Cambridge Assessment International Education

# Cambridge IGCSE™

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CANDIDATE NAME | | | | | | | | | |
| CENTRE NUMBER | | | | | | CANDIDATE NUMBER | | | | |

*3552027947*

**MATHEMATICS** **0580/32**

Paper 3 (Core) **October/November 2022**

**2 hours**

You must answer on the question paper.

You will need: Geometrical instruments

**INSTRUCTIONS**

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should use a calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.
- For $\pi$, use either your calculator value or 3.142.

**INFORMATION**

- The total mark for this paper is 104.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **20** pages. Any blank pages are indicated.


© UCLES 2022

**1** **(a)** 2 18 27 29 39 49 80 92

From this list of numbers, write down

**(i)** a multiple of 8,

..... [1]

**(ii)** a factor of 46,

..... [1]

**(iii)** a square number,

..... [1]

**(iv)** a cube number,

..... [1]

**(v)** a prime number.

..... [1]

**(b)** Write 0.003 857 correct to

**(i)** 3 decimal places,

..... [1]

**(ii)** 3 significant figures.

..... [1]

**(c)** Anna invests \$16 000 at a rate of 3.8% per year compound interest.

Calculate the value of her investment at the end of 5 years.

\$ ..... [2]

© UCLES 2022

**(d) (i)** Write 48 as the product of its prime factors.

..... [2]

**(ii)** Find the lowest common multiple (LCM) of 48 and 126.

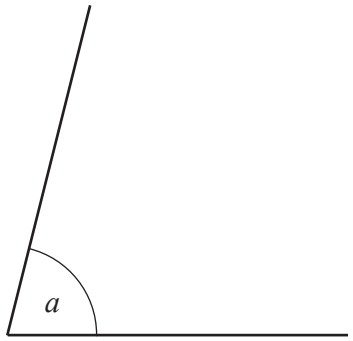
..... [2]

**(e)** The mass of a truck, $m$ tonnes, is 28.5 tonnes, correct to 1 decimal place.

Complete this statement about the value of $m$.

..... $\leqslant m <$ ..... [2]

**2 (a)**



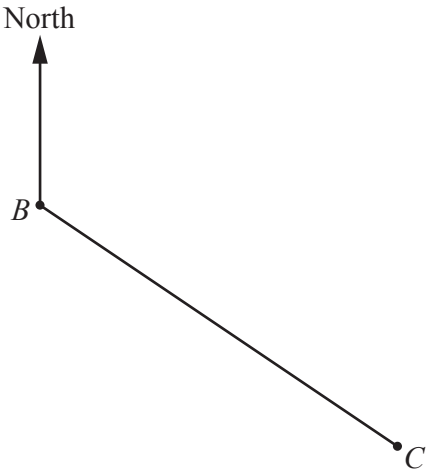

**(i)** Measure the size of angle $a$.

..... [1]

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

..... [1]

**(b)** The scale drawing shows the positions of town $B$ and town $C$.
The scale is 1 cm represents 8 km.




Scale: 1 cm to 8 km

**(i)** Work out the actual distance between town $B$ and town $C$.

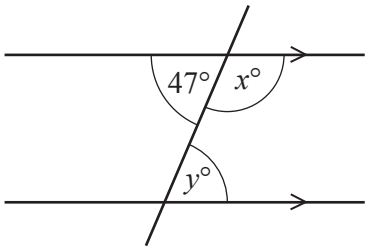
..... km [2]

**(ii)** Measure the bearing of town $C$ from town $B$.

..... [1]

© UCLES 2022

**(c)**




NOT TO SCALE

The diagram shows two parallel lines and a straight line crossing them.

Find the value of $x$ and the value of $y$.

$x =$ .....

$y =$ ..... [2]

**(d)** A triangle has angles 119°, 31° and $d$°.

Explain why this triangle is scalene.
You must show your working.

.....

..... [2]

**(e)** Find the size of one interior angle of a regular 15-sided polygon.

..... [2]

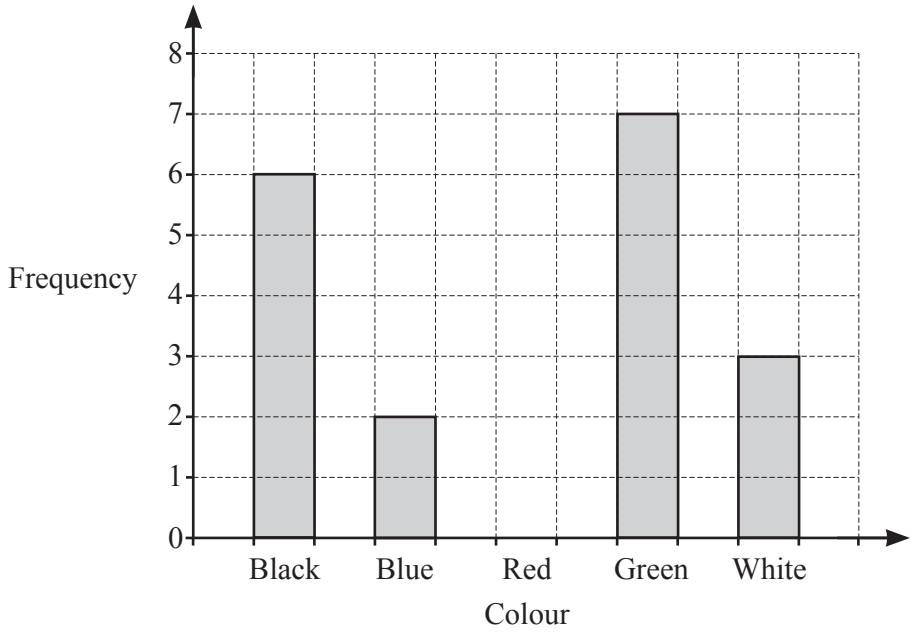
**(f)** One of the angles in a parallelogram is 64°.

Find the other three angles in this parallelogram.

..... , ..... , ..... [3]

**3** 24 people own a car.

**(a)** Ranjit asks each of these 24 people the colour of their car.
The bar chart shows some of these results.




**(i)** Complete the bar chart by drawing the bar for the colour red.

[2]

**(ii)** Write down the mode.

..... [1]

**(iii)** How many more people have a green car than have a blue car?

..... [1]

**(b)** The table shows the size, in litres, of each of the 24 car engines.

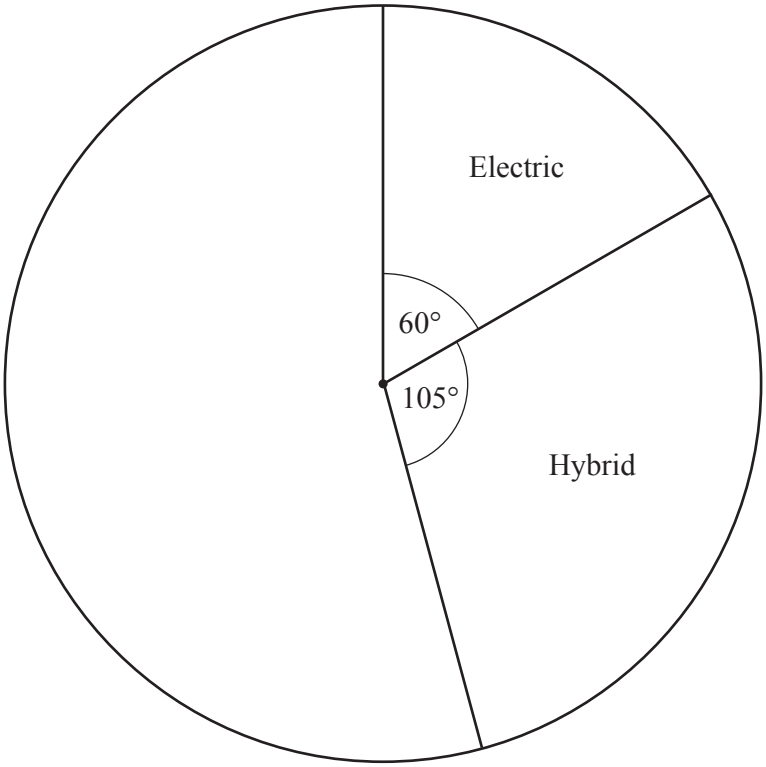
| Engine size (litres) | 0.8 | 1.2 | 1.5 | 1.8 | 2.4 |
|---|---|---|---|---|---|
| Frequency | 7 | 4 | 5 | 6 | 2 |

Calculate the mean.

..... litres [3]

© UCLES 2022

**(c)** Ranjit also asks each of the 24 people what type of car they have.
The pie chart shows some of these results.




**(i)** Work out the number of hybrid cars.

..... [2]

**(ii)** The rest of the cars are either petrol or diesel.
There are 8 petrol cars.

Complete the pie chart to show this information.

[2]

**4** Mr and Mrs Perez and their 3 children go on holiday to Tokyo.

**(a)** The holiday costs $3800 for an adult and $2400 for a child.
8% tax is then added to the cost of the holiday.

Find the total cost of the holiday, including tax, for the Perez family.

$ ..... [4]

**(b)** The plane takes 11 hours 40 minutes to fly from Los Angeles to Tokyo.
The plane leaves on Wednesday at 10 35 local time.
The local time in Tokyo is 17 hours ahead of the local time in Los Angeles.

**(i)** Find the day and local time in Tokyo when the plane arrives.

Day ..... Time ..... [3]

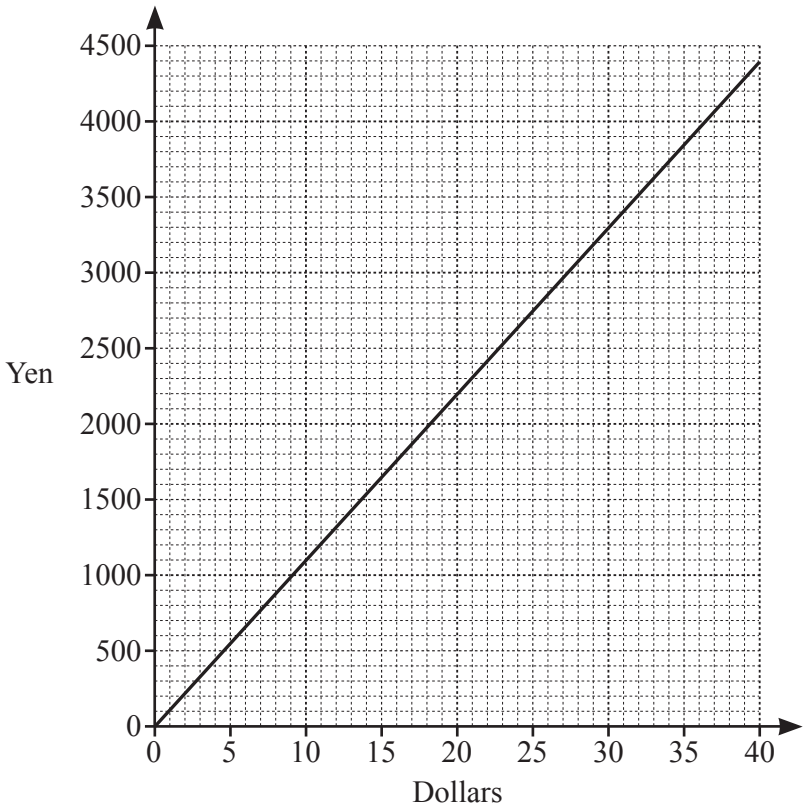
**(ii)** The distance the plane flies is 8820 km.

Calculate the average speed of the plane.

..... km/h [2]

© UCLES 2022

**(c)** The diagram shows a conversion graph between dollars and Japanese yen.




A watch costs $100.

Find the cost of this watch in yen.

..... yen [2]

**(d)** The family go to a restaurant.
The total cost of the food and drinks is $154.
The ratio cost of food : cost of drinks = 21 : 4.

Work out the cost of drinks.

$ ..... [2]

**5** **(a)** Apples cost \$$a$ per kilogram and bananas cost \$$b$ per kilogram.
Lee buys 6 kg of apples and 8 kg of bananas.

Write down an expression, in terms of $a$ and $b$, for the total cost, in dollars, of the apples and the bananas.

\$ ..... [2]

**(b)** Cara is one year older than twice Asher's age.
Brice is 22 years older than Asher.
The total of their three ages is 167.

Find the age of each person.

Asher ..... years

Brice ..... years

Cara ..... years [4]

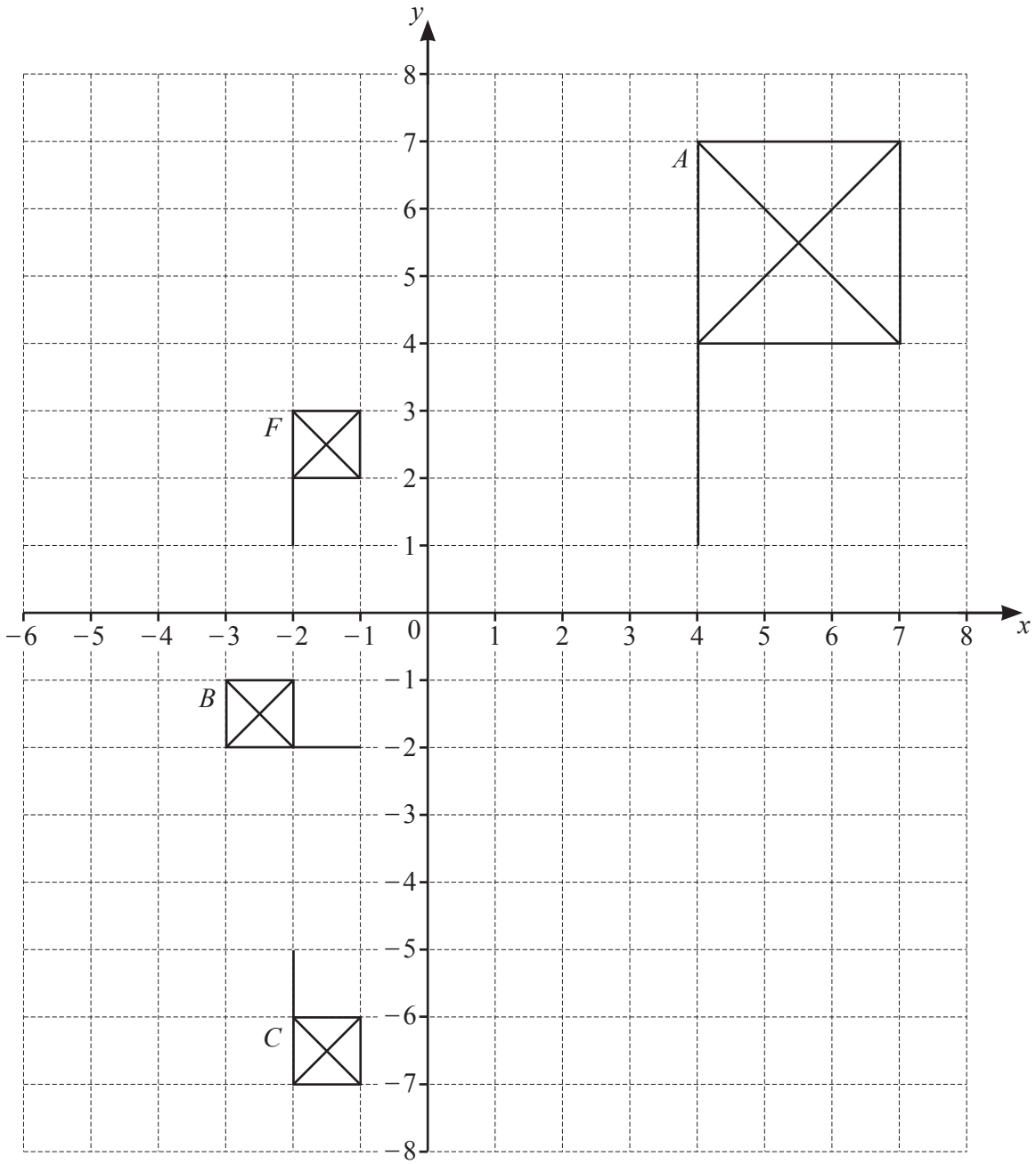
**(c)** Solve the simultaneous equations.
You must show all your working.

$$3x + 2y = 21$$
$$2x - 5y = 33$$

$x =$ .....

$y =$ ..... [4]

**6** The diagram shows four flags, $F$, $A$, $B$ and $C$, on a grid.



**(a)** Describe fully the **single** transformation that maps

**(i)** flag $F$ onto flag $A$,

.....

..... [3]

**(ii)** flag $F$ onto flag $B$,

.....

..... [3]

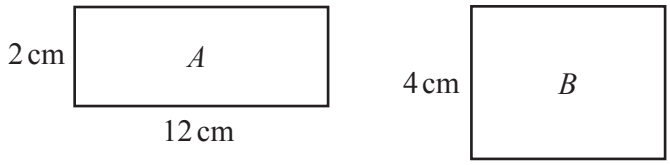
**(iii)** flag $F$ onto flag $C$.

.....

..... [2]

**(b)** On the grid, draw the image of flag $F$ after a translation by the vector $\begin{pmatrix} 3 \\ -4 \end{pmatrix}$. [2]

**7** **(a)**




NOT TO SCALE

The area of rectangle $A$ is equal to the area of rectangle $B$.

Work out which rectangle has the greater perimeter and by how much.

Rectangle ..... has the greater perimeter by ..... cm [4]

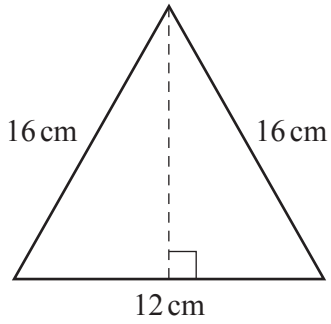
**(b)** A circle has an area of $150\,cm^2$.

Calculate the radius of this circle.

..... cm [3]

© UCLES 2022

**(c)**




NOT TO SCALE

An isosceles triangle has base 12 cm and sides 16 cm.

Find the area of this triangle.

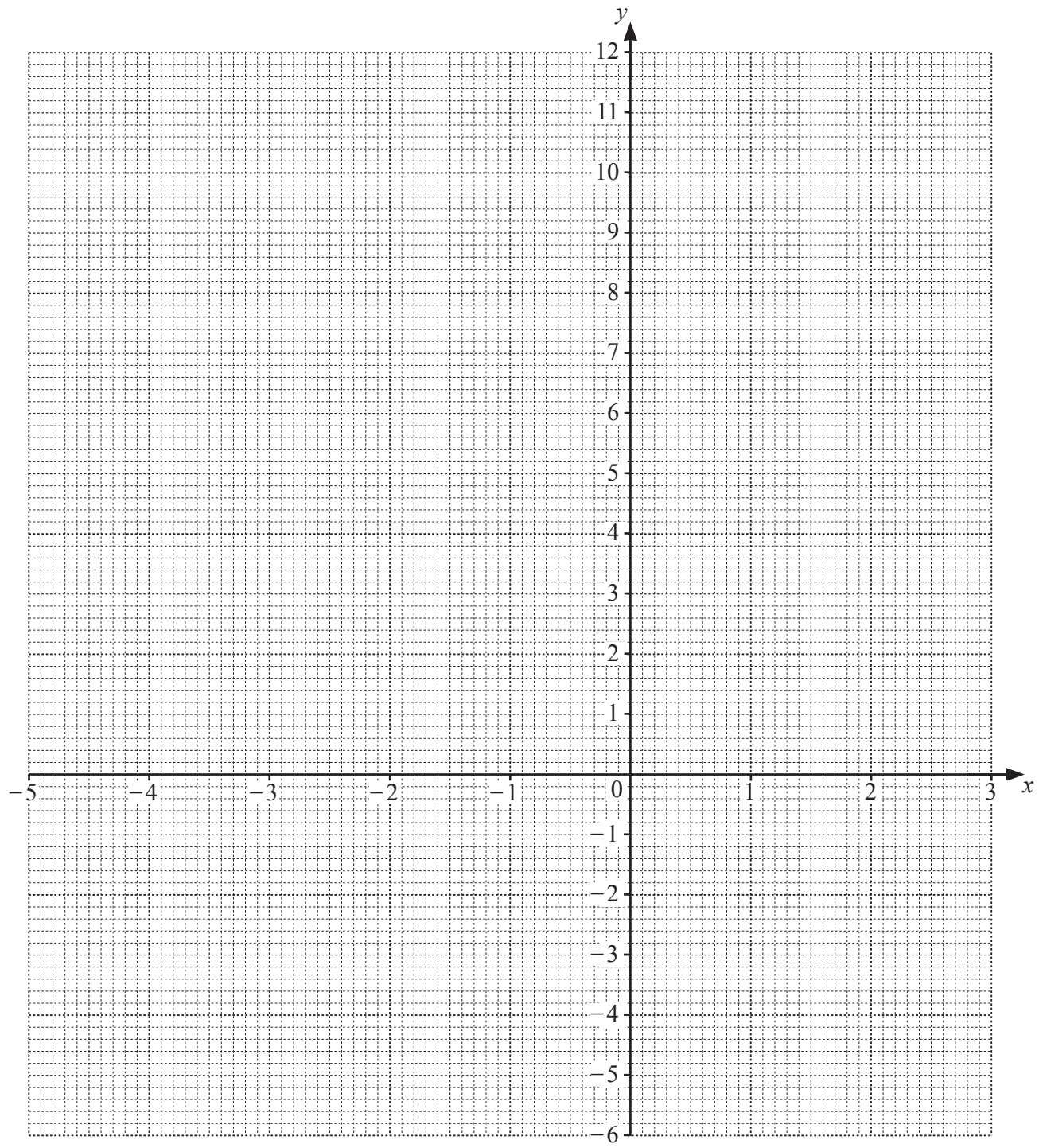
..... $cm^2$ [5]

**8** **(a)** **(i)** Complete the table of values for $y = x^2 + 2x - 4$.

| $x$ | −5 | −4 | −3 | −2 | −1 | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|---|---|
| $y$ | 11 | | −1 | | | | −1 | | 11 |

[3]

**(ii)** On the grid, draw the graph of $y = x^2 + 2x - 4$ for $-5 \leqslant x \leqslant 3$.




[4]

**(iii)** Write down the equation of the line of symmetry of the graph.

..... [1]

**(iv)** Use your graph to solve the equation $x^2 + 2x - 4 = 0$.

$x =$ ..... or $x =$ ..... [2]

**(b)** A line $L$ has an equation of $y = 5x + 7$.

Write down the equation of the line parallel to $L$ that passes through $(0, -2)$.

..... [2]

**9** **(a)** Write down the reciprocal of $\frac{1}{3}$.

..... [1]

**(b)** Write down the value of $3^0$.

..... [1]

**(c)** Find a fraction between $\frac{3}{25}$ and $\frac{4}{25}$.

..... [1]

**(d)** Find the difference in temperature between −5 °C and 9 °C.

..... °C [1]

**(e)** Write in standard form.

**(i)** 5 600 000

..... [1]

**(ii)** 0.000 072

..... [1]

**(f)** Calculate $(5.2 \times 10^6) \times (3.8 \times 10^{-2})$.
Give your answer in standard form.

..... [1]

**BLANK PAGE**

**BLANK PAGE**

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of Cambridge Assessment. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which is a department of the University of Cambridge.

© UCLES 2022