Cambridge Assessment International Education

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2127001144

MATHEMATICS **0580/32**

Paper 3 (Core) **October/November 2020**

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

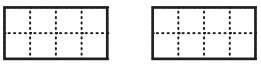
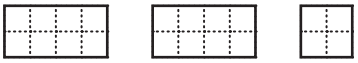
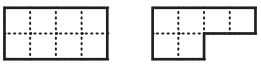
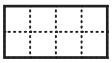
- The total mark for this paper is 104.
- The number of marks for each question or part question is shown in brackets [ ].

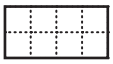
This document has **16** pages. Blank pages are indicated.

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1 George, Louis and Beatriz have a café.

(a) George records the number of each type of meal sold.
He draws a pictogram to show his results.
All rows are complete except for Salad.

Type of meal	Number of meals
Meat curry	
Pasta	
Vegetarian	
Salad	
Fish	
Sandwich	

Key:  = 8 meals

(i) Six salads were sold.

Complete the pictogram. [1]

(ii) Write down which type of meal was sold most.

..... [1]

(iii) Find the number of meals sold altogether.

..... [1]

(b) The café also sells drinks.

Drinks	
Cup of tea	$2.20
Cup of coffee	$2.80
Bottle of juice	$1.50
Bottle of water	$1.35

Johan buys 2 cups of tea, 1 bottle of juice and 1 bottle of water.

Calculate the change he receives from a $10 note.

$ ..... [2]

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(c) These are the opening times of the café.

Monday to Friday	8 am to 6 pm
Saturday	9.30 am to 3 pm
Sunday	Closed

Work out the total number of hours the café is open in one week.

..... hours [2]

(d) One week the café makes a profit of $1027.
George, Louis and Beatriz share this profit in the ratio George : Louis : Beatriz = 7 : 4 : 2.

Calculate the amount of money they each receive.

George $ .....

Louis $ .....

Beatriz $ ..... [3]

(e) In 2019 the rent for the café was $7275.
In 2020 the rent is $7566.

Calculate the percentage increase in the rent.

.....% [2]

(f) George drives 315 km from the café to the airport.
The journey takes 3 hours 30 minutes.

Calculate his average speed.

..... km/h [1]

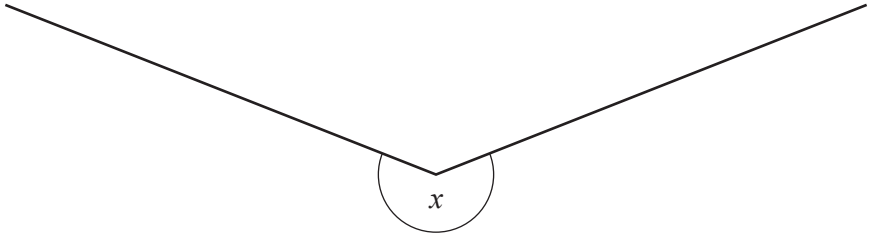
2 **(a)**



Measure the length of this line in millimetres.

..... mm [1]

(b)



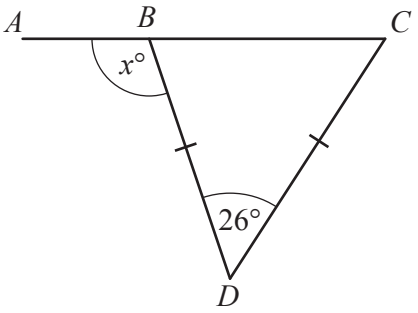
(i) Measure the size of angle x.

..... [1]

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

..... [1]

(c)



NOT TO SCALE

ABC is a straight line and BCD is an isosceles triangle.

Find the value of x.

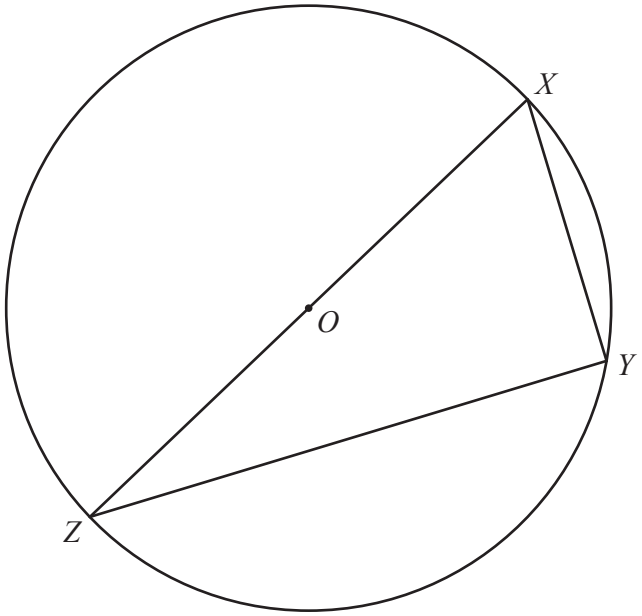
$x =$ ..... [2]

(d) Work out the size of one interior angle of a regular 16-sided polygon.

..... [2]

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(e)



NOT TO SCALE

(i) Complete this statement.

X, *Y* and *Z* are points on the ..... of the circle, centre *O*. [1]

(ii) Give a reason why angle *XYZ* is 90°.

..... [1]

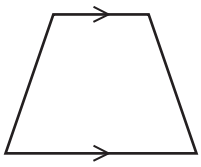
(f) A circle has diameter 6 cm.

Calculate the area of the circle.
Give the units of your answer.

.... [3]

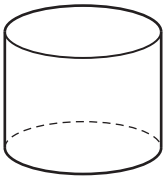
3 **(a)** Write down the mathematical name for this

(i) quadrilateral,



..... [1]

(ii) solid.



..... [1]

(b) The area of a square is $64\,cm^2$.

Work out the length of one side of the square.

..... cm [1]

(c) The length, l, of a rectangle is 3 cm longer than the width, w.
The perimeter of the rectangle is 26 cm.

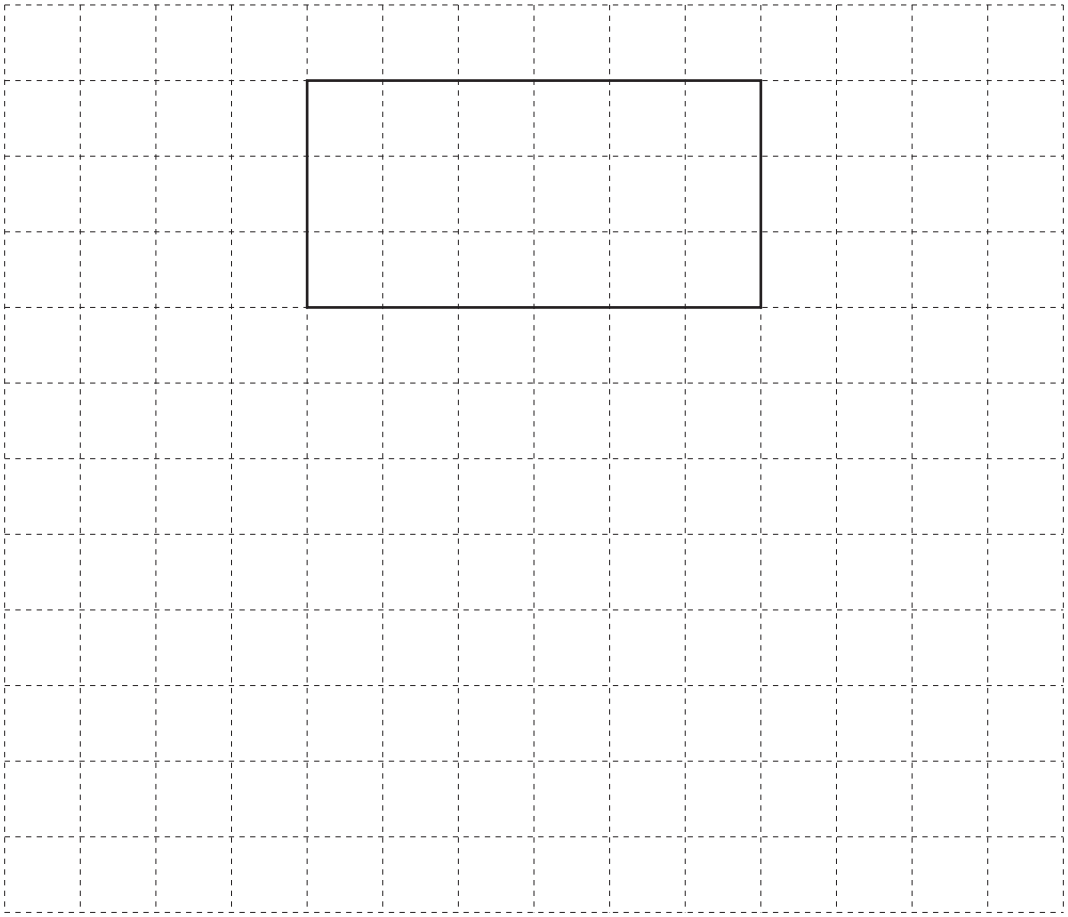
Calculate the length, l, and the width, w.

$l =$ ..... cm

$w =$ ..... cm [3]

(d) A cuboid measures 6 cm by 3 cm by 1 cm.

(i) On the 1 cm^2 grid, draw an accurate net of this cuboid.
One face has been drawn for you.



[3]

(ii) Calculate the surface area of the cuboid.

..... cm^2 [2]

4 **(a)** Sami travels to work by bus.
The bus leaves the bus station at 07 35.

(i) It takes Sami 23 minutes to walk from his house to the bus station.

Work out the latest time Sami can leave his house.

..... [1]

(ii) The bus journey takes 41 minutes.

Work out the arrival time of the bus.

..... [1]

(b) The scale drawing shows the positions of two towns, *A* and *B*.
The scale is 1 centimetre represents 10 kilometres.





Scale : 1 cm to 10 km

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

..... km [2]

(ii) Town *C* is 85 km from town *A* on a bearing of 100°.

On the scale drawing, mark the position of town *C*. [2]

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5 **(a)** Here are the weekly wages, in dollars, of the ten workers in an office.

280 200 175 1180 95 182 238 256 194 250

(i) Find the median.

$ ..... [2]

(ii) Calculate the mean.

$ ..... [2]

(iii) For this office, explain why the mean is not a suitable average.

..... [1]

(b) The stem-and-leaf diagram shows the ages of the workers in a factory.

1	6	7	7	9		
2	2	3	4	6	8	
3	0	2	3	6	9	
4	1	4	4	8		
5	0	1	6	6	6	9
6	1	5	8			

Key : 2 | 3 represents 23

(i) Write down the mode.

..... [1]

(ii) Work out the range.

..... [1]

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6 **(a)** Write 60 025 in words.

..... [1]

(b) Write 849.481 correct to 1 decimal place.

..... [1]

(c) Write down

(i) all the factors of 21,

..... [2]

(ii) a prime number between 40 and 50.

..... [1]

(d) Write $\frac{2}{5}$ as a decimal.

..... [1]

(e) Find the value of

(i) $\sqrt[3]{2744}$,

..... [1]

(ii) 7^0.

..... [1]

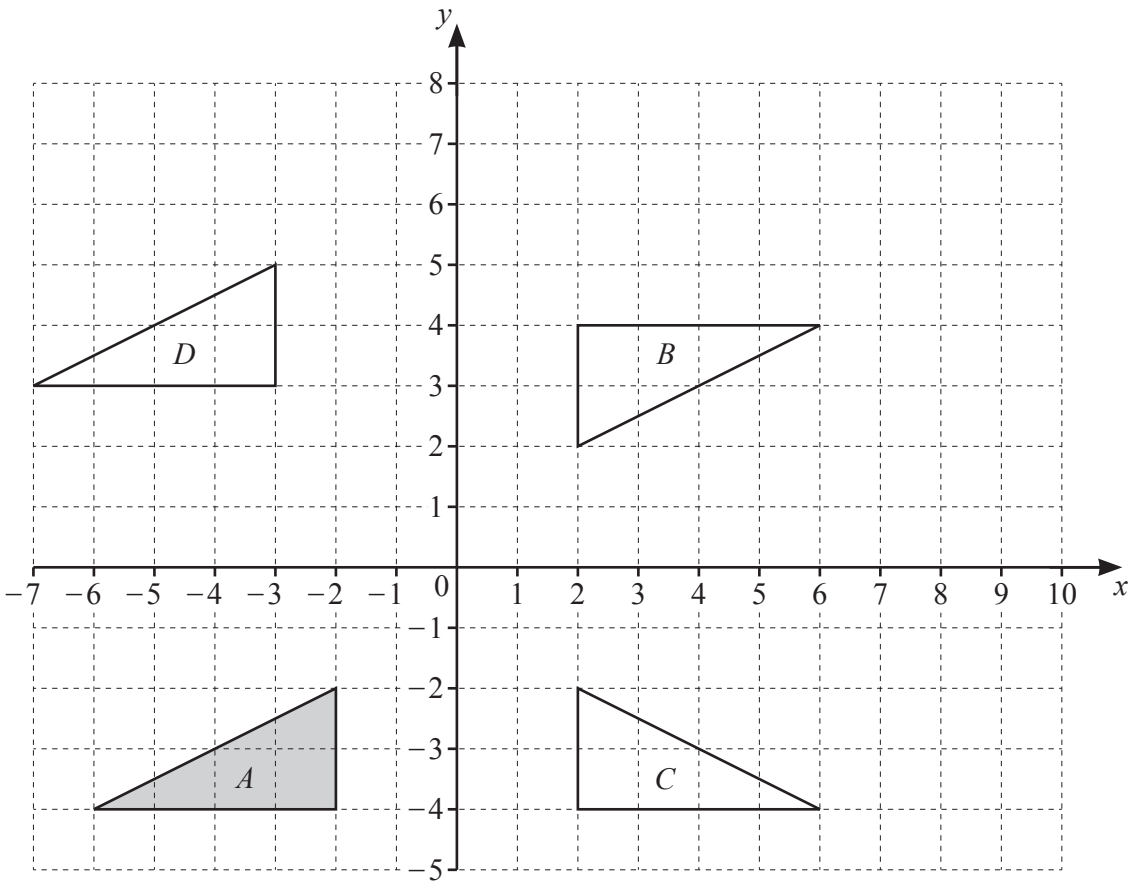
(f) Gino invests \$6000 for 5 years at a rate of 1.2% per year compound interest.

Calculate the value of his investment at the end of the 5 years.
Give your answer correct to the nearest dollar.

\$ ..... [3]

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7



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

(i) triangle *A* onto triangle *B*,

.....

..... [3]

(ii) triangle *A* onto triangle *C*,

.....

..... [2]

(iii) triangle *A* onto triangle *D*.

.....

..... [2]

(b) On the grid, enlarge triangle *A* by scale factor 0.5, centre (4, 0). [2]

8 (a)

COMMONWEALTH

Lindon picks a letter at random from this word.

Explain why the probability that he picks a letter M is not $\frac{1}{10}$.

..... [1]

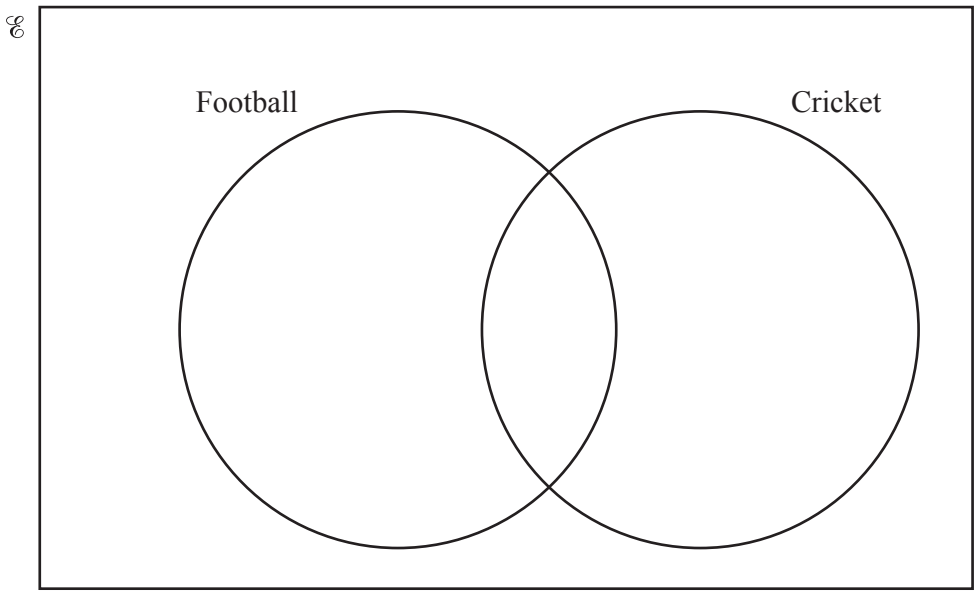
(b) Tickets for athletics or swimming or hockey or diving are placed in a box.
A ticket is picked at random from the box.

Sport	Athletics	Swimming	Hockey	Diving
Probability	0.12		0.09	0.4

Complete the table. [2]

(c) In a group of 40 students,

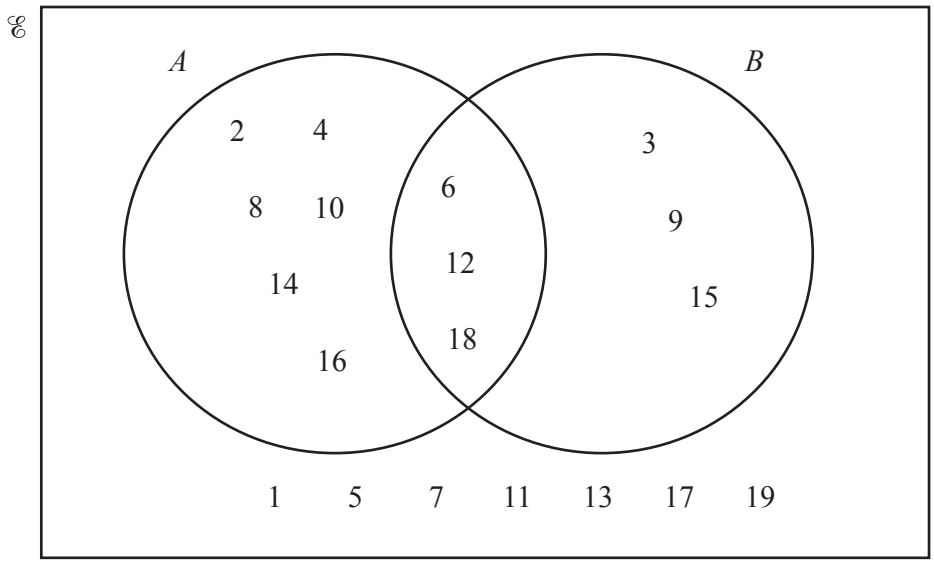
- 24 students like football
- 19 students like cricket
- 10 students like football but not cricket.



Complete the Venn diagram. [3]

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(d) $\mathscr{E} = \{x : x \text{ is a positive integer less than } 20\}$
$A = \{x : x \text{ is an even number}\}$
$B = \{x : x \text{ is a multiple of } 3\}$



(i) Write down $n(A)$.

..... [1]

(ii) List the elements of set B.

$B = \{$ ..... $\}$ [2]

(iii) One of these 19 numbers is picked at random.

Work out the probability that this number is

(a) not in set A and not in set B,

..... [1]

(b) in $A \cup B$.

..... [1]

(iv) Complete the statement.

$A \cap B = \{x : x \text{ is }$ ..... $\}$ [1]

9 **(a)** Simplify.

$4x + 3y + 2x - 8y$

..... [2]

(b) A pen costs 60 cents and a ruler costs 29 cents.

Write down an expression for the total cost, in cents, of x pens and y rulers.

..... cents [2]

(c) Solve.

$5(2x + 4) = 85$

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

(d) **(i)** $2^8 \times 2^m = 2^6$

Work out the value of m.

$m =$ ..... [1]

(ii) $5^n \div 5^4 = 5^6$

Work out the value of n.

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

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(e) A plant costs p dollars and a bush costs b dollars.
Ana buys 2 plants and 4 bushes for \$42.
Paola buys 7 plants and 9 bushes for \$107.

Write down a pair of simultaneous equations and solve them to find the value of p and the value of b.
You must show all your working.

$p =$ .....

$b =$ ..... [6]

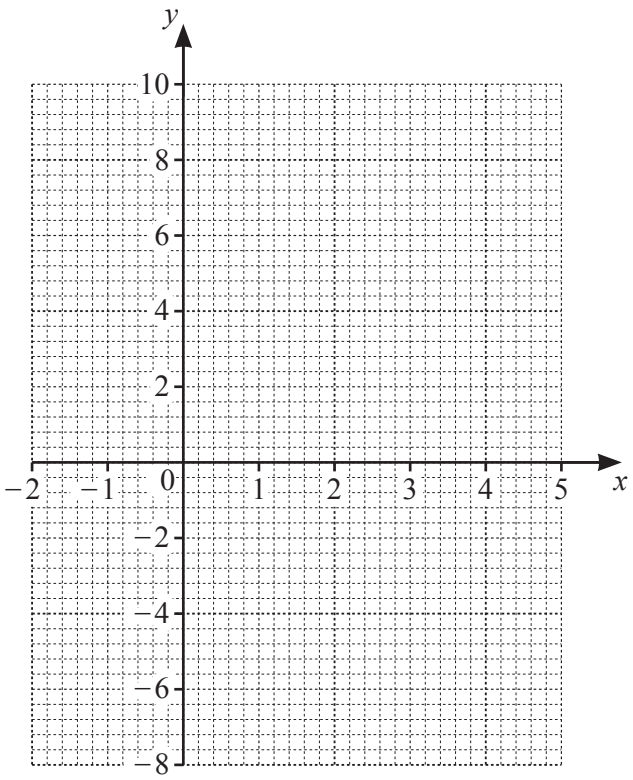
Question 10 is printed on the next page.

10 **(a)** Complete the table of values for $y = x^2 - 4x - 3$.

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

[2]

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



[4]

(c) Use your graph to solve the equation $x^2 - 4x - 3 = 0$.

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

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