

9 The scale drawing shows the positions of two boats, P and Q.

Scale: 1 cm represents 4 km



(a) Find the actual distance between boat P and boat Q.

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

(b) Measure the bearing of boat Q from boat P.

(b) .....° **[1]**

(c) A lighthouse is

- 18 km from boat P
- on a bearing of 200° from boat Q.

On the scale drawing, mark a possible position of the lighthouse with a cross. **[2]**

10 A man running at a constant speed of 5 metres per second takes 66 seconds to complete a particular distance.
A horse completes the same distance running at a constant speed of 15 metres per second.

Find the difference, in seconds, in the times taken by the man and by the horse to run this distance.

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

11 **(a)** Alice buys a picture for £180 and later sells it for £216.

Find the percentage profit that she made.

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

(b) Rashid wants to increase £345 by 17% in one step by using a decimal multiplier.

Write the decimal multiplier to complete Rashid's calculation.

345 × ..... **[1]**

12 In an exam, Adam scored the following marks.

Paper 1	17 out of 20
Paper 2	19 out of 25

(a) Show that he scored a higher percentage in Paper 1 than Paper 2. **[2]**

(b) The two marks are added together.

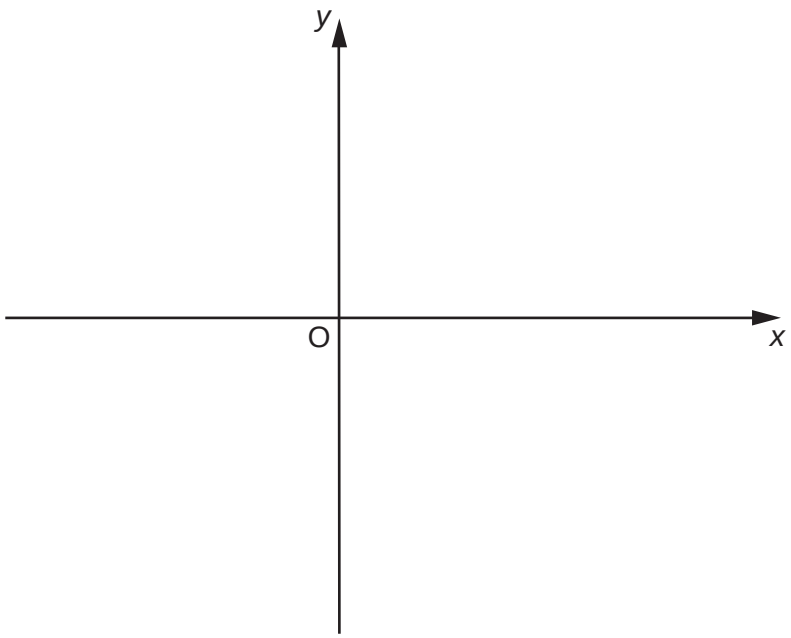
Work out Adam's overall percentage for the two papers.

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

13 (a) (i) Sketch the graph of $y = 2$.

[2]

(ii) Sketch the graph of $y = x + 1$.



[2]

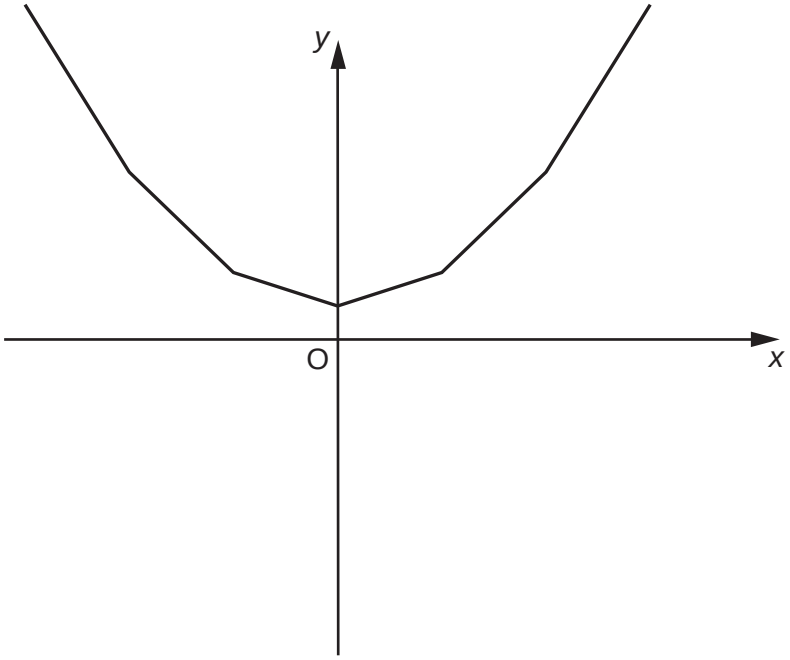
(iii) Ceri says that the graphs of $y = 2$ and $y = x + 1$ cross at the point (2, 3).

Explain the error in her answer.

.....

..... **[1]**

(b) Oliver has sketched the graph of $y = x^2$ below.



Make two comments about the accuracy of his sketch.

1 .....

.....

2 .....

.....

[2]

14 **(a)** Write each of the following ratios in their simplest form.

(i) 8 : 10

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

(ii) 300 ml : 2.1 litres

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

(b) The ratio $\sin 30° : \tan 45°$ can be written in the form 1 : n.

Find the value of n.

(b) $n =$ ..... **[3]**

15 Angie is planning a presentation evening.
She writes down her costs and income.

Costs	Income
10 staff each working 6 hours at £8 per hour Food: 60 meals at £8.95 each Prizes: 12 prizes at £19.99 each	60 guests each paying £5 Sponsorship £1000

Angie thinks she will make a small profit.

Use estimation to decide if Angie is correct.
Show all of your working.

..... **[6]**

16 Martina has answered some questions on algebra.
In each question, she has made an error.

Describe her error and give the correct answer to each problem.

(a) Question 1 Simplify. $2a \times a \times a$

Martina's answer $4a$

Martina's error is .....

.....

Correct answer = ... **[2]**

(b) Question 2 Simplify. $\dfrac{x^{10}}{x^{2}}$

Martina's answer x^{5}

Martina's error is .....

.....

Correct answer = ... **[2]**

(c) Question 3 $s = ut + \frac{1}{2}at^2$

Find s when $u = 0$, $t = 5$ and $a = 6$.

Martina's solution $s = 0 \times 5 + \frac{1}{2} \times 6 \times 5^2$

$s = 0 + 15^2$

$s = 225$

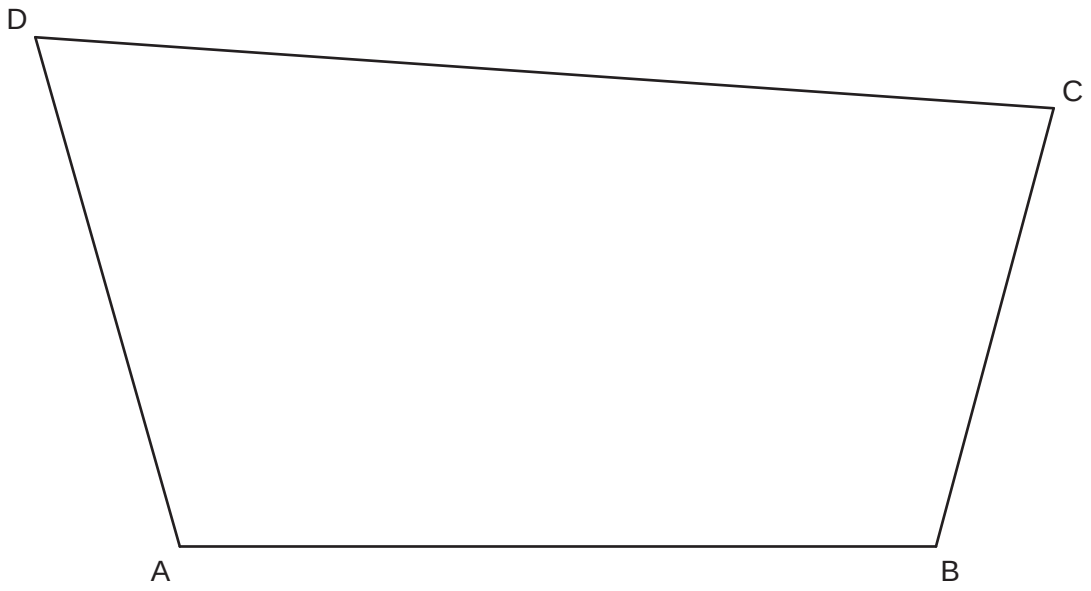
Martina's error is .....

.....

Correct answer = ... **[2]**

17 The diagram shows the scale drawing of a garden ABCD.

Scale: 1 cm represents 5 m



A tree is to be planted in the garden so that it is

- at least 10 m from AB

and

- closer to CD than CB

and

- at least 15 m from D.

Using a ruler and compasses only, construct and shade the region in which the tree can be planted.

[6]

18 Solve by factorising.

$$x^2 + 9x + 20 = 0$$

$x =$ ..... or $x =$ ..... **[3]**

19 On a plane, $\frac{2}{5}$ of the passengers were British.

30% of the British passengers were men.
There were 36 British men on the plane.

Find the total number of passengers on the plane.

..... **[5]**

20 A bag contains 100 pencils that are either red or green.

Describe a method you could use to estimate the number of red pencils in the bag without looking into the bag or having more than one of the pencils out of the bag at any one time.

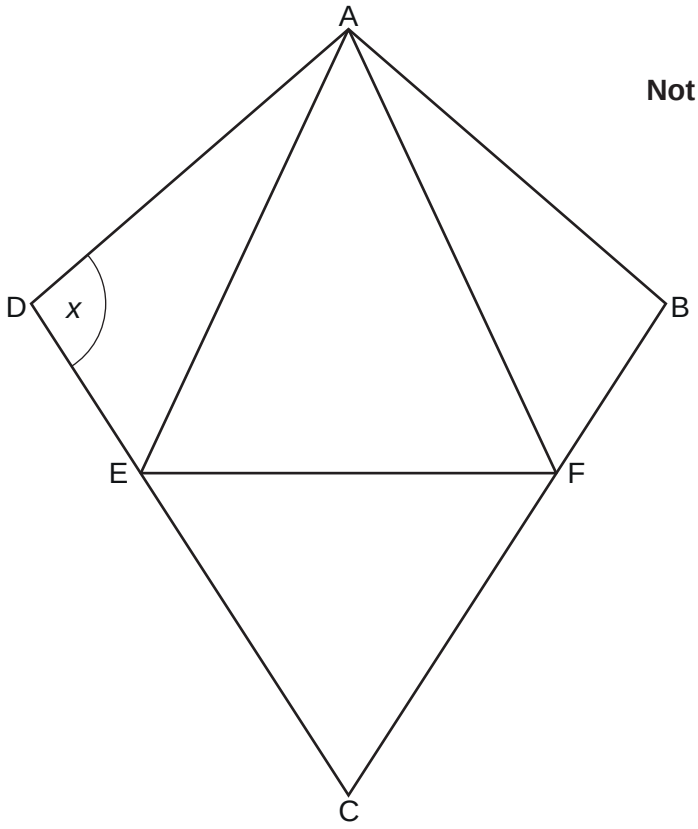
.....

.....

.....

..... **[4]**

21 The diagram shows a kite, ABCD.
AFE and CEF are equilateral triangles.



Not to scale

(a) Write down a mathematical name for quadrilateral AFCE.

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

(b) The ratio of angle DAE : angle EAF = 1 : 4.

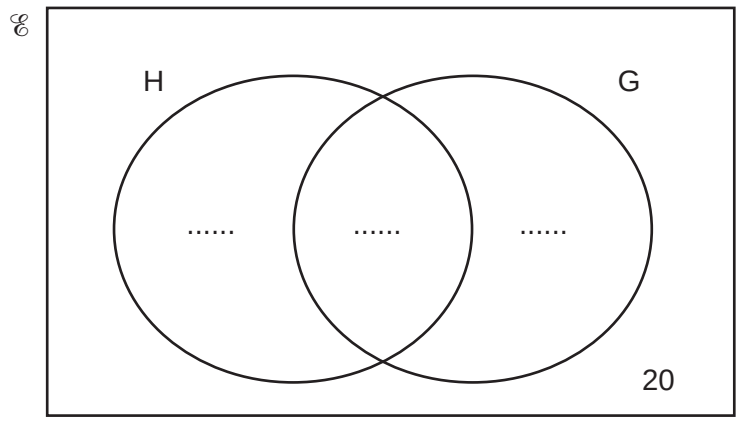
Work out angle x.
Write on the diagram the values of any other angles you use in your working.

(b) $x =$ ..... ° **[4]**

22 In a group of 100 students

- 59 study History (H)
- 62 study Geography (G)
- 20 do not study either subject.

(a) Complete the Venn diagram.



[3]

(b) One of the 100 students is selected at random.

Find the probability that this student studies exactly one of the two subjects.

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

Turn over for Question 23

23 A straight line with gradient 4 passes through the point (1, 5).

Find the equation of the line in the form $y = mx + c$.

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

END OF QUESTION PAPER