Cambridge Assessment International Education

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2650226153

MATHEMATICS **0580/13**

Paper 1 (Core) **May/June 2021**

1 hour

You must answer on the question paper.

You will need: Geometrical instruments

INSTRUCTIONS

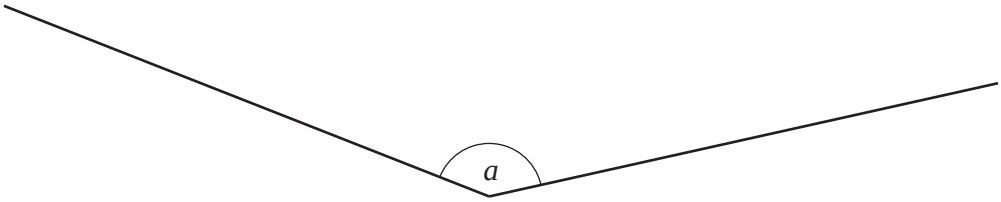
- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction 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 56.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **12** pages.

1



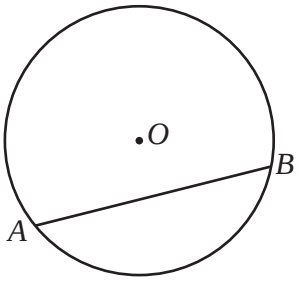
(a) Measure angle *a*.

..... [1]

(b) Write down the mathematical name for this type of angle.

..... [1]

2



NOT TO SCALE

Points *A* and *B* lie on a circle, centre *O*.

(a) Write down the mathematical name for line *AB*.

..... [1]

(b) The circle has a diameter of 16.8 cm.

Write down the radius of the circle.

..... cm [1]

3 Write down the number that is 23 less than -1.6 .

..... [1]

4 Write as a fraction in its simplest form.

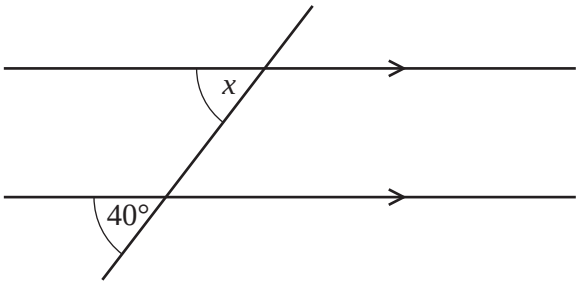
(a) 72%

..... [1]

(b) 0.004

..... [1]

5



NOT TO SCALE

The diagram shows a pair of parallel lines and a straight line.

Complete the statement with the correct geometrical reason.

$x = 40°$ because the angles are ..... [1]

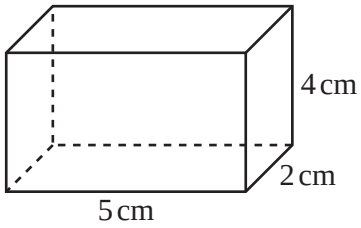
6

18 28 7 15 41 19 31 53

Calculate the mean of these numbers.

..... [2]

7 The diagram shows a box in the shape of a cuboid.
The box has an **open top**.



NOT TO SCALE

(a) On the 1cm^2 grid, draw a net of this box.

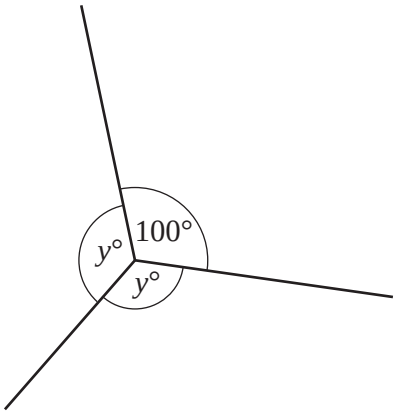
[3]

(b) The outside of the box is painted.

Work out the total area that is painted.

..... cm^2 [2]

8



NOT TO SCALE

Find the value of y.

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

9 12 18 29 49 91 125

From the list of numbers, write down

(a) a cube number,

..... [1]

(b) a prime number.

..... [1]

10 **(a)** $\mathbf{a} = \begin{pmatrix} 3 \\ -4 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} 5 \\ 2 \end{pmatrix}$

Work out.

(i) $8\mathbf{b}$

$\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

(ii) $\mathbf{a} - \mathbf{b}$

$\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

(b) Point L has coordinates $(-3, 6)$ and $\overrightarrow{LM} = \begin{pmatrix} 5 \\ -2 \end{pmatrix}$.

Find the coordinates of point M.

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

11 Maria buys n pencils that cost p cents each.
She pays with a \$$y$ note.

Find, in terms of n, p and y, the amount of change Maria receives.
Give your answer in cents.

..... cents [2]

12 Francesca spins a four-sided spinner numbered 1, 2, 3 and 4.
The table shows some of the probabilities of landing on each number.

Number	1	2	3	4
Probability	0.18	0.21	0.37	

Complete the table.

[2]

13 Alex changes 190 euros (€) into pounds (£) when £1 = €1.1723 .

Calculate the amount Alex receives.
Give your answer correct to 2 decimal places.

£ ..... [2]

14 The exterior angle of a regular polygon is 36°.

Find how many sides this polygon has.

..... [1]

15 Expand and simplify.

$$6(t-q)-2(t-3q)$$

..... [2]

16 **Without using a calculator**, work out $1\frac{2}{3} \div 7\frac{1}{2}$.
You must show all your working and give your answer as a fraction in its simplest form.

..... [3]

17 These are the first four terms of a sequence.

7 11 15 19

Find the *n*th term.

..... [2]

18 **(a)** Calculate the volume of a cylindrical vase with radius 14.2 cm and height 18 cm.

..... cm^3 [2]

(b) Change your answer to **part (a)** into litres.

..... litres [1]

19 **(a)** Write 0.000 74 in standard form.

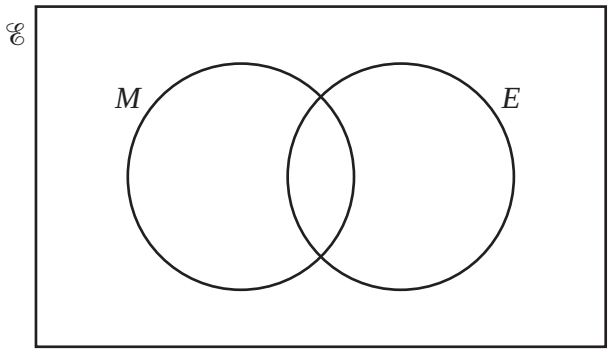
..... [1]

(b) Calculate $4.6 \times 10^2 \times 6.7 \times 10^5$.
Give your answer in standard form, correct to 2 significant figures.

..... [2]

20 (a) A group of 120 students take two tests, mathematics and English.
Here is some information about the number of students who pass mathematics (M) and who pass English (E).

- 61 students pass mathematics.
- 27 students pass both mathematics and English.
- 19 students do not pass mathematics and do not pass English.

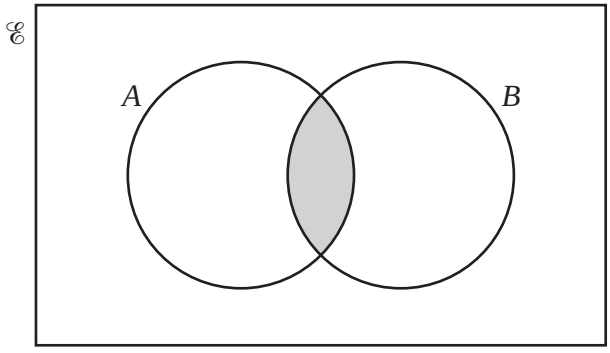


(i) Complete the Venn diagram. [3]

(ii) Use the Venn diagram to find n(E).

..... [1]

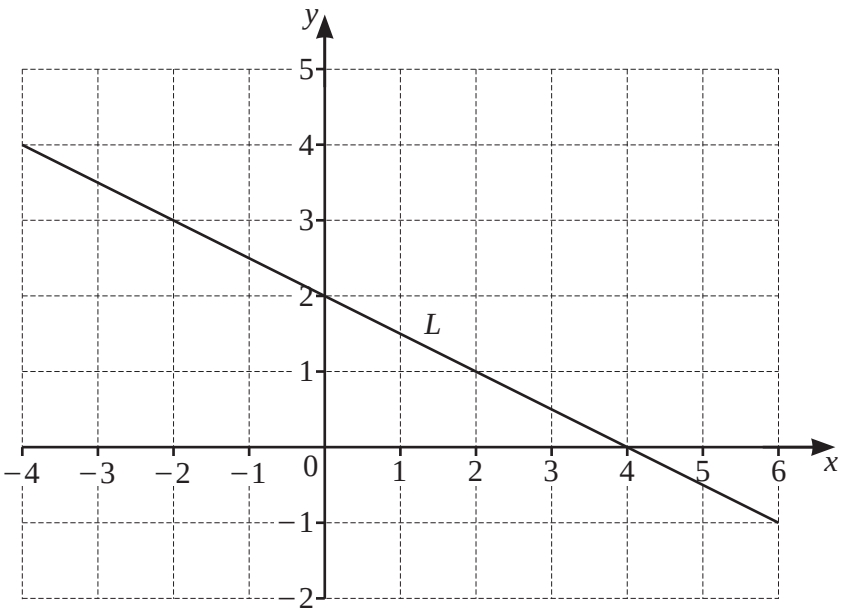
(b)



Use set notation to describe the shaded region.

..... [1]

21 (a)



Find the equation of line L in the form $y = mx + c$.

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

(b) Find the equation of the line which is

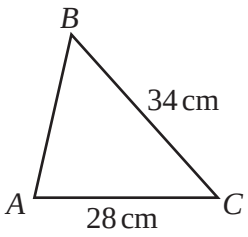
- parallel to the line $y = 3x - 5$

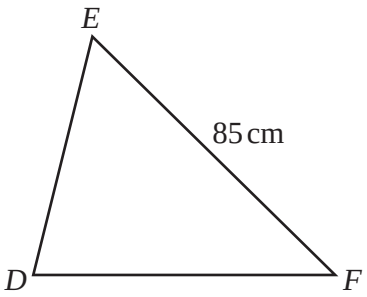
and

- passes through the point (0, 17).

..... [1]

22





NOT TO SCALE

Triangle *ABC* is similar to triangle *DEF*.

Calculate *DF*.

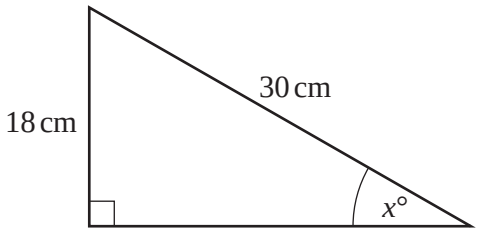
DF = ... cm [2]

23 Simplify $3x^3 \times 4x^4$.

..... [2]

Question 24 is printed on the next page.

24



NOT TO SCALE

The diagram shows a right-angled triangle.

Show that the value of x is 36.9, correct to 1 decimal place.

[2]