Cambridge Assessment International Education

Cambridge IGCSE™

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1383446504

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/32**

Paper 3 (Core) **May/June 2020**

1 hour 45 minutes

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 graphic display calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly and you will be given marks for correct methods, including sketches, even if your answer is incorrect.
- 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 π, use your calculator value.

INFORMATION

- The total mark for this paper is 96.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **20** pages. Blank pages are indicated.

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Formula List

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle, radius r.	$A = \pi r^2$
Circumference, C, of circle, radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Curved surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$

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Answer **all** the questions.

1 **(a)** Write down a multiple of 7.

..... [1]

(b) Here are the factors of 99.

1 3 9 11 33 99

Write down the factors that are prime.

..... [2]

(c) Write down all of the factors of 20.

..... [2]

(d) Write 54 as a product of its prime factors.

..... [2]

(e) For an activity, students are split into groups.
The students can be split exactly either into groups of 15 or into groups of 21.

Work out the smallest number of students taking part in the activity.

..... [2]

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2 **(a)** The temperature, in °C, in each of five cities is listed in the table.

City	Temperature (°C)
Amsterdam	−4
Dublin	5
Oslo	−11
Venice	6
Warsaw	9

(i) Write down which city is the coldest.

..... [1]

(ii) Work out the difference in temperature between Amsterdam and Warsaw.

..... °C [1]

(iii) Work out the difference in temperature between Amsterdam and Oslo.

..... °C [1]

(b) Chris climbs from Kathmandu to the top of Mount Everest.
He uses this formula to find the temperature, T °C, at different heights, H metres, above sea level.

$$T = -0.008 \times H + 30$$

(i) The top of Mount Everest is 8850 m above sea level.

Show that the temperature at the top of Mount Everest is −40.8 °C.

[1]

(ii) Kathmandu is 1400 m above sea level.

Work out the temperature in Kathmandu.

..... °C [1]

(iii) The temperature at Everest Base Camp is −12.4 °C.

Work out the height of Everest Base Camp above sea level.

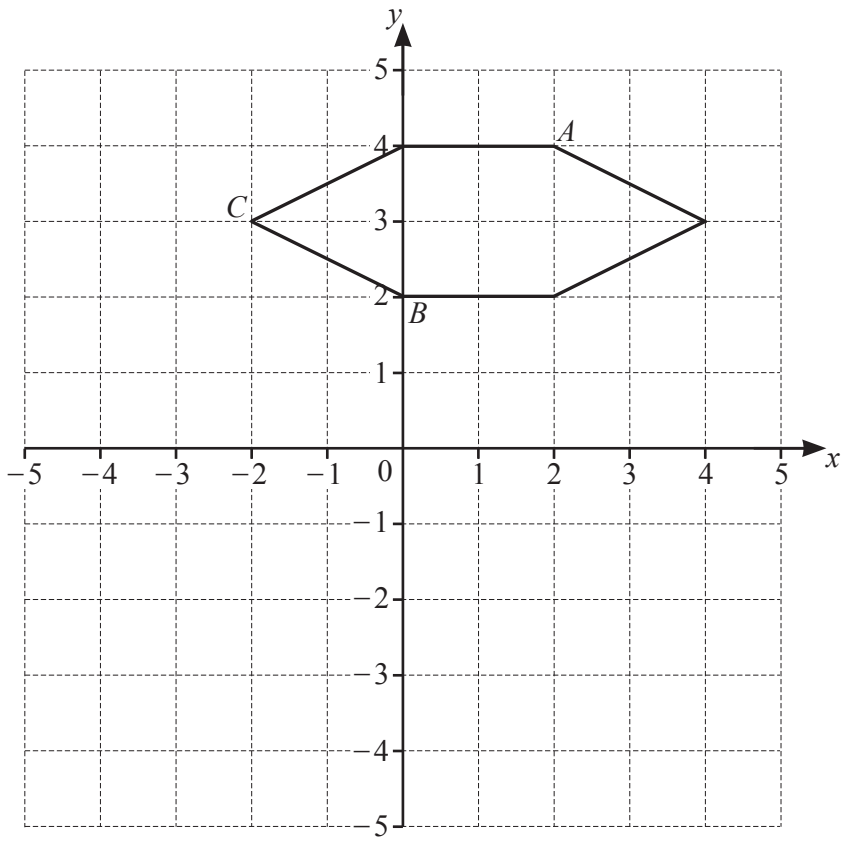
..... m [2]

(iv) Rearrange this formula to make H the subject.

$$T = -0.008 \times H + 30$$

$H =$ ..... [2]

3 (a)



The diagram shows a hexagon drawn on a $1\,cm^2$ grid.

(i) Write down the coordinates of

(a) point A,

(..... , ...) [1]

(b) point B,

(..... , ...) [1]

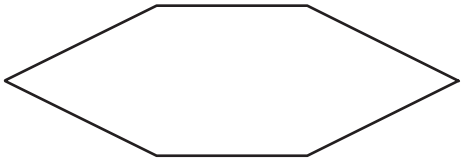
(c) point C.

(..... , ...) [1]

(ii) On the grid, draw the reflection of the hexagon in the x-axis. [2]

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(b)



(i) Write down the order of rotational symmetry of this shape.

..... [1]

(ii) On the shape above, draw all the lines of symmetry. [2]

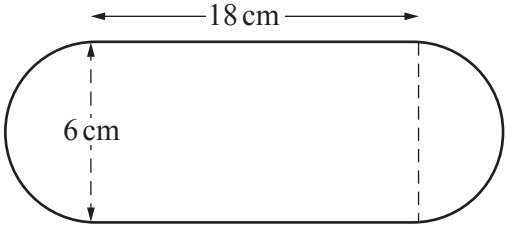
4 **(a)** Use the correct mathematical word to complete each sentence.

(i) The distance around the edge of a circle is the ..... . [1]

(ii) A straight line which touches the edge of a circle once only is a ..... . [1]

(iii) A straight line from the edge of a circle to its centre is a ..... . [1]

(b)



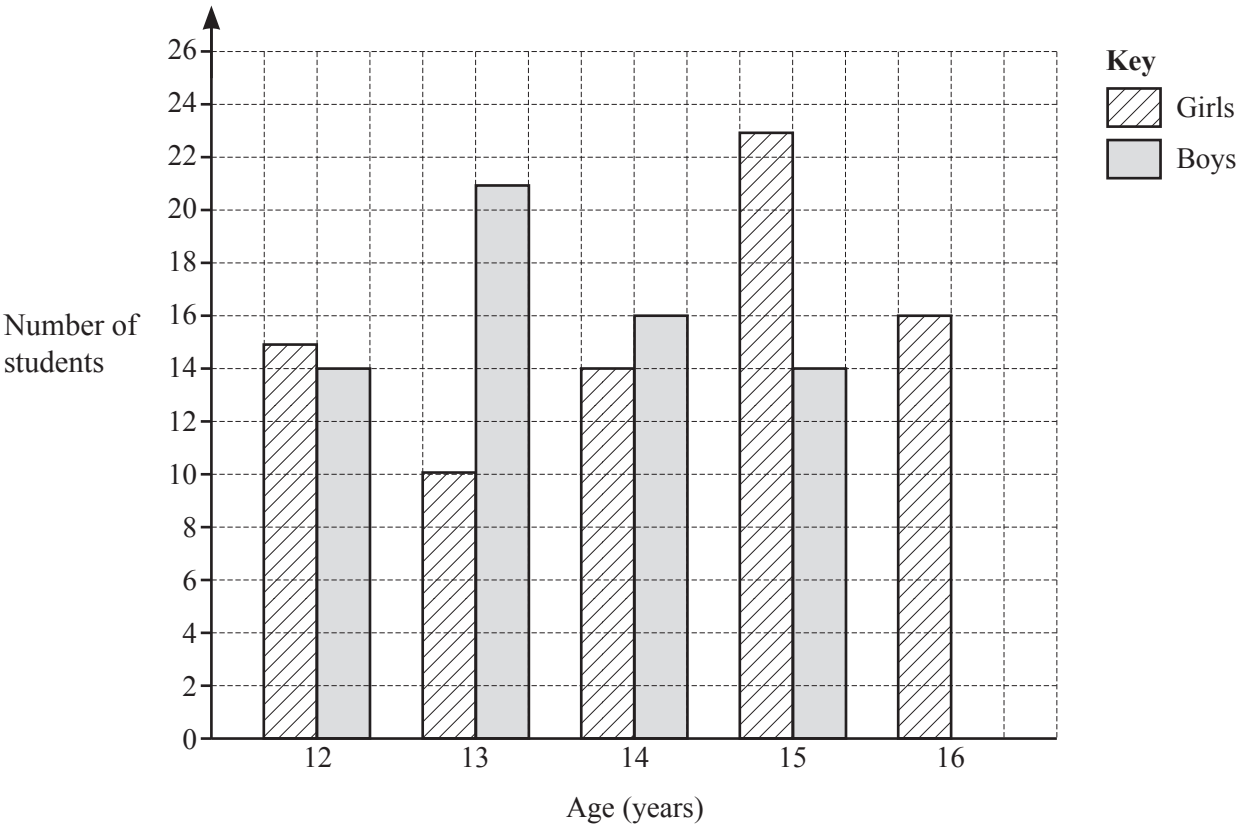
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This shape is a rectangle joined to two semicircles.

Work out the total area of this shape.
Give the units of your answer.

.... [5]

5 **(a)** The bar chart shows the numbers of girls and boys in a village school and their ages.



(i) There are 19 boys aged 16 in the school.

Complete the bar chart. [1]

(ii) For students aged 13, work out how many more boys than girls there are.

..... [1]

(iii) Find the total number of students aged 12.

..... [1]

(iv) Find the total number of girls in the school.

..... [1]

(v) Which age has the largest total number of students?

..... [1]

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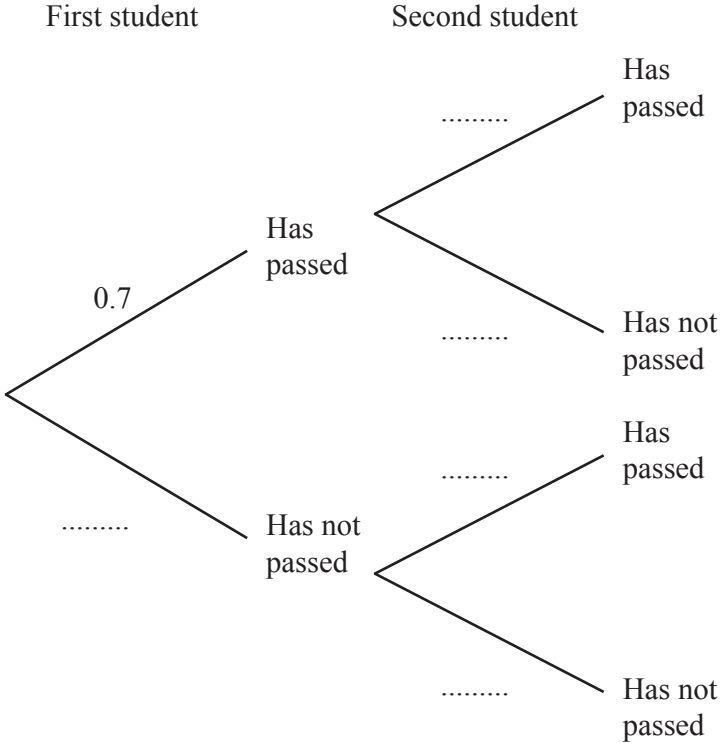
(b) In a country there are 11.5 million children.
The probability that one of these children has measles is 0.2 .

Work out the expected number of these children that have measles.

..... million [2]

(c) In a town, the probability that a student aged 17 has passed their driving test is 0.7 .
Two students aged 17 are chosen at random from the town.

(i) Complete the tree diagram.



[2]

(ii) Work out the probability that both students have **not** passed their driving test.

..... [2]

6 **(a)** Write each of these ratios in its simplest form.

(i) 6 : 30

..... : ..... [1]

(ii) 75 cents : 2 dollars

..... : ..... [2]

(b) **(i)** One year, Amir earns $85 000.
He pays $\frac{1}{5}$ of this in tax.

Work out how much Amir pays in tax.

$ ..... [1]

(ii) The next year, the $85 000 that Amir earns is increased by 3%.

Work out how much Amir now earns.

$ ..... [2]

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(iii) Another year, Amir receives a bonus of $8400.
He decides to use this bonus for savings and for pleasure in the ratio

savings : pleasure = 1 : 5.

Work out how much of the bonus Amir uses for savings and how much he uses for pleasure.

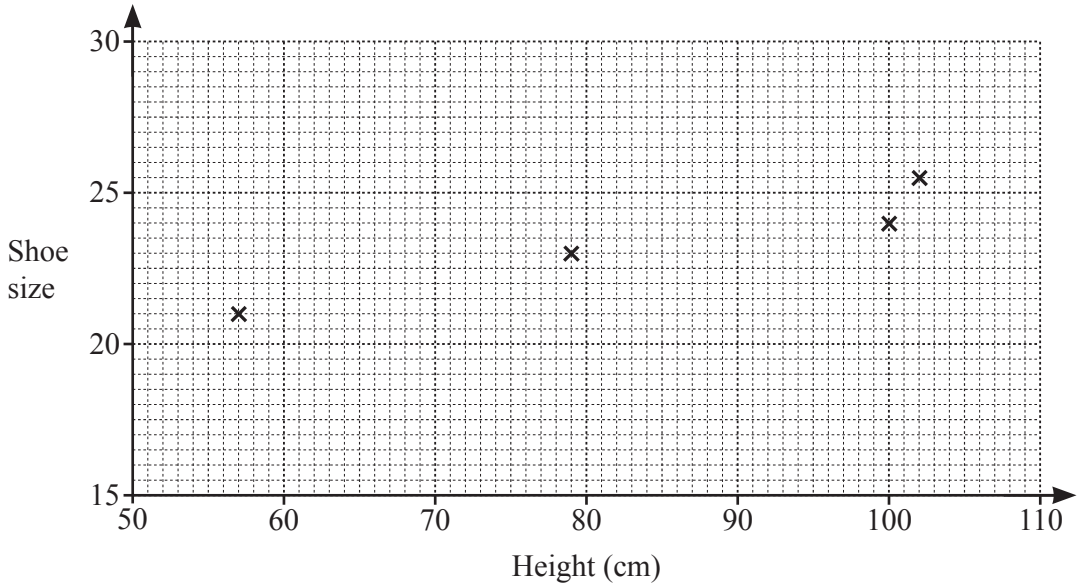
Savings $ .....

Pleasure $ ..... [2]

7 The table shows the height and the shoe size of each of eight children.

Height (cm)	57	79	102	100	92	81	109	60
Shoe size	21	23	25.5	24	25	24	27.5	22

(a) Complete the scatter diagram.
The first four points have been plotted for you.



[2]

(b) What type of correlation is shown in the scatter diagram?

..... [1]

(c) **(i)** Work out the mean height and the mean shoe size.

Mean height = ... cm

Mean shoe size = ... [2]

(ii) On the scatter diagram, draw a line of best fit. [2]

(d) Use your line of best fit to estimate the shoe size of a child with height 70 cm.

..... [1]

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8 **(a)** **(i)** $7 \times 7 \times 7 \times 7 \times 7 \times 7 = 7^n$

Write down the value of n.

$n =$ ..... [1]

(ii) Write down the value of 7^0.

..... [1]

(b) Simplify fully.

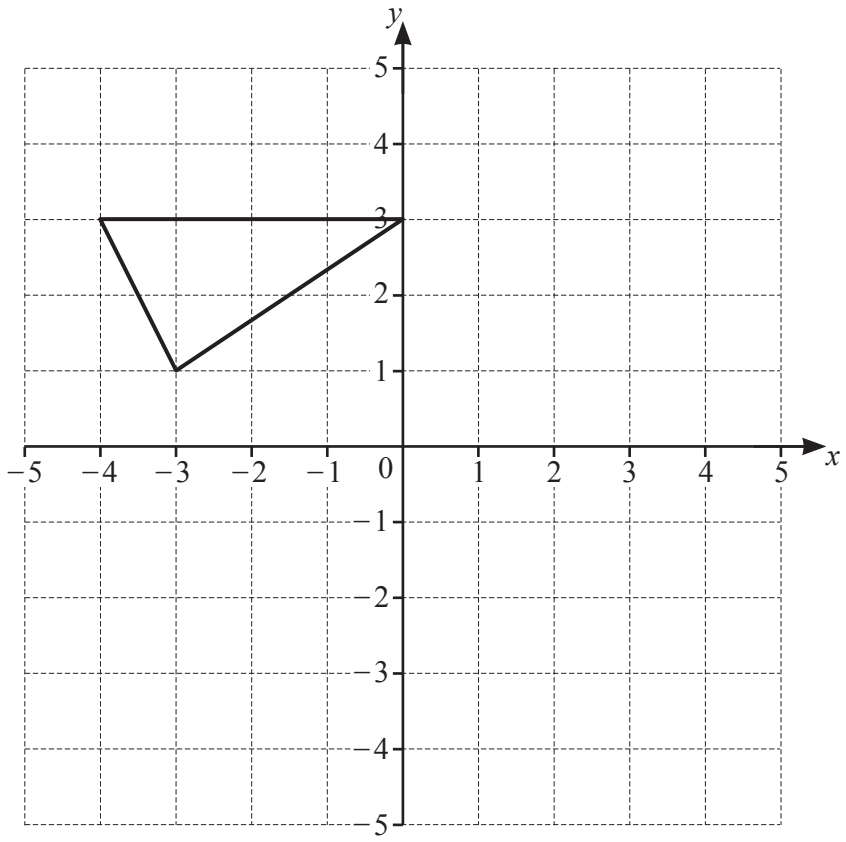
(i) $\frac{2x}{7} \times \frac{3}{4}$

..... [2]

(ii) $\frac{x}{7} \div \frac{x}{2}$

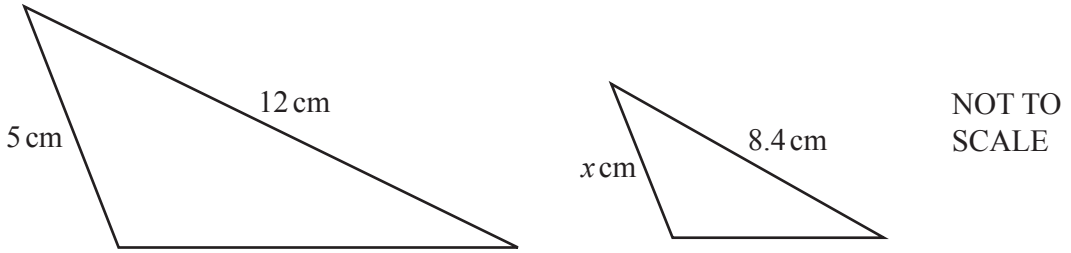
..... [3]

9 (a)



Rotate the triangle by 90° clockwise about (0, 0). [2]

(b)

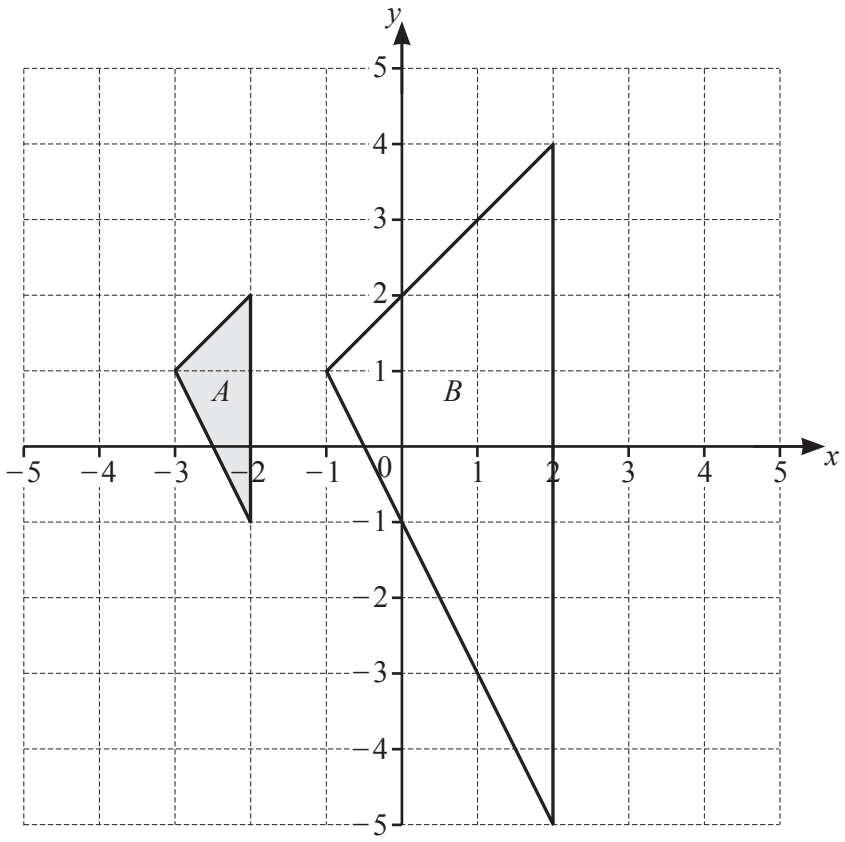


These two triangles are mathematically similar.

Work out the value of x.

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

(c)



Describe fully the **single** transformation that maps triangle *A* onto triangle *B*.

.....

..... [3]

10 **(a)** Solve.

(i) $\frac{x}{3} = 6$

$x =$ ..... [1]

(ii) $2x - 5 \geqslant 4$

..... [2]

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

$$3x + y = 13$$
$$2x - y = 12$$

$x =$ .....

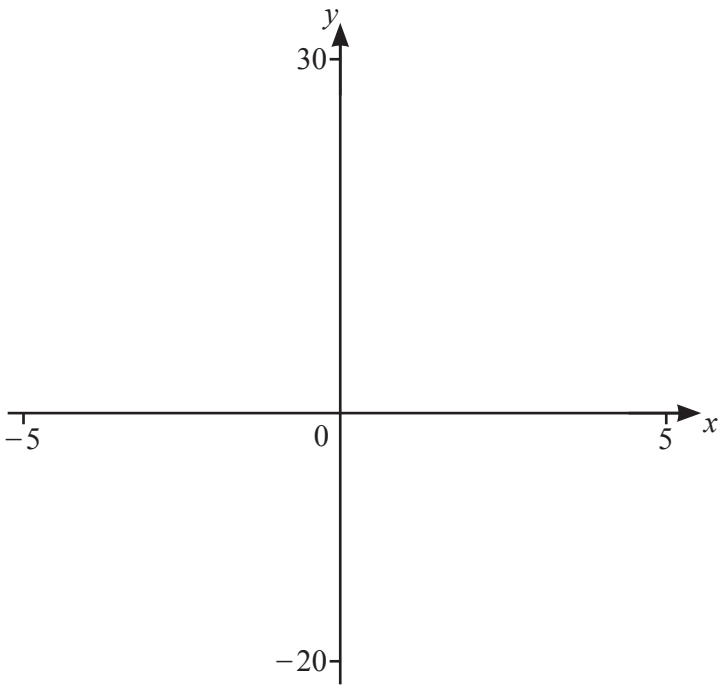
$y =$ ..... [2]

(c) Multiply out the brackets and simplify.

$$(x + 1)(x - 4)$$

..... [2]

11



(a) **(i)** On the diagram, sketch the graph of $y = x^2 + 2x - 8$ for $-5 \leqslant x \leqslant 5$. [2]

(ii) Find the coordinates of the local minimum.

(..... , ...) [1]

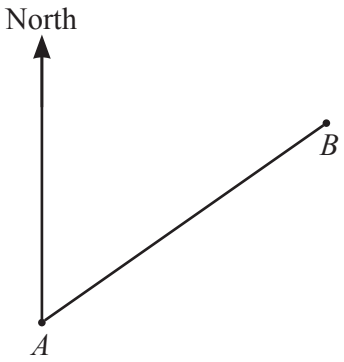
(b) On the diagram, sketch the graph of $y = 3x - 2$ for $-5 \leqslant x \leqslant 5$. [2]

(c) Find the x-coordinate of each point of intersection of

$$y = x^2 + 2x - 8 \quad \text{and} \quad y = 3x - 2 \ .$$

$x =$ ..... and $x =$ ..... [2]

12 (a)



Scale: 1 cm to 10 km

A boat sails from A to B.

(i) Measure the bearing of B from A.

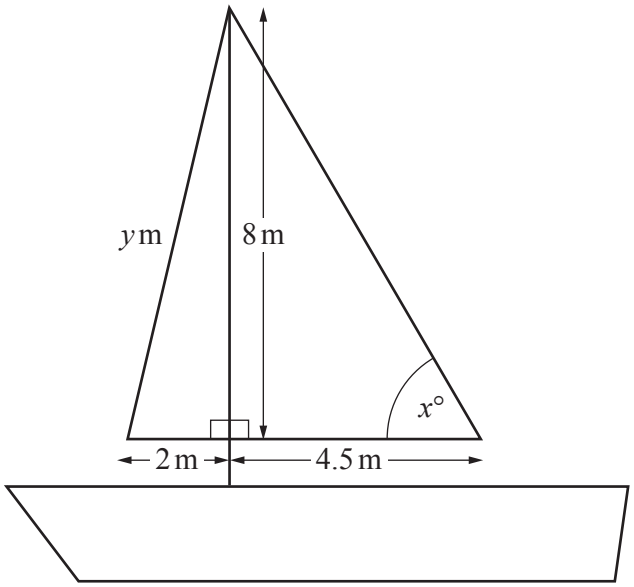
..... [1]

(ii) Work out the actual distance from A to B.

..... km [2]

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(b)



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The boat has two triangular sails.

(i) Find the value of x.

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

(ii) Find the value of y.

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

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