

Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

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Forename(s)

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Candidate signature

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# GCSE MATHEMATICS

# F

Foundation Tier    Unit 2    Number and Algebra

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Friday 4 November 2016

Morning

Time allowed: 1 hour 15 minutes

## Materials

For this paper you must have:

- mathematical instruments.

You must **not** use a calculator.



## Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book.

## Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 66.
- The quality of your written communication is specifically assessed in Questions 6 and 18. These questions are indicated with an asterisk (\*).
- You may ask for more answer paper and graph paper. These must be tagged securely to this answer book.

## Advice

- In all calculations, show clearly how you work out your answer.



Answer **all** questions in the spaces provided.

**1 (a)** Work out  $\frac{1}{4}$  of 32 **[1 mark]**

\_\_\_\_\_

Answer \_\_\_\_\_

**1 (b)** Work out 10% of 270 **[1 mark]**

\_\_\_\_\_

Answer \_\_\_\_\_

**1 (c)** Circle the decimal with the same value as 5% **[1 mark]**

0.5

0.2

0.05

1.2

**1 (d)** Circle the fraction with the same value as 0.3 **[1 mark]**

$\frac{1}{30}$

$\frac{3}{10}$

$\frac{1}{3}$

$\frac{3}{100}$

**1 (e)** Write  $\frac{3}{4}$  as a percentage. **[1 mark]**

Answer \_\_\_\_\_%



2 Paul buys some teas and cakes.

Here is the bill.

Teas	$2 \times \text{£}1.20$	$\text{£}2.40$
Cakes	_____ $\times 90\text{p}$	_____
		_____
	Total	$\text{£}6.00$

How many cakes did he buy?

[2 marks]

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Answer \_\_\_\_\_

3 I am thinking of three single-digit numbers.

The numbers are **different**.

The sum of the numbers is 22

What is the **least** possible value of the smallest number?

[2 marks]

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Answer \_\_\_\_\_



- 4 (a)** Two odd numbers are  
multiples of 9  
and between 40 and 70

What are the **two** numbers?

[2 marks]

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Answer \_\_\_\_\_ and \_\_\_\_\_

- 4 (b)** Circle the number below that is **not** a factor of 56

[1 mark]

4

6

7

8



5 A sequence of patterns is made from sticks.



Pattern 1



Pattern 2



Pattern 3



Pattern 4

5 (a) Draw Pattern 5

[1 mark]

5 (b) Here is a rule for working out the number of sticks in a pattern.

$$4 \times \text{Pattern number} + 1$$

How many sticks are in Pattern 10?

[1 mark]

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Answer \_\_\_\_\_

5 (c) Tick the correct box for the number of sticks in a pattern.

The number of sticks

is always even

could be even or odd

is always odd

[1 mark]

6

Turn over ►



\*6 Ros buys 60 samosas.

Samosas 40p each
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She is given 30% off the price.

How much does she pay altogether?

**[4 marks]**

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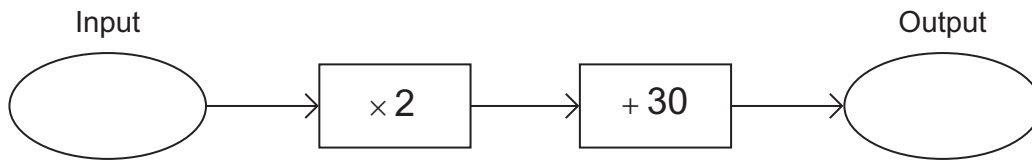
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Answer £ \_\_\_\_\_



7 Here is a number machine.



7 (a) Work out the **output** when the input is 25

[1 mark]

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Answer \_\_\_\_\_

7 (b) Work out the **input** when the output is 64

[2 marks]

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Answer \_\_\_\_\_

Turn over for the next question

7

Turn over ►



**8** Here are the temperatures in four cities at 7 am

Belfast	Cardiff	London	Glasgow
-9 °C	-3 °C	-5 °C	-13 °C

**8 (a)** Which city had the highest temperature?  
Circle your answer.

[1 mark]

Belfast

Cardiff

London

Glasgow

**8 (b)** What was the difference in temperature between London and Glasgow?

[1 mark]

Answer \_\_\_\_\_ °C

**8 (c)** At 1 pm the temperature in Belfast was 15 °C higher than at 7 am

What was the temperature in Belfast at 1 pm?

[1 mark]

Answer \_\_\_\_\_ °C





9 One-fifth of a number is 30

Work out half of the number.

[2 marks]

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Answer \_\_\_\_\_

10 Blue counters and red counters are in the ratio 2 : 5

What fraction of the counters are red?  
Circle your answer.

[1 mark]

$\frac{2}{5}$

$\frac{5}{7}$

$\frac{3}{5}$

$\frac{2}{7}$

Turn over for the next question



11 This is what you need to make 20 pancakes.

Eggs	4
Flour	600 g
Milk	450 ml

Work out what you need to make 30 pancakes.

**[2 marks]**

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Eggs \_\_\_\_\_

Flour \_\_\_\_\_ g

Milk \_\_\_\_\_ ml



12 (a) Solve  $\frac{x}{8} = 4$

[1 mark]

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$x =$  \_\_\_\_\_

12 (b) Solve  $6y - 13 = 29$

[2 marks]

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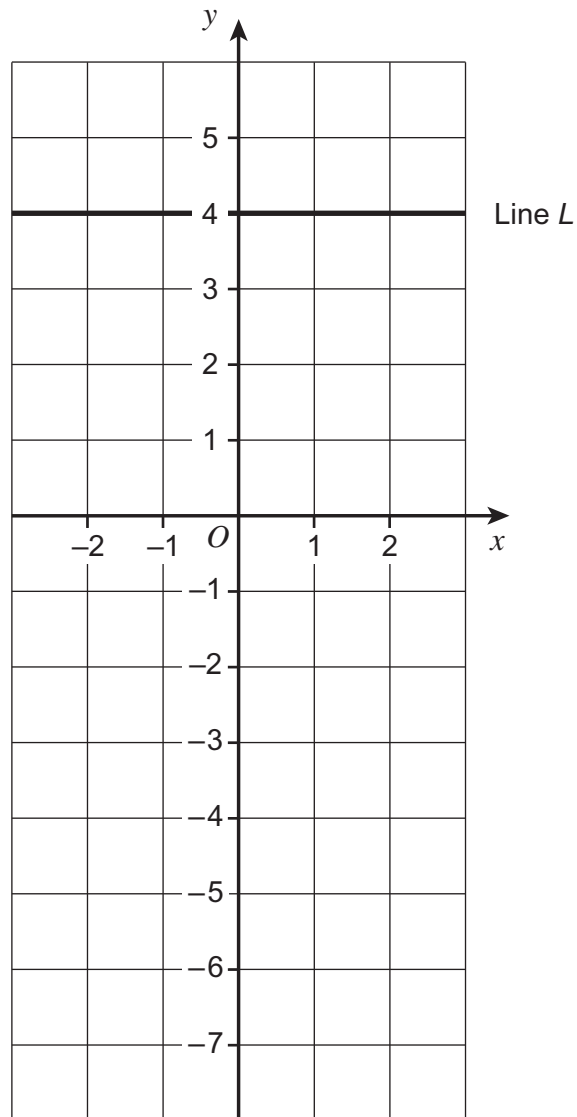
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$y =$  \_\_\_\_\_

Turn over for the next question



13 (a) On the grid is line  $L$ .



Circle the equation of line  $L$ .

[1 mark]

$$y = x + 4$$

$$y = 4$$

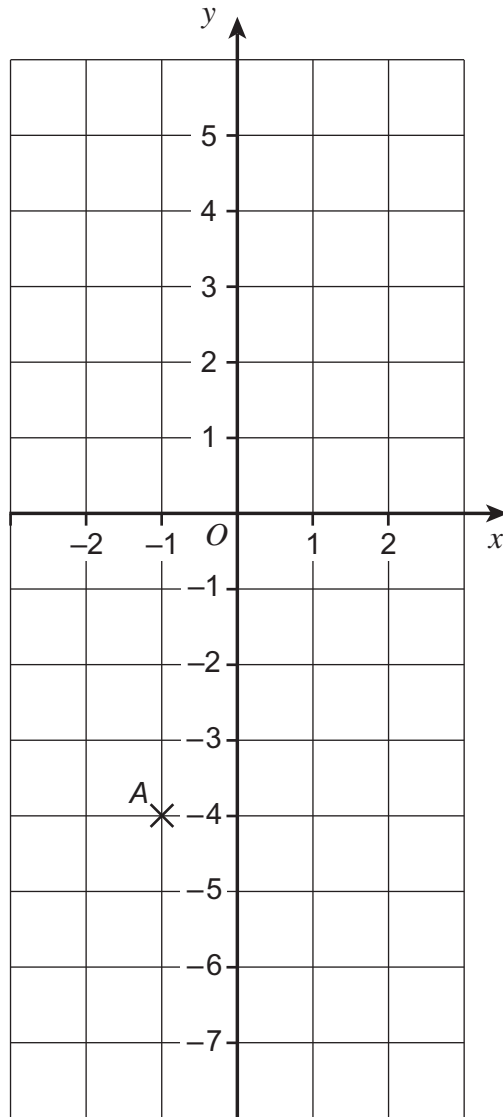
$$x = 4$$

$$x + y = 4$$



13 (b)  $A, B$  and  $C$  are points on the line  $y = 3x - 1$

$A$  is  $(-1, -4)$



$B$  has  $x$ -coordinate 2

$C$  has  $y$ -coordinate  $-1$

Complete the coordinates of  $B$  and  $C$ .

[2 marks]

Answer  $B(2, \underline{\hspace{2cm}})$

$C(\underline{\hspace{2cm}}, -1)$



**14 (a)** Work out  $0.7 \times 0.3$  **[1 mark]**

Answer \_\_\_\_\_

**14 (b)** Work out  $4.6 - 0.29$  **[1 mark]**

\_\_\_\_\_

\_\_\_\_\_

Answer \_\_\_\_\_

**14 (c)** Write these in order of size, starting with the smallest. **[2 marks]**

$\frac{13}{20}$

0.7

55%

Smallest \_\_\_\_\_

\_\_\_\_\_

Largest \_\_\_\_\_



15 Use approximations to estimate the value of  $\frac{37 \times 304}{58}$  [2 marks]

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Answer \_\_\_\_\_

16 (a) Multiply out  $3(2x - 7)$  [1 mark]

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Answer \_\_\_\_\_

16 (b) Factorise  $x^2 + 8x$  [1 mark]

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Answer \_\_\_\_\_



17 Work out the value of  $2a^2 + b^3$  when  $a = 5$  and  $b = -3$

[3 marks]

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Answer \_\_\_\_\_





\*18 Lisa wants to hire a car.

**Company A**

No charge for mileage

Normal price   £66 each day

**Offer** Now  $\frac{1}{3}$  off

**Company B**

No daily charge

Normal price   75p each mile

**Offer** Now 20% off

Which company is cheaper  
to hire a car for 15 days  
**and**  
drive 1000 miles?

You **must** show your working.

**[5 marks]**

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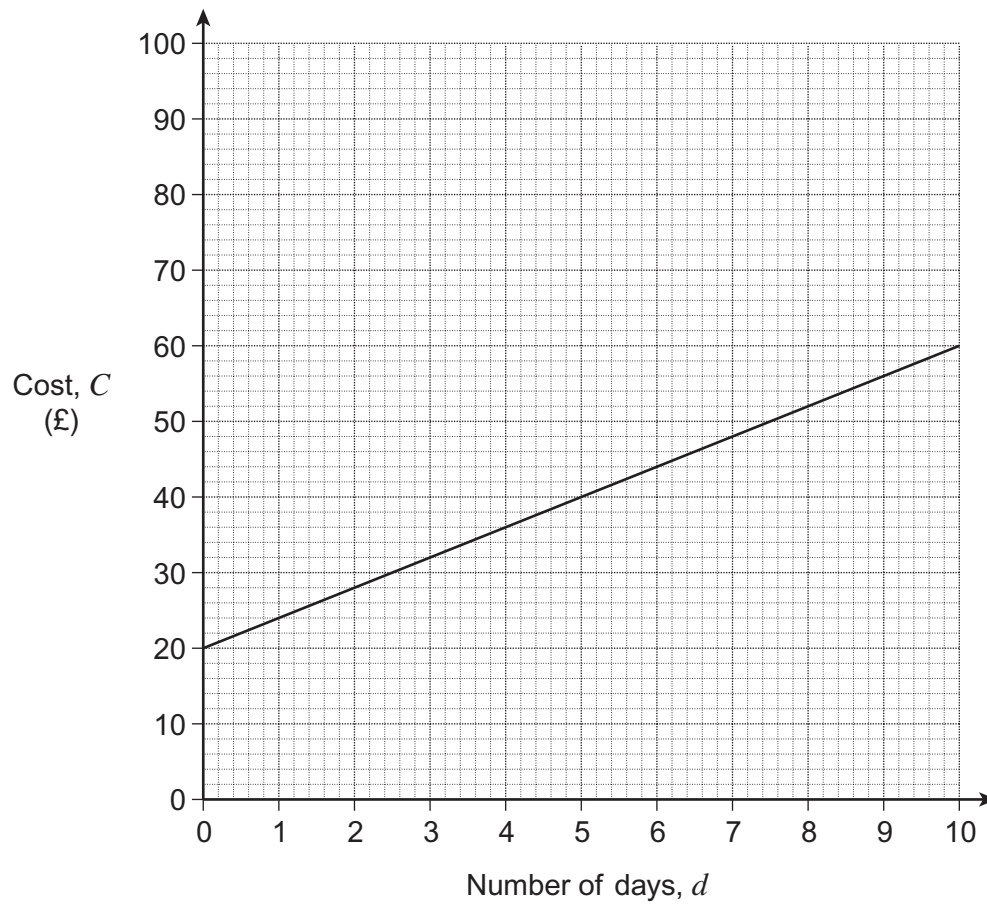
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Answer \_\_\_\_\_

**Turn over** ►



- 19 This graph is used to work out the cost,  $C$  (£), to hire a drill for a number of days,  $d$ .



- 19 (a) Circle the correct formula for the cost,  $C$ , to hire a drill.

[1 mark]

$$C = 20d + 4$$

$$C = 4d + 24$$

$$C = 4d + 20$$

$$C = 24d - 4$$



- 19 (b) The cost of hiring a sander is given by the formula

$$C = 6d + 10$$

Dev hires a drill and a sander for the **same** number of days.  
The **total** cost is £90

Work out the number of days that he hires the drill and sander.

[3 marks]

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Answer \_\_\_\_\_ days

- 20 Solve  $4(x - 5) = x + 7$

[3 marks]

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$x =$  \_\_\_\_\_

7
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Turn over ►



**21** Write 56 as a product of prime factors.

**[2 marks]**

Answer \_\_\_\_\_



**22** A shop makes juice by mixing cranberry and orange in the ratio

$$\text{cranberry} : \text{orange} = 1 : 3$$

1 litre of cranberry costs 60p

1 litre of orange costs 40p

**22 (a)** Show that the cost of 20 litres of juice is £9

**[2 marks]**

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**22 (b)** The shop sells 1 litre of juice for 80p

Work out the profit for selling 60 litres of juice.

**[3 marks]**

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Answer £ \_\_\_\_\_

**END OF QUESTIONS**



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