



THIRD SPACE  
LEARNING

# Mathematics

## Paper 3

### (Calculator)

## Foundation Tier

OCR GCSE

SET 2

# Mathematics Paper 3 (Calculator) Foundation Tier OCR GCSE

## SET 2

Name

Total marks



Paper length: 1hr 30mins

## Instructions

- Use black ink or ball-point pen.
- Fill in the boxes at the top of this page with your name, centre number and candidate number.
- Answer all questions.
- Answer the questions in the spaces provided
  - there may be more space than you need.
- You must show all your working.
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- Calculators may be used.

## Information

- The total mark for this paper is 100
- The marks for each question are shown in brackets
  - use this as a guide as to how much time to spend on each question.

## Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

**You must have:** Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. Tracing paper may be used.

*Please note, this practice paper is an example to help revision, these topics can be tested in other ways and other topics may be included in the actual papers*

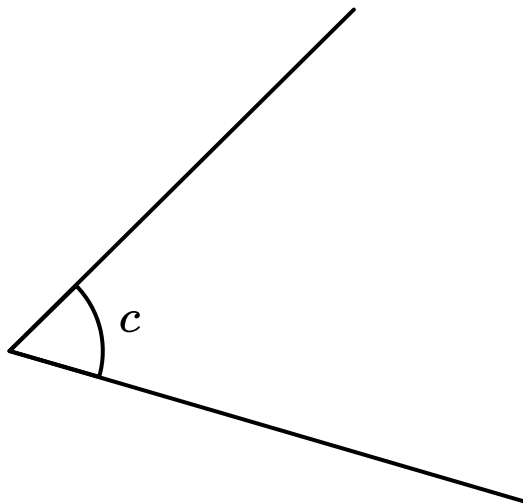
- 1 (a)** Measure the length of the line AB.

Give your answer in *cm*.



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

- (b) (i)** Measure angle C.



**(b) (i)** .....<sup>°</sup> **[1]**

- (b) (ii)** Write down the mathematical name of this type of angle.

Choose from the list below.

acute

obtuse

reflex

right angle

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

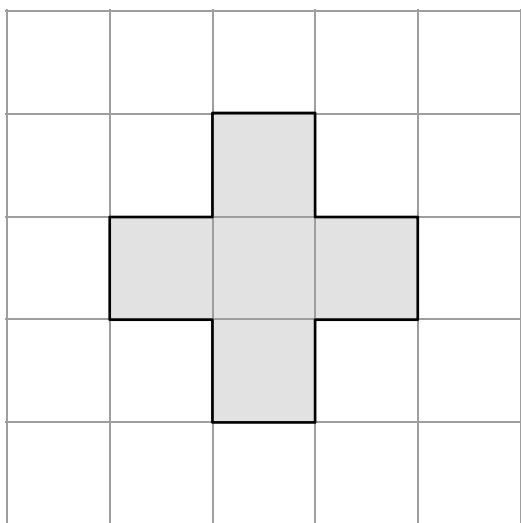
**2 (a)** Round 3572 to the nearest hundred.

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

**(b)** Round 3572 to 1 significant figure.

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

**3** A shape is drawn on a one-centimetre grid.



**(a)** Find the perimeter of the shape.

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

**(b)** How many lines of symmetry does the shape have?

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

**Turn over**

4 Use your calculator to work out.

(a)  $\sqrt{625} + 27$

(a) ..... [1]

(b)  $3^5$

(b) ..... [1]

5 Write the following numbers in order of size.

0.103

1.11

1.3

1.033

0.31

**Smallest** .....

.....

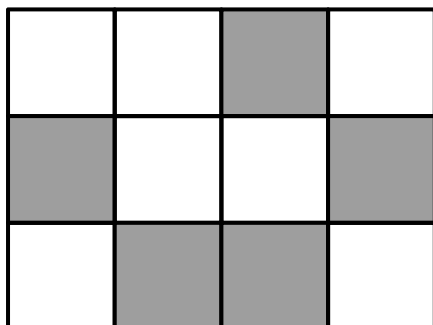
.....

.....

**Largest** .....

[1]

- 6 Here is a grid of squares.



- (a) Write down the ratio of the number of shaded squares to the number of unshaded squares.

..... [1]

- (b) Adam shades 3 more squares.

Write down the fraction of squares that are now shaded.

Give your answer in its simplest form.

..... [2]

- 7 Here are the first four terms of a sequence.

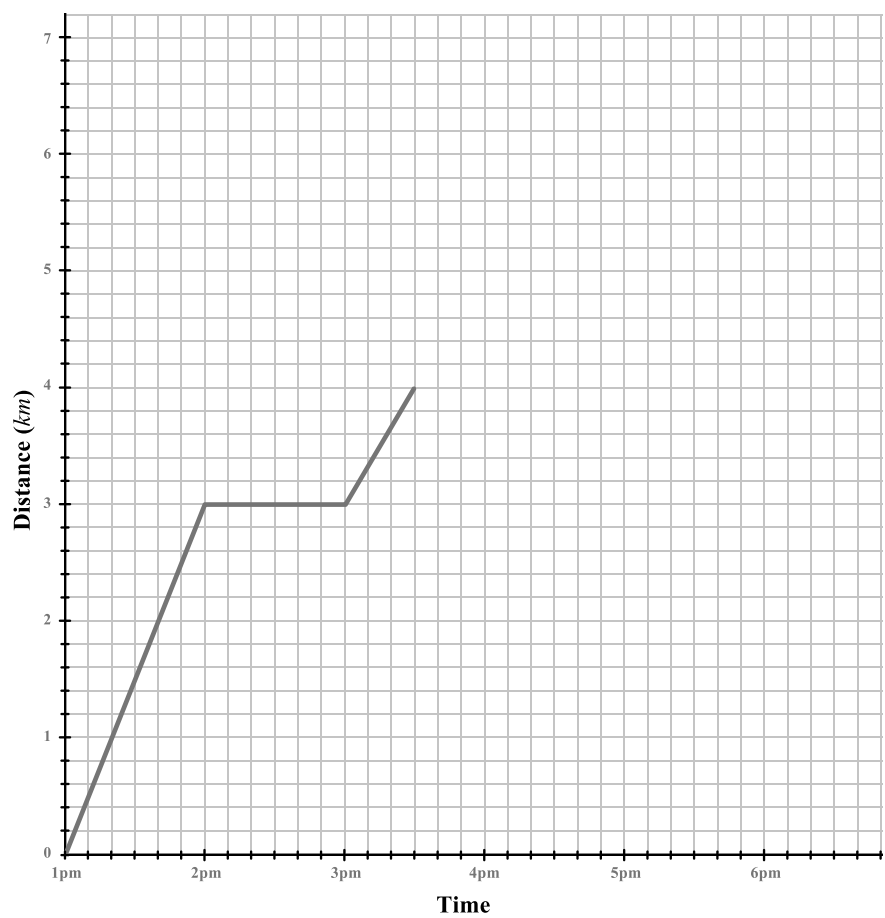
1          4          9          16

Write down the next two terms in the sequence.

....., ..... [2]

**Turn over**

8 Hollie walked 3km to a friend's house.  
Hollie stopped at her friend's house before walking to the post box to post a letter.  
The travel graph below shows Hollie's journey.



(a) How long did Hollie spend at her friend's house?

----- [1]

(b) After posting her letter, Hollie walked straight home. It took her 1 hour and 30 minutes.  
Complete the travel graph.

[2]

9 The probability that Nathaniel is late to work is 0.2.

(a) What is the probability that Nathaniel is on time?

(a) ..... [1]

(b) The probability that Liv is late for work is  $\frac{1}{8}$ .

Who is most likely to be late for work?

You must show how you decide.

(b) ..... [2]

(c) What is the probability that Nathaniel is late on both Monday and Tuesday?

(c) ..... [2]

---

10 Fill in the boxes to make these calculations correct:

(a) 

|    |
|----|
| 48 |
|----|

|        |
|--------|
| $\div$ |
|--------|

|       |
|-------|
| ..... |
|-------|

|   |
|---|
| = |
|---|

|    |
|----|
| -8 |
|----|

(b) 

|    |
|----|
| -5 |
|----|

|   |
|---|
| + |
|---|

|       |
|-------|
| ..... |
|-------|

|          |
|----------|
| $\times$ |
|----------|

|   |
|---|
| 2 |
|---|

|   |
|---|
| = |
|---|

|   |
|---|
| 3 |
|---|

[2]

**Turn over**

**11** A television costs £420.

- (a)** There is a 15% sale at the shop where the television is sold.

Show that the cost of the television in the sale is £357.

**[2]**

- (b)** Jordan buys a television in the sale.

He pays £57 now and splits the rest over 24 equal monthly payments.

How much does Jordan pay each month?

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

**12** Here are some algebraic statements.

$$s = \frac{d}{t}$$

$$4ab$$

$$2(x + 4) = 2x + 8$$

$$m < 5$$

$$f + 1 = 7$$

From the list above, write down an example of each of the following:

- (a)** An equation

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

- (b)** An identity

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

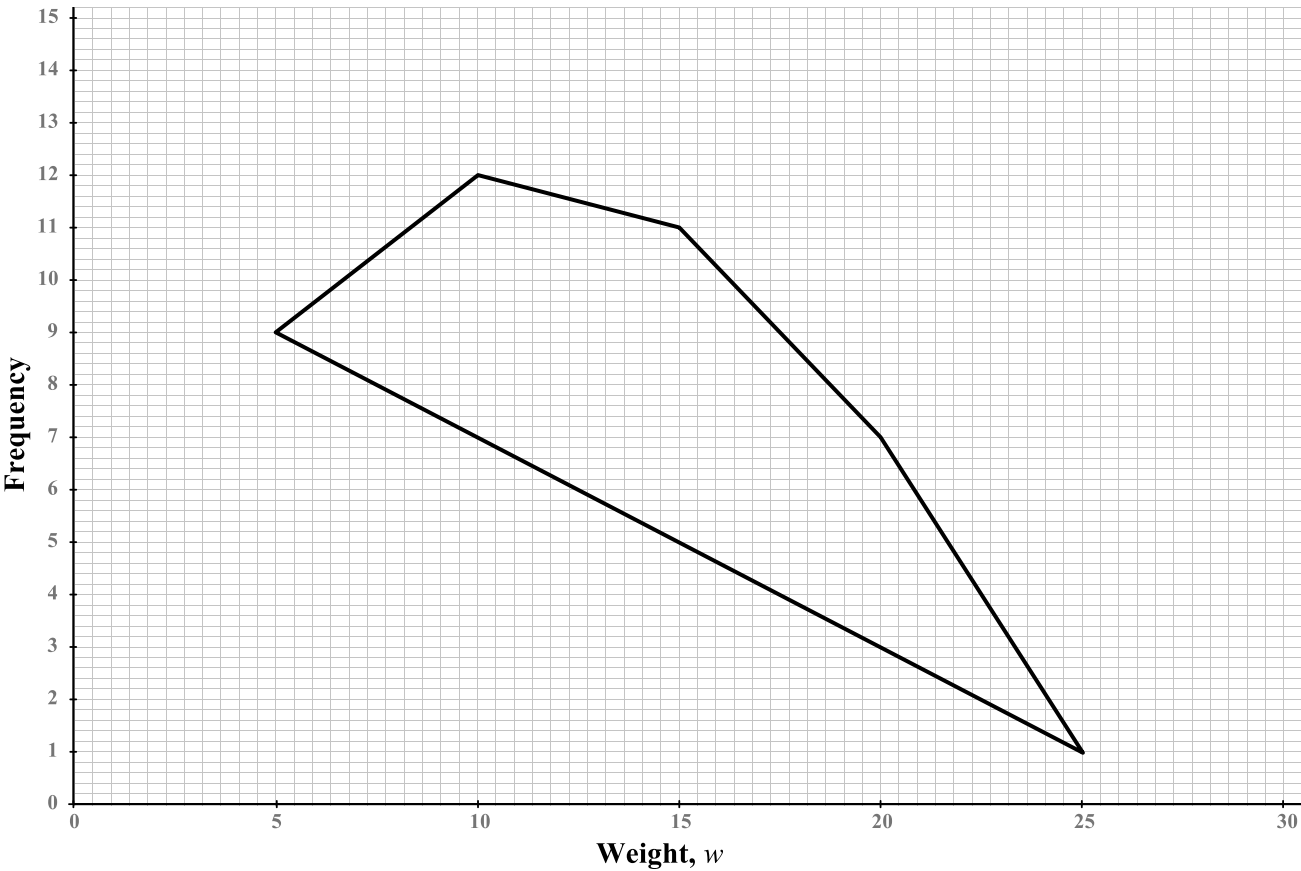
- (c)** An inequality

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

13 The grouped frequency table gives information about the weights of 40 dogs.

| Weight, $w$      | Frequency |
|------------------|-----------|
| $5 < w \leq 10$  | 9         |
| $10 < w \leq 15$ | 12        |
| $15 < w \leq 20$ | 11        |
| $20 < w \leq 25$ | 7         |
| $25 < w \leq 30$ | 1         |

This incorrect frequency polygon has been drawn for the information in the table.



Write down two mistakes that have been made.

1. ....
- .....
2. ....
- .....

[2]

Turn over

14 Alex is going on a sports camp. He needs to pick two sports from the following:

|                |
|----------------|
| Football (F)   |
| Rugby (R)      |
| Hockey (H)     |
| Basketball (B) |

Complete the table to show all of the possible combinations that Alex can pick.

| Sport 1 | Sport 2 |
|---------|---------|
| F       | R       |
|         |         |
|         |         |
|         |         |
|         |         |
|         |         |

[2]

- 15** A pizza restaurant has some small blocks of cheese and some large blocks of cheese in the ratio 2:5.

Small blocks of cheese weigh 350g.

Large blocks of cheese weigh 600g.

In total there are 42 blocks of cheese.

The restaurant needs 24kg of cheese. Do they have enough cheese?

Show how you decide.

because

[4]

- 16 (a)** Write 84 as a product of its prime factors.

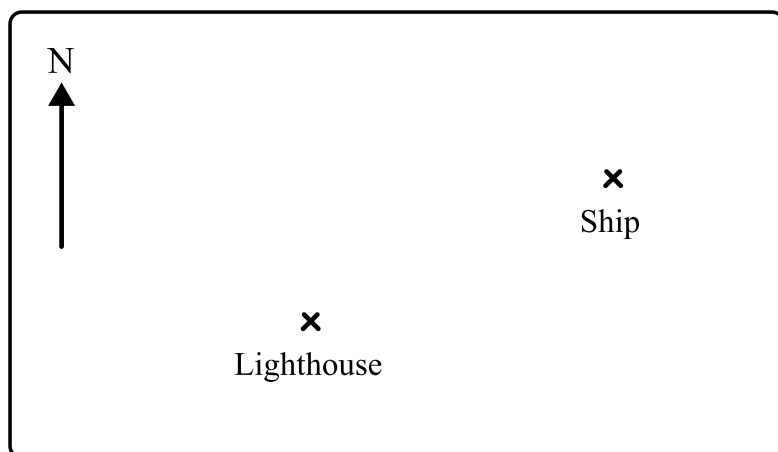
(a) ..... [2]

- (b)** Find the lowest common multiple of 84 and 30 .

(b) ..... [2]

**Turn over**

- 17** The diagram shows the position of a lighthouse and a ship.



Scale: 1 centimetre represents 20 kilometres

- (a)** Measure the bearing of the ship from the lighthouse.

**(a)** .....° [2]

- (b)** Work out the actual distance of the lighthouse from the ship.

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

- 18 (a)** Factorise  $12x + 18y$

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

- (b)** Solve  $3(4x + 2) = 54$

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

19 (a) Andy cycles from Bristol to Bath.

Andy travels  $22.8\text{km}$  in 1 hour and 30 minutes.

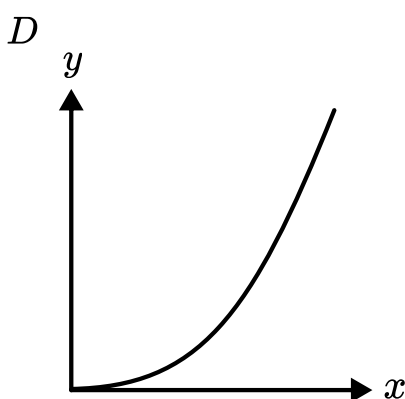
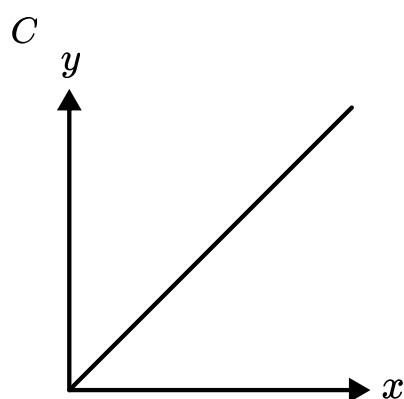
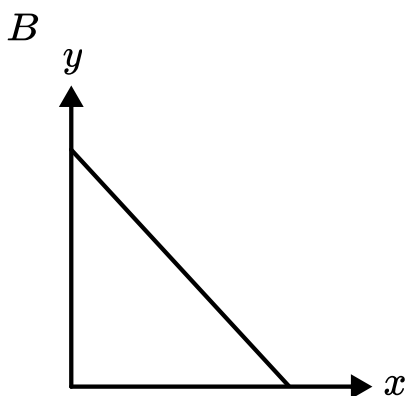
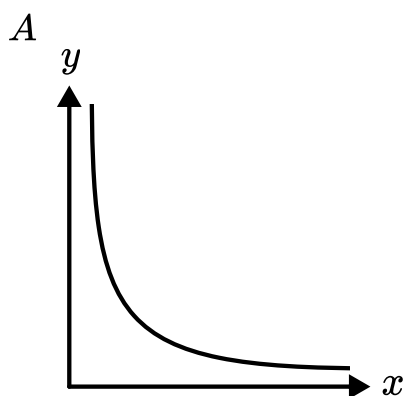
Work out Andy's average speed.

Give your answer in  $\text{km/h}$ .

(a) .....  $\text{km/h}$  [3]

(b) The time Andy takes to make his journey is inversely proportional to the speed at which he travels.

Which graph shows the relationship between the time taken and the speed at which Andy travels?



(b) ..... [1]

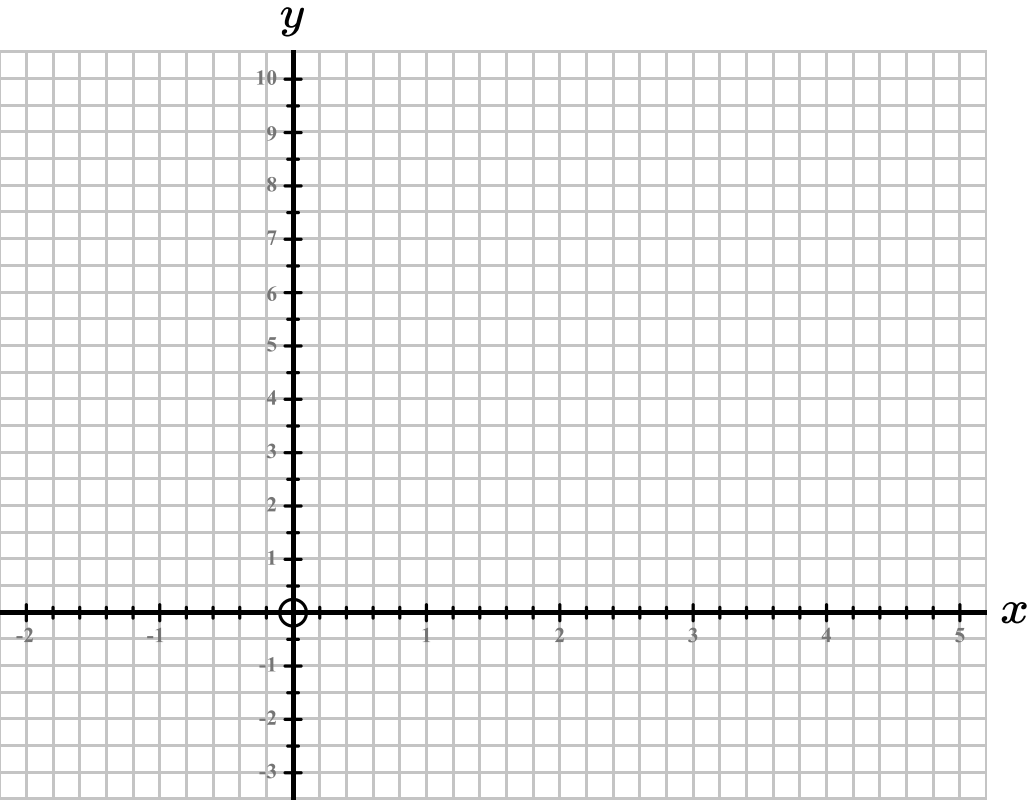
Turn over

20 (a) Complete the table of values for  $y = x^2 - 2x$

|     |    |    |   |    |   |   |   |
|-----|----|----|---|----|---|---|---|
| $x$ | -2 | -1 | 0 | 1  | 2 | 3 | 4 |
| $y$ |    | 3  |   | -1 | 0 |   | 8 |

[2]

(b) On the grid, draw the graph of  $y = x^2 - 2x$



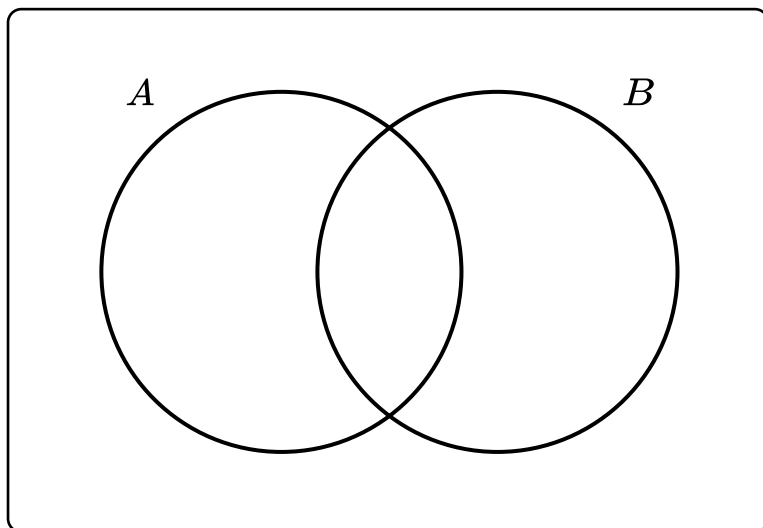
[2]

(c) Use your graph to write down the values of  $x$  for which  $x^2 - 2x = 3$

(c)  $x =$  \_\_\_\_\_ or  $x =$  \_\_\_\_\_ [2]

- 21**  $\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15\}$   
 $A = \{\text{factors of } 30\}$   
 $B = \{\text{prime numbers}\}$

Complete the Venn diagram for this information.



[4]

- 22 (a)** Simplify  $p^3 \times p^4$

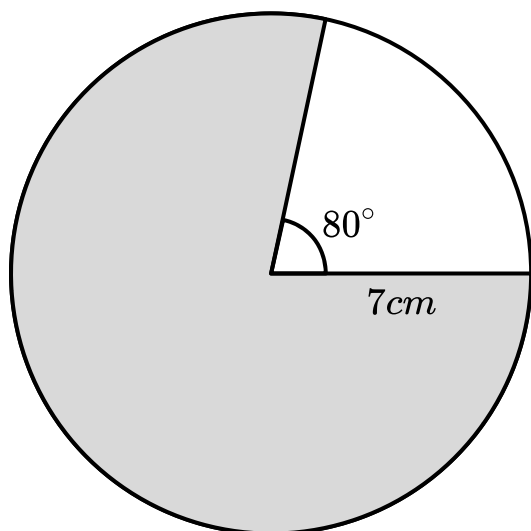
(a) ..... [1]

- (b)** Simplify  $\frac{12q^7}{3q^2}$

(b) ..... [2]

**Turn over**

23 Here is a circle.



Work out the shaded area.

Give your answer to 1 decimal place.

.....  $\text{cm}^2$  [3]

- 24 (a)** A number,  $n$ , is rounded to 1 decimal place.

The result is 8.7.

Complete the error interval for  $n$ .

**(a)** .....  $\leq n <$  ..... **[2]**

- (b)** A builder measures the length,  $w$ , of a plank of wood.

He writes

$$2.85 \leq w < 2.95$$

Put rings around all possible values of  $w$  in the list below.

2.849

2.85

2.9

2.95

2.959

2.999

**[2]**

- (c)** The distance from the builder's house to the job is 30 miles, to the nearest 10 miles.

The builder's car travels 26 miles per gallon of fuel.

The builder has 1.2 gallons of fuel in his car.

Can the builder definitely make it to the job?

You must show how you decide.

because

**[3]**

**Turn over**

25 Here is some information about the number of siblings that 32 children have.

| Number of siblings | Frequency |
|--------------------|-----------|
| 0                  | 8         |
| 1                  | 13        |
| 2                  | 7         |
| 3                  | 3         |
| 4                  | 1         |

(a) Work out the mean number of siblings.

(a) ..... [3]

(b) Explain how you know that your answer is reasonable.

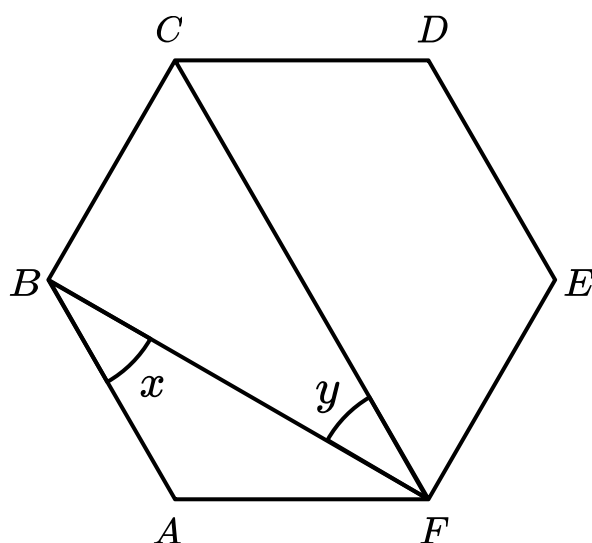
.....

.....

.....

[1]

**26** Here is a regular hexagon.



- (a)** Work out the size of angle  $x$ .  
Give reasons for each stage of your working.

**(a)** .....<sup>°</sup> [4]

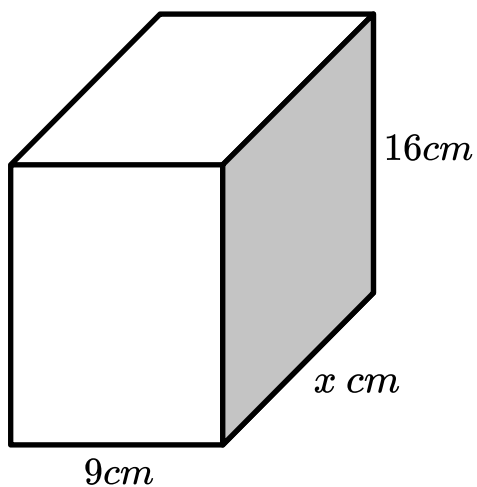
- (b)** Work out the size of angle  $y$ .

**(b)** .....<sup>°</sup> [2]

**Turn over**

- 27** A company is designing some new packaging in the shape of a cuboid.

The packaging must have a height of  $16\text{cm}$ , a length of  $9\text{cm}$  and a width of  $x\text{cm}$ , as shown below.



The company wants the surface area to be less than  $900\text{cm}^2$ .

- (a)** Show that  $50x + 288 < 900$ .

**[4]**

- (b)** Solve  $50x + 288 < 900$ .

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

- (c)**  $x$  must be an integer. Write down the greatest possible value of  $x$ .

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

**28 (a)**  $x = 4 \times 10^5$   
 $y = 6 \times 10^3$

Work out  $x + 2y$ .

Give your answer in standard form.

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

- (b)** The weight of a grain of rice is  $2.9 \times 10^{-2}$  *grams*.  
The weight of a grain of sugar is  $6.25 \times 10^{-4}$  *grams*.

Which weighs more, one grain of rice or 10 grains of sugar?

Show how you decide.

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

**END OF QUESTION PAPER**

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