OCR
Oxford Cambridge and RSA

F

GCSE (9–1) Mathematics

J560/02 Paper 2 (Foundation Tier)

Practice Paper – Set 3

Time allowed: 1 hour 30 minutes

2016

You may use:
- Geometrical instruments
- Tracing paper

Do not use:
- a Calculator

J560/02

First name									
Last name									
Centre number						Candidate number				

INSTRUCTIONS
- Use black ink. You may use an HB pencil for graphs and diagrams.
- Complete the boxes above with your name, centre number and candidate number.
- Answer **all** the questions.
- Read each question carefully before you start 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).
- Do **not** write in the barcodes.

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

Answer **all** the questions

1 Work out.
Give each answer as a fraction in its simplest form.

(a) $4 - \frac{2}{7}$

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

(b) $\frac{1}{2} + \frac{1}{6}$

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

(c) $\frac{3}{5} \times \frac{7}{8}$

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

2 Wilfred runs in six races.
These are his times, in seconds.

10.5 10.6 10.1 10.6 10.0 9.9

(a) Write down the mode of his times.

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

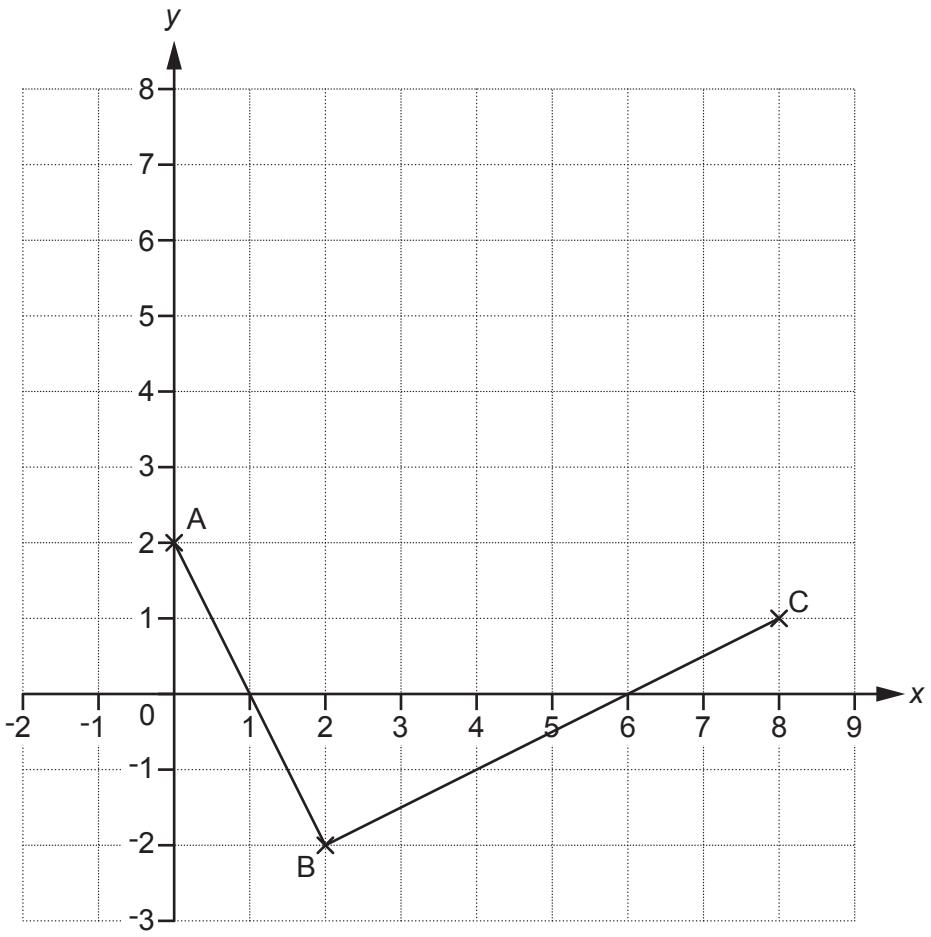
(b) Work out the range of his times.

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

(c) Work out the median of his times.

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

3 **(a)** Points A, B and C are marked on the grid below.



(i) Write down the coordinates of point A and point B.

(a)(i) A (..... , ...)

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

(ii) Plot the point D so that ABCD is a rectangle. **[1]**

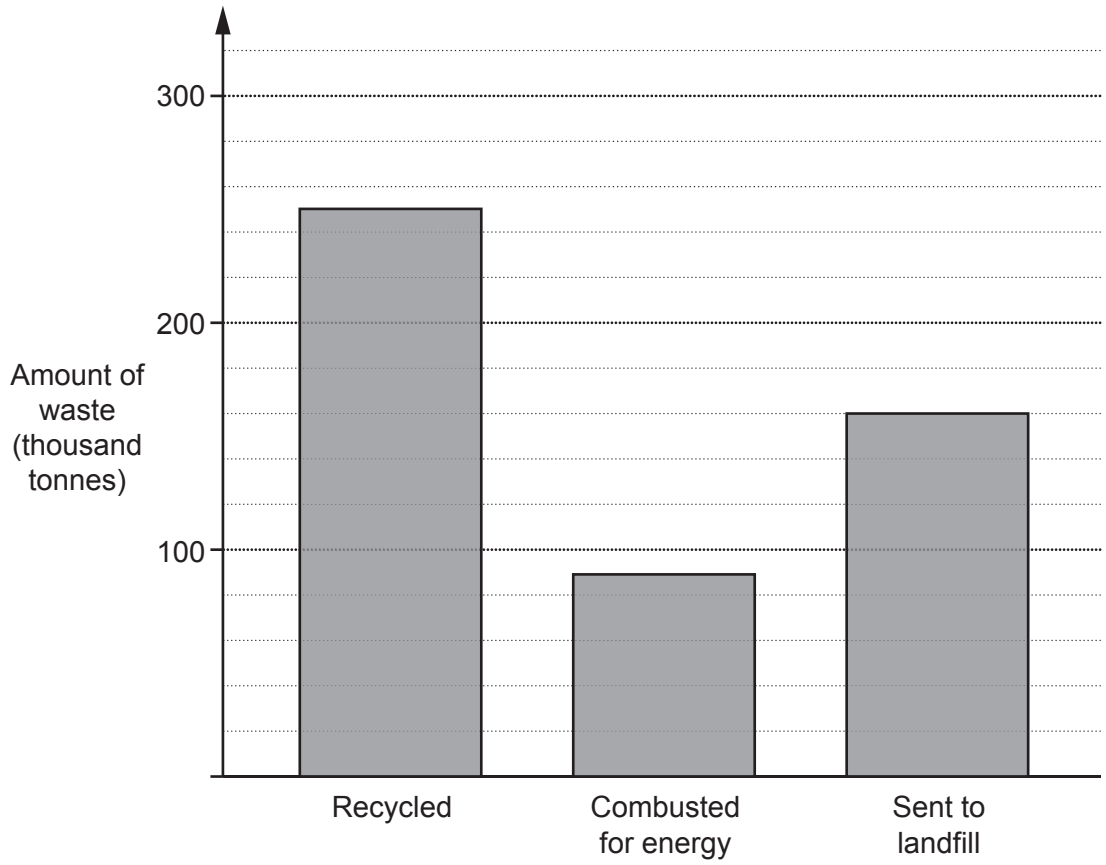
(b) PQRS is a square.
P has coordinates (56, 3). Q has coordinates (56, -1).

Find a possible pair of coordinates for R and S.

(b) R (..... , ...)

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

4 This diagram shows how a council disposed of waste in 2016.
The total amount of waste was 500 thousand tonnes.



(a) How much waste was recycled?

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

(b) The council had a target to send less than 30% of the waste to landfill in 2016.

Did the council meet its target in 2016?
Justify your answer.

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

5 George is going to make biscuits for a party.

He buys:

- two 250 g packs of butter at £1.30 per pack
- one 1.5 kg bag of flour at £0.80 per bag
- one 500 g bag of sugar at £0.99 per bag.

(a) (i) How much does he spend altogether?

(a)(i) £ ..... **[1]**

(ii) He pays with a £10 note.

How much change should he receive?

(ii) £ ..... **[1]**

(b) These are the ingredients for making 16 biscuits.

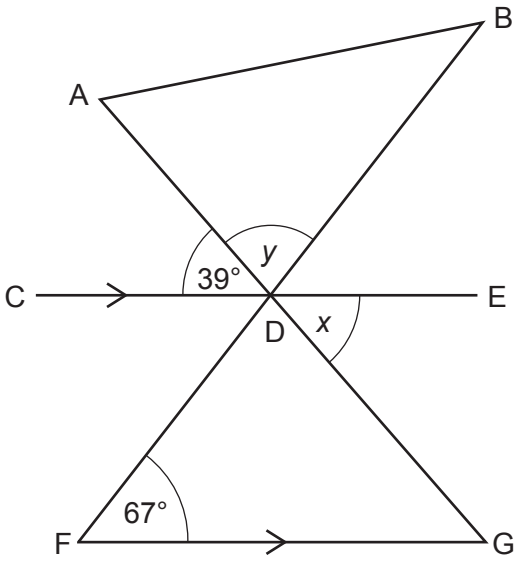
16 Biscuits

100 g butter
150 g flour
40 g sugar

George makes as many biscuits as he can, with the ingredients he bought.

Show that George can make 80 biscuits. **[3]**

6 In the diagram, CDE is parallel to FG.
ADG and BDF are straight lines.



Not to scale

(a) Complete the sentence with a reason.

Angle $x = 39°$ because ..... **[1]**

(b) Work out angle y.

(b) .....° **[3]**

7 **(a)** Work out.

(i) 11^2

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

(ii) $\sqrt{400}$

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

(b) Simplify.

$m^2 \times m^6$

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

8 **(a)** By converting each fraction to a percentage, show that $\frac{9}{20}$ is bigger than $\frac{11}{25}$. **[2]**

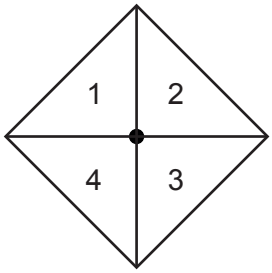
(b) A holiday is advertised at £900.
The price of the holiday is then reduced by 20%.

How much does the holiday cost now?

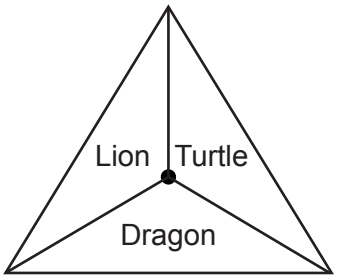
(b) £ ..... **[3]**

9 **(a)** Omar has a game.
In his game there are two fair spinners.

Spinner A has four sides, labelled 1, 2, 3, 4.



Spinner B has three sides, labelled Dragon, Lion and Turtle.



Omar spins the two spinners and records the result.

(i) Complete the table showing all the possible outcomes.

Spinner A	Spinner B
1	D(ragon)

You may not need to use all the lines.

[2]

(ii) What is the probability that Omar spins a 3 and a Lion?

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

(b) Lizzie spins two fair coins.

Lizzie says

There are three possible outcomes: two heads, two tails or a head and a tail.

So the probability that I will get two heads is $\frac{1}{3}$.

Explain the error that Lizzie has made in her reasoning.

.....

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

10 **(a)** Write down all the factors of 20.

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

(b) **(i)** A number has exactly four factors.
Two of the factors are 1 and 9.

Find the number.

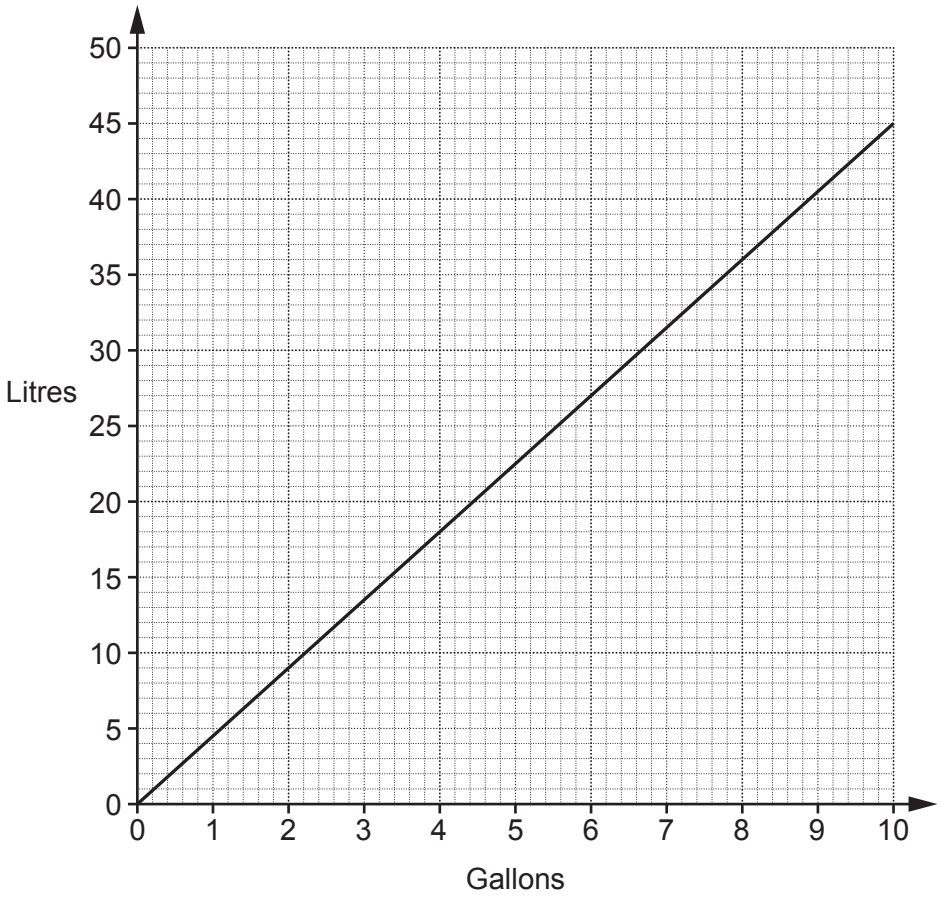
(b)(i) ..... **[1]**

(ii) A different number has exactly three factors.
One of the factors is 7.

Find the number.

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

11 This is a conversion graph for gallons and litres.



(a) Use the graph to convert 4 gallons to litres.

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

(b) Millie is planning a journey.
She assumes her car will travel 40 miles per gallon of petrol.
The fuel tank in her car contains 36 litres of petrol.

(i) Use the graph to help work out how far she can travel using this petrol.

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

(ii) Millie decides not to fill up with petrol until she has travelled the distance found in part **(b)(i)**.

Explain why this may not be sensible.

.....

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

12 **(a)** Work out.
Give your answers in standard form.

(i) $3 \times 10^4 + 2.7 \times 10^2$

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

(ii) $5 \times 10^6 \times 7 \times 10^8$

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

(b) Estimate.

$$\sqrt{\frac{0.621 \times 7.94}{0.334}}$$

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

13 **(a)** Here are the first four terms of a sequence.

10 13 16 19

(i) What is the fifth term?

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

(ii) Write an expression for the *n*th term.

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

(iii) What is the 40th term?

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

(b) Here are the first four terms of a different sequence.

2 5 10 17

(i) What is the next term of this sequence?

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

(ii) Explain how you can work out the next term of this sequence.

.....

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

14 **(a)** A box contains only orange counters, purple counters and green counters.

A counter is taken, at random, from the box.

The probability that it is purple is $\frac{3}{10}$ and the probability that it is green is $\frac{7}{15}$.

Find the ratio of orange to purple to green counters.

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

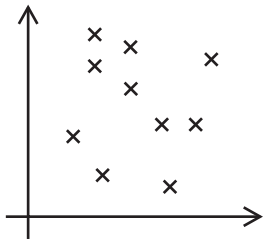
(b) A different box contains 42 red counters, 90 yellow counters and no other counters.

A group of students share these counters between them so that they each receive the same number of red counters and the same number of yellow counters.
There are no counters left over.

How many students could be in the group?
Give all possible answers and show your reasoning.

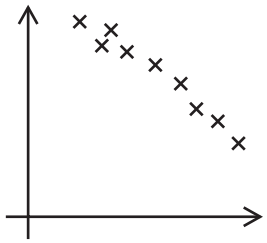
(b) ..... **[3]**

15 Describe the correlation shown in each of these scatter graphs.
Where there is correlation, state the strength.



.....

.....



.....

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

16 Demi gives her dog $\frac{2}{3}$ of a tin of food each day.

Work out the smallest number of tins of food that she needs to feed her dog for 10 days.

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

17 Adil, Katie and Rebecca share £160 in the ratio 2 : 5 : 3.

(a) How much does Rebecca receive?

(a) £ ..... **[2]**

(b) Katie says she receives 60% more than Rebecca.
Here is her reasoning.

I receive 5 parts and Rebecca receives 3 parts.

$$\frac{3}{5} = 60\%$$

So I receive 60% more than Rebecca.

(i) Explain what is wrong with Katie's reasoning.

.....

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

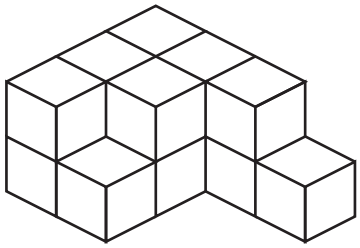
(ii) Complete the following to give the correct percentage.

I receive 5 parts and Rebecca receives 3 parts.

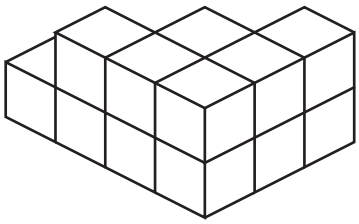
..... = ... %

So I receive ..... % more than Rebecca. **[2]**

18 The diagram shows two views of a solid made from 14 one-centimetre cubes.



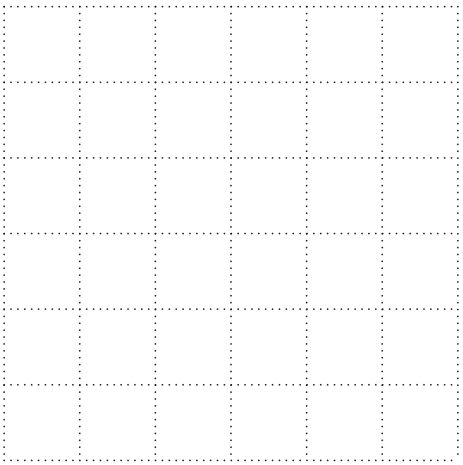
Front view



Rear view

Not to scale

(a) On the centimetre grid below, draw a plan of the solid.



[2]

(b) Work out the **smallest** number of cubes that need to be added to the solid to make a cube.

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

19 **(a)** Use the formula $s = ut + \frac{1}{2}at^2$ to find s when $u = 2$, $a = 10$ and $t = 5$.

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

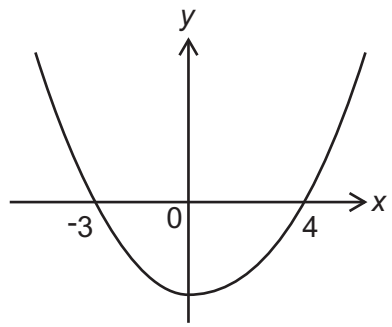
(b) Expand and simplify.

$(x+7)(x-3)$

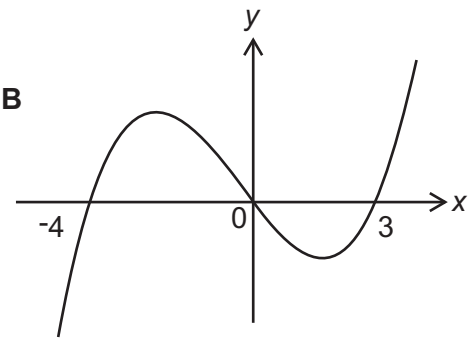
(b) ..... **[2]**

(c) Here are some graphs.

A

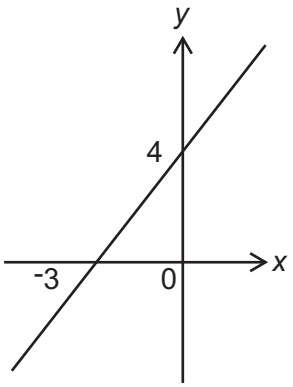


B

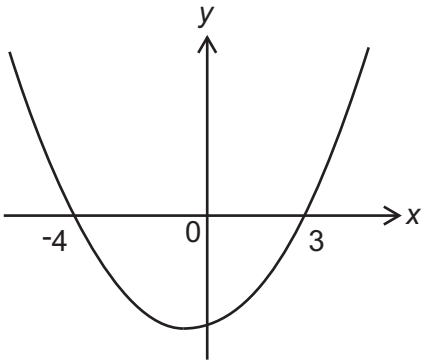


Not to scale

C



D



Complete the following:

Graph ..... is the graph of $y = (x-3)(x+4)$. **[1]**

20 **(a)** Rearrange this formula to make x the subject.

$$y = \frac{2x}{5}$$

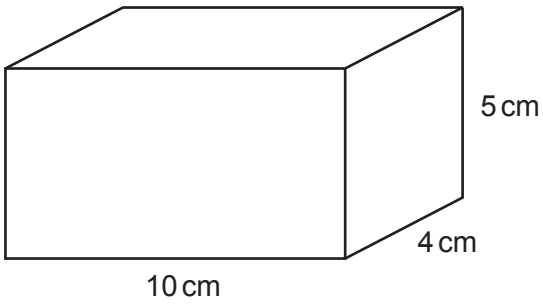
(a) ..... **[2]**

(b) Solve.

$$5x - 6 = 3x + 13$$

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

21 Dani has a silver bar.
The bar is a cuboid.



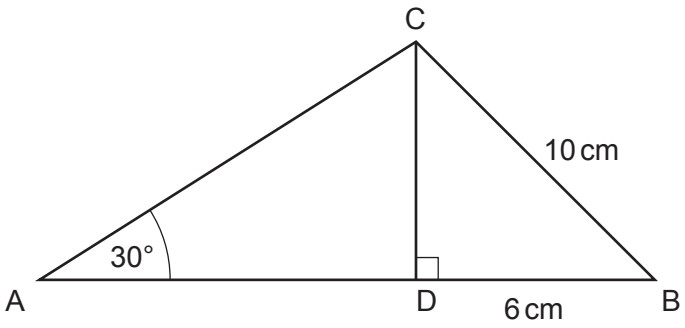
Silver has a density of 10.5 grams per cm^3.
Dani sells the bar and is paid 30p for each gram of silver.

How much is she paid?
Give your answer in pounds.

£ ..... **[5]**

TURN OVER FOR QUESTION 22

22 The diagram shows triangle ABC.
D is a point on AB such that DB = 6 cm.
BC = 10 cm, angle CAD = 30° and angle BDC = 90°.



Not to scale

Work out the ratio length of AC : length of DB in its simplest form.

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

END OF QUESTION PAPER