Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

3394678818

MATHEMATICS **0580/32**

Paper 3 (Core) **October/November 2021**

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 π, 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.

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1 **(a)** In a café at a train station, a cup of coffee costs \$3.25 and a glass of cola costs \$2.15 .
Gary buys 2 cups of coffee and 4 glasses of cola.

Work out how much change he receives from a \$20 note.

\$ ..... [3]

(b) Roy spends \$37.80 in the café on food and drink in the ratio food : drink = 7 : 2.

Work out how much he spends on food.

\$ ..... [2]

(c) The price of a \$48 train ticket is increased by 12%.

Find the new price of the ticket.

\$ ..... [2]

(d) Here is part of the timetable for trains from Washby to Dunstley.
All trains take the same time to travel from Washby to Dunstley.

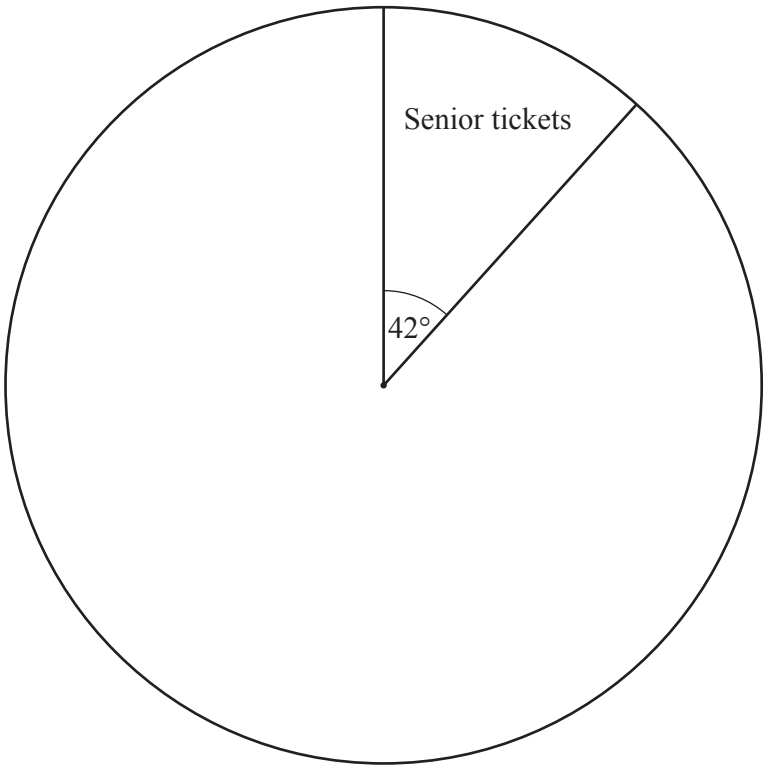
Washby	09 18	11 05
Dunstley	10 03	.....

Complete the timetable.

[2]

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(e) On one day, Washby station sells 28 senior tickets, 192 adult tickets and some child tickets.



Complete the pie chart to show this information.

[3]

2 **(a)** 8 17 26 35 49 51 72

From this list of numbers, write down

(i) a multiple of 24,

..... [1]

(ii) a square number,

..... [1]

(iii) a cube number,

..... [1]

(iv) a prime number.

..... [1]

(b) Write 420 as a product of its prime factors.

..... [2]

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(c) Find the lowest common multiple (LCM) of 30 and 84.

..... [2]

(d) By writing each number correct to 1 significant figure, show that an estimate for this calculation is 40.

$$\frac{9.875 + 18.305}{3.418} + 27.837$$

[2]

3 **(a)** Simone completes one lap of a 400 metre running track in 79 seconds.

Work out how long it will take her to run 6 km at the same rate.
Give your answer in minutes and seconds.

..... minutes ..... seconds [4]

(b) The probability that she does not win a race is 0.94 .

Find the probability that she wins a race.

..... [1]

(c) Each day she records the number of laps she runs.
Here is her record for one week.

15 42 28 16 24 15 32

(i) Write down the mode.

..... [1]

(ii) Find the median.

..... [2]

(iii) Find the range.

..... [1]

(d) Wilfred records his times, in seconds, for each of 5 laps.

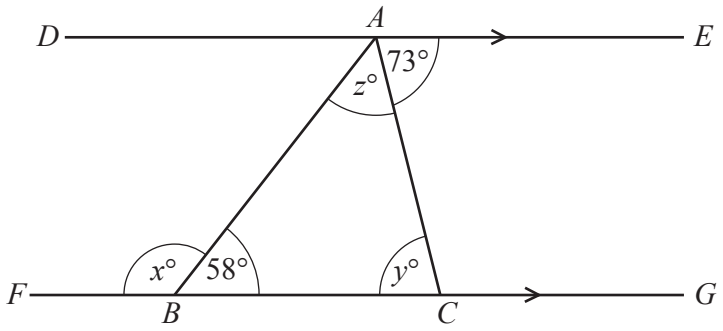
59 74 69 63 65

After running a 6th lap his mean time is 67 seconds.

Find his time for the 6th lap.

..... seconds [3]

4 (a)



NOT TO SCALE

In the diagram, ABC is a triangle.
Line DAE is parallel to line $FBCG$.

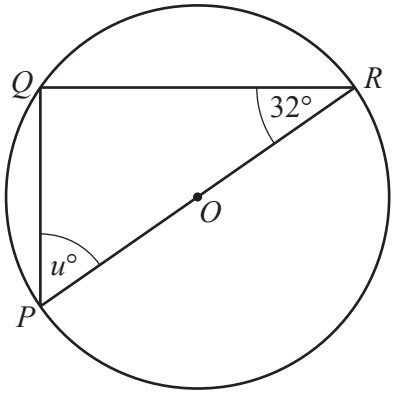
Find the value of x, the value of y and the value of z.

$x =$ .....

$y =$ .....

$z =$ ..... [3]

(b)



NOT TO SCALE

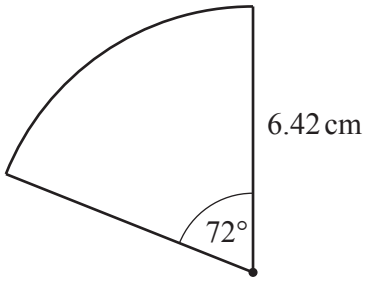
Points P, Q and R lie on a circle, centre O.

Find the value of u.

$u =$ ..... [2]

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(c)



NOT TO SCALE

The diagram shows a sector of a circle with radius 6.42 cm and sector angle 72°.

Calculate the perimeter of this sector.

..... cm [3]

5 **(a)** Simplify.

$5a-3b+7a+2b$

..... [2]

(b) Find the value of $8x-3y$ when $x=5$ and $y=-2$.

..... [2]

(c) Solve.

$6x-3=2x+8$

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

(d) $P=6t-11$

Make t the subject of this formula.

$t=$ ..... [2]

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

$$3x - 4y = 30$$
$$2x + 5y = -3$$

$x =$ .....

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

6 **(a)** Write these in order, starting with the smallest.

$$0.5806 \qquad \frac{11}{19} \qquad \frac{17}{29} \qquad 58\%$$

..... < ..... < ..... < ..... [2]

smallest

(b) Write 0.004 973 correct to

(i) 3 decimal places,

..... [1]

(ii) 2 significant figures.

..... [1]

(c) The height of a flag pole, h metres, is measured as 37.84 metres, correct to 2 decimal places.

Complete this statement about the value of h.

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

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(d) The population of Nigeria is 201 000 000, correct to 3 significant figures.

Write this population in standard form.

..... [1]

(e) The table shows the populations of some countries given in standard form, correct to 3 significant figures.

Country	Population
Brazil	2.12×10^8
China	1.42×10^9
Eritrea	5.31×10^6
France	6.55×10^7
Maldives	4.52×10^5
New Zealand	4.79×10^6

Use the information in this table to find

(i) the country with the smallest population,

..... [1]

(ii) the country with the population that is nearest to 5 million,

..... [1]

(iii) the difference between the population of Brazil and the population of France,

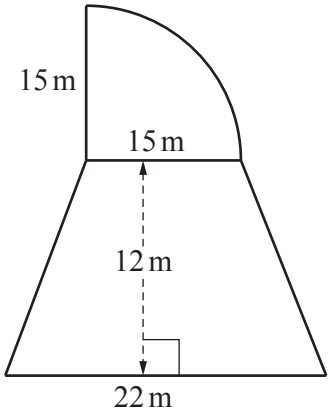
..... [1]

(iv) the value of k, correct to 2 significant figures, where

the population of China $= k \times$ the population of Eritrea.

$k =$ ..... [2]

7 (a)



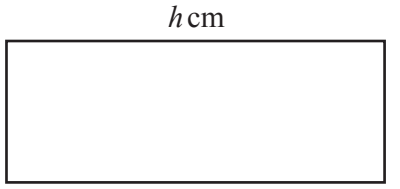
NOT TO SCALE

The diagram shows a shape made from a quarter circle and a trapezium.

Find the total area of this shape.

..... m^2 [4]

(b)



NOT TO SCALE

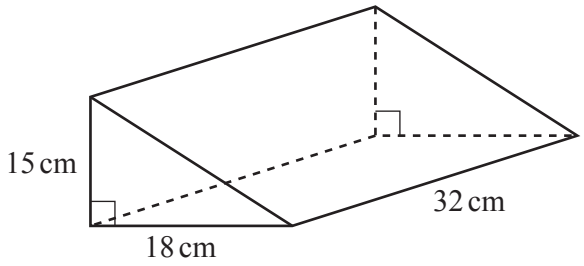
The diagram shows a rectangle.
The area of the rectangle is 387.1 cm^2.

Find the value of h.

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

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(c)



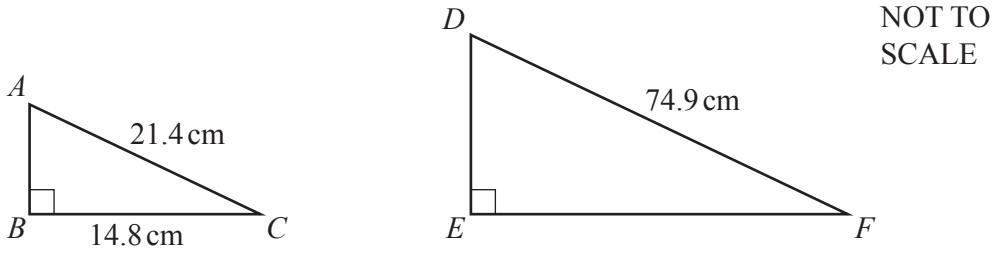
NOT TO SCALE

The diagram shows a right-angled triangular prism.

Find the volume of the prism.

..... cm^3 [3]

8 (a)



NOT TO SCALE

Right-angled triangles *ABC* and *DEF* are similar.

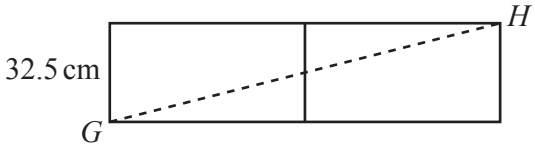
(i) Calculate *EF*.

EF = ... cm [2]

(ii) Calculate angle *BCA*.

Angle *BCA* = ... [2]

(b) The diagram shows two congruent rectangular tiles placed together.



NOT TO SCALE

The width of each tile is 32.5 cm and *GH* = 84.5 cm.

Find the length of each tile.

..... cm [4]

(c) Town *B* is 72 km from town *A* on a bearing of 058°.
Town *C* is 60 km due east of town *B*.

(i) Using a scale of 1 cm to represent 12 km, complete the scale drawing to show the positions of town *B* and town *C*.



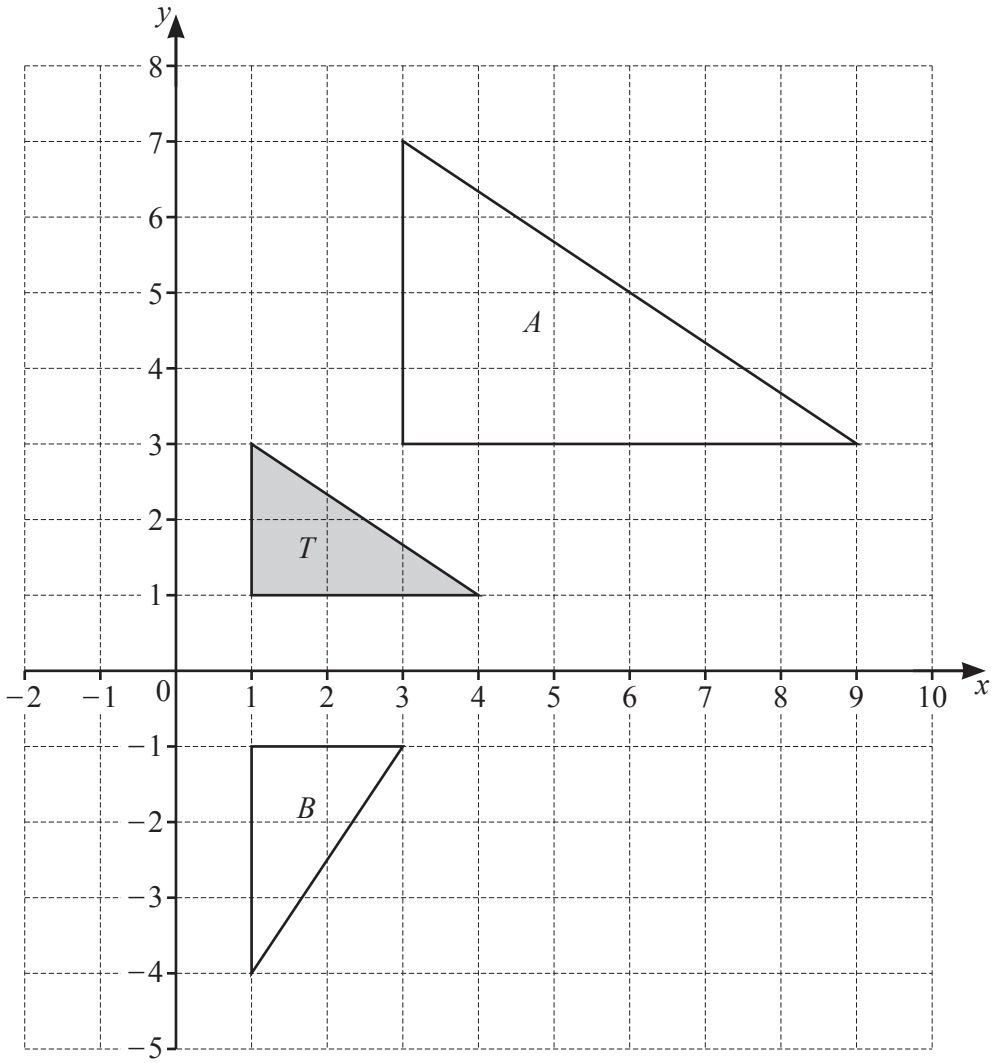
Scale: 1 cm to 12 km

[3]

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

..... [1]

9 Triangles A, B and T are shown on the grid.



(a) Describe fully the **single** transformation that maps triangle T onto triangle A.

.....

..... [3]

(b) Describe fully the **single** transformation that maps triangle T onto triangle B.

.....

..... [3]

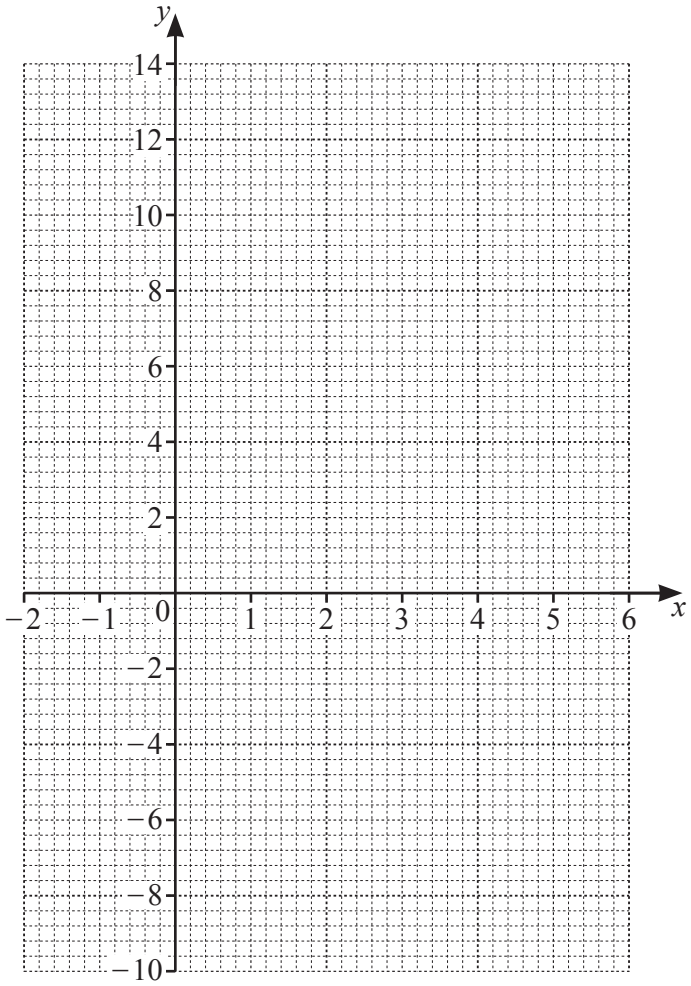
(c) On the grid, draw the image of triangle T after a translation by the vector $\begin{pmatrix} 5 \\ -3 \end{pmatrix}$. [2]

10 **(a)** Complete the table of values for $y = x^2 - 5x - 2$.

x	-2	-1	0	1	2	3	4	5	6
y		4	-2		-8	-8		-2	4

[2]

(b) On the grid, draw the graph of $y = x^2 - 5x - 2$ for $-2 \leqslant x \leqslant 6$.



[4]

(c) On the grid, draw the line $y = 2$. [1]

(d) Use your graph to solve the equation $x^2 - 5x - 2 = 2$.

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

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