Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

6220165587

MATHEMATICS **0580/22**

Paper 2 (Extended) **October/November 2020**

1 hour 30 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 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 π, use either your calculator value or 3.142.

INFORMATION

- The total mark for this paper is 70.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **12** pages. Blank pages are indicated.

DC (RW/CGW) 189268/2

[Turn over

1 Write two hundred thousand and seventeen in figures.

..... [1]

2 Insert one pair of brackets to make this calculation correct.

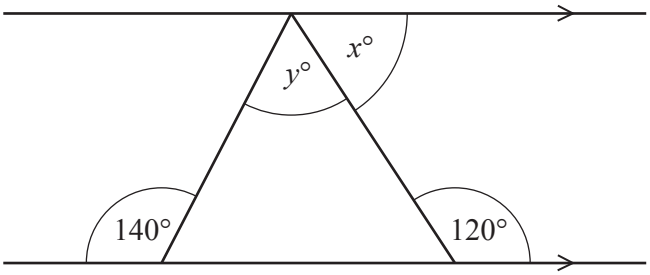
$$7 - 5 - 3 + 4 = 9$$ [1]

3 Solve the equation.

$$6 - 2x = 3x$$

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

4



NOT TO SCALE

The diagram shows a triangle drawn between a pair of parallel lines.

Find the value of x and the value of y.

$x =$ .....

$y =$ ..... [3]

5 Increase 42 by 16%.

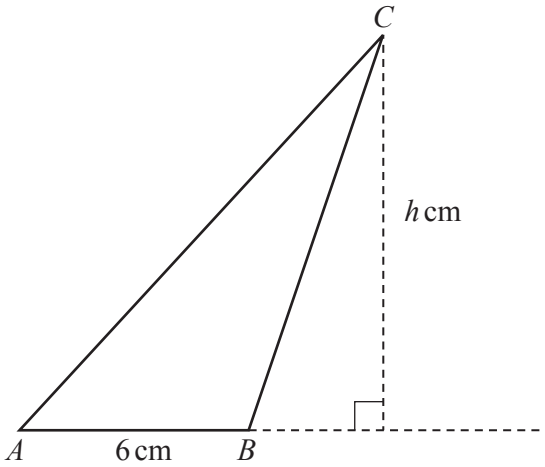
..... [2]

6 Factorise completely.

$4 - 8x$

..... [1]

7



NOT TO SCALE

The area of triangle ABC is $27\,\text{cm}^2$ and $AB = 6\,\text{cm}$.

Calculate the value of h.

$h =$ ..... [2]

8 Calculate the size of one interior angle of a regular polygon with 40 sides.

..... [2]

9 Solve the simultaneous equations.

$$2x + y = 7$$
$$3x - y = 8$$

$x =$ .....

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

10 **Without using a calculator**, work out $\frac{5}{6} \div 1\frac{1}{3}$.
You must show all your working and give your answer as a fraction in its simplest form.

..... [3]

11 Simplify.

$$2x^2 \times 5x^5$$

..... [2]

12 Alex and Chris share sweets in the ratio Alex : Chris = 7 : 3.
Alex receives 20 more sweets than Chris.

Work out the number of sweets Chris receives.

..... [2]

13 The length of one side of a rectangle is 12 cm.
The length of the diagonal of the rectangle is 13 cm.

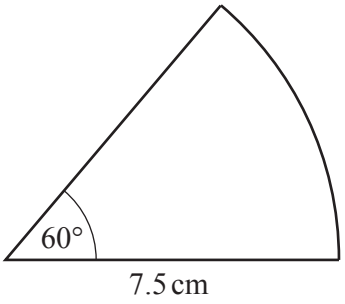
Calculate the area of the rectangle.

..... cm^2 [3]

14 Work out $(3 \times 10^{199}) + (2 \times 10^{201})$.
Give your answer in standard form.

..... [2]

15



NOT TO SCALE

Calculate the area of this sector of a circle.

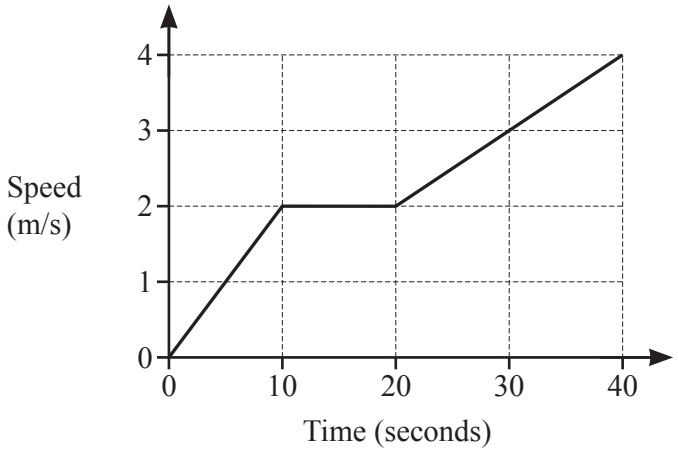
..... cm^2 [2]

16 The selling price of a shirt is $26.50 .
This includes a tax of 6%.

Calculate the price of the shirt before the tax was added.

$ ..... [2]

17



The diagram shows the speed–time graph for the first 40 seconds of a cycle ride.

(a) Find the acceleration between 20 and 40 seconds.

..... m/s^2 [1]

(b) Find the total distance travelled.

..... m [3]

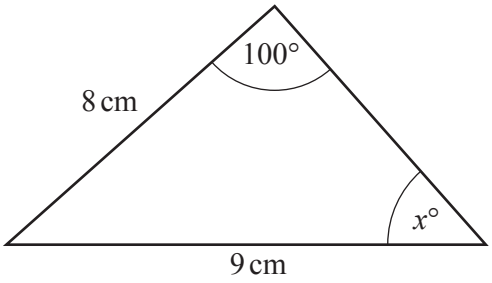
18 The sides of an isosceles triangle are measured correct to the nearest millimetre.
One side has a length of 8.2 cm and another has a length of 9.4 cm.

Find the largest possible value of the perimeter of this triangle.

..... cm [3]

[Turn over

19



NOT TO SCALE

(a) Calculate the value of x.

$x =$ ..... [3]

(b) Calculate the area of the triangle.

..... cm^2 [3]

20 A model of a statue has a height of 4 cm.
The volume of the model is 12 cm^3.
The volume of the statue is 40 500 cm^3.

Calculate the height of the statue.

..... cm [3]

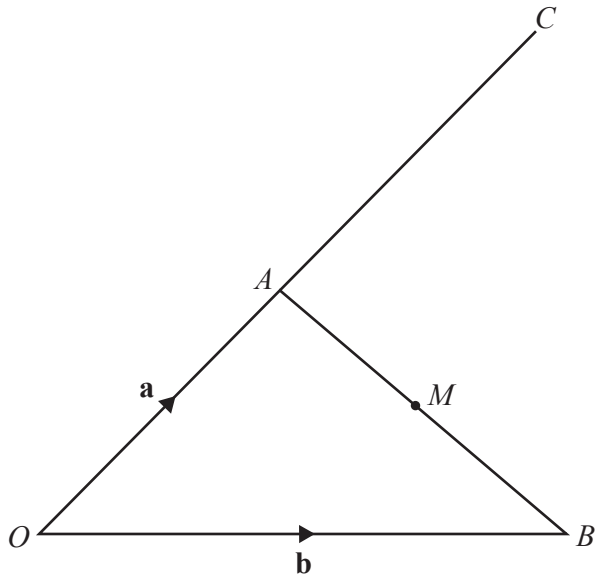
21 **(a)** Differentiate $6+4x-x^2$.

..... [2]

(b) Find the coordinates of the turning point of the graph of $y = 6+4x-x^2$.

(..... , ...) [2]

22



NOT TO SCALE

The diagram shows a triangle OAB and a straight line OAC.
$OA : OC = 2 : 5$ and M is the midpoint of AB.
$\overrightarrow{OA} = \mathbf{a}$ and $\overrightarrow{OB} = \mathbf{b}$.

Find, in terms of **a** and **b**, in its simplest form

(a) $\overrightarrow{AB}$,

$\overrightarrow{AB} =$ ..... [1]

(b) $\overrightarrow{MC}$.

$\overrightarrow{MC} =$ ..... [3]

23 Write as a single fraction in its simplest form.

$$2 - \frac{2x-1}{x+1}$$

..... [3]

24 A line from the point (2, 3) is perpendicular to the line $y = \frac{1}{3}x + 1$.
The two lines meet at the point P.

Find the coordinates of P.

(..... , ...) [5]

Questions 25 and 26 are printed on the next page.

25 Solve the equation $\tan x = 2$ for $0° \leqslant x \leqslant 360°$.

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

26 Simplify.

$$\frac{ux - 2u - x + 2}{u^2 - 1}$$

..... [4]