Cambridge Assessment International Education

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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.

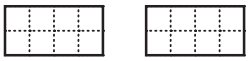
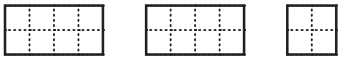
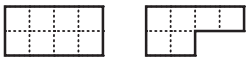
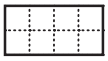
INFORMATION

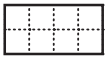
- The total mark for this paper is 104.
- The number of marks for each question or part question is shown in brackets [ ].

1 George, Louis and Beatriz have a café.

View solution

(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]

View solution

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

..... [1]

View solution

(iii) Find the number of meals sold altogether.

..... [1]

View solution

(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.

View solution

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]

View solution

(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]

View solution

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

Calculate the percentage increase in the rent.

.....% [2]

View solution

(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]

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2 **(a)**

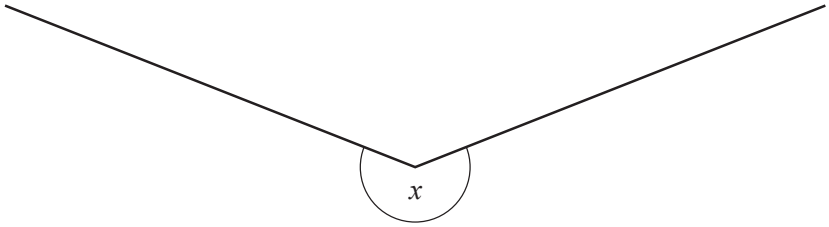


View solution

Measure the length of this line in millimetres.

..... mm [1]

(b)



View solution

(i) Measure the size of angle x.

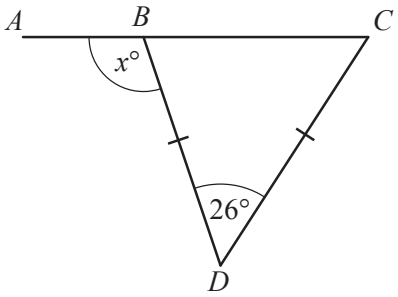
..... [1]

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

View solution

..... [1]

(c)



NOT TO SCALE

View solution

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.

View solution

..... [2]

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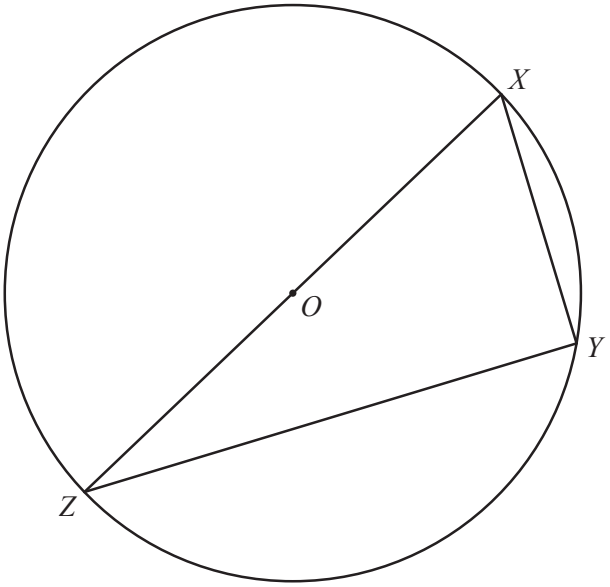
(e)



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]

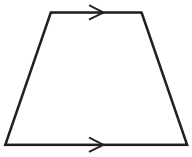
(f) A circle has diameter 6 cm.

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

.... [3]

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

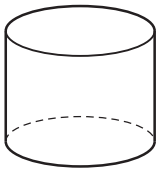
(i) quadrilateral,



..... [1]

View solution

(ii) solid.



..... [1]

View solution

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

Work out the length of one side of the square.

..... cm [1]

View solution

(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

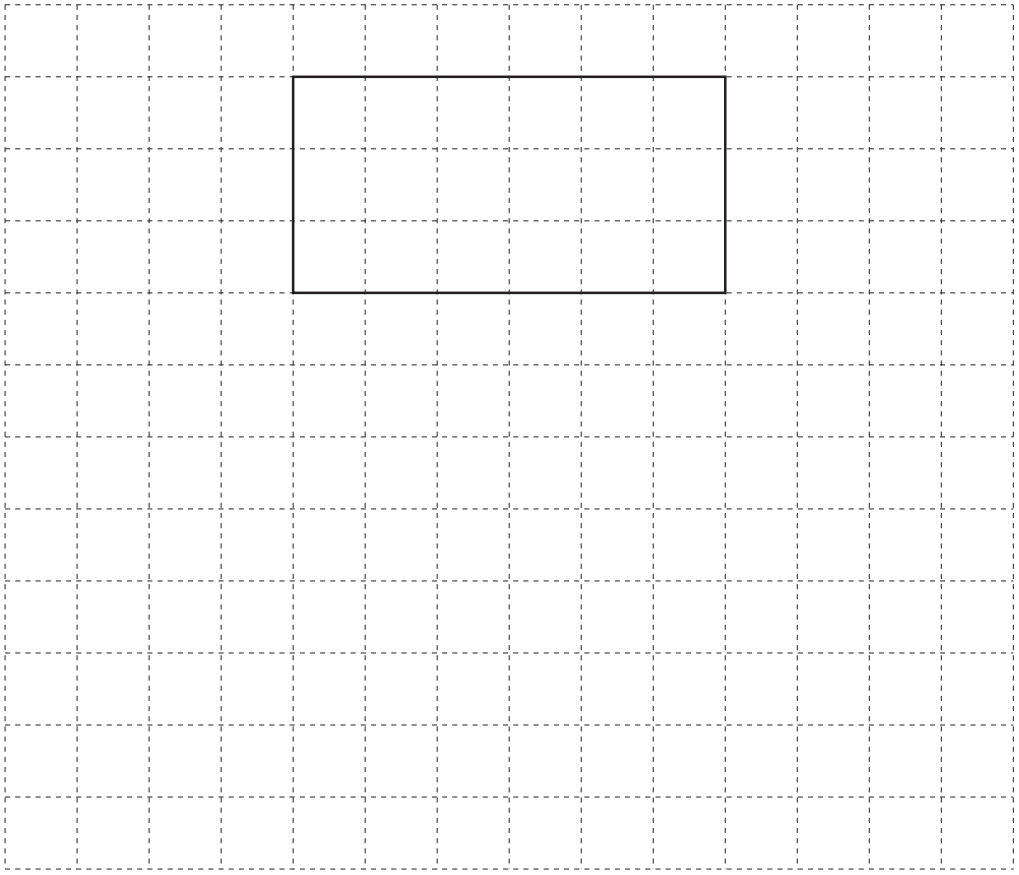
w = ... cm [3]

View solution

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

View solution

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



[3]

View solution

(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.

View solution

(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]

View solution

(ii) The bus journey takes 41 minutes.

Work out the arrival time of the bus.

..... [1]

View solution

(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]

View solution

(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.

View solution

280 200 175 1180 95 182 238 256 194 250

(i) Find the median.

$ ..... [2]

View solution

(ii) Calculate the mean.

$ ..... [2]

View solution

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

..... [1]

View solution

(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]

View solution

(ii) Work out the range.

..... [1]

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

View solution

..... [1]

(b) Write 849.481 correct to 1 decimal place.

View solution

..... [1]

(c) Write down

(i) all the factors of 21,

View solution

..... [2]

(ii) a prime number between 40 and 50.

View solution

..... [1]

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

View solution

..... [1]

(e) Find the value of

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

View solution

..... [1]

(ii) 7^0.

View solution

..... [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.

View solution

\$ ..... [3]

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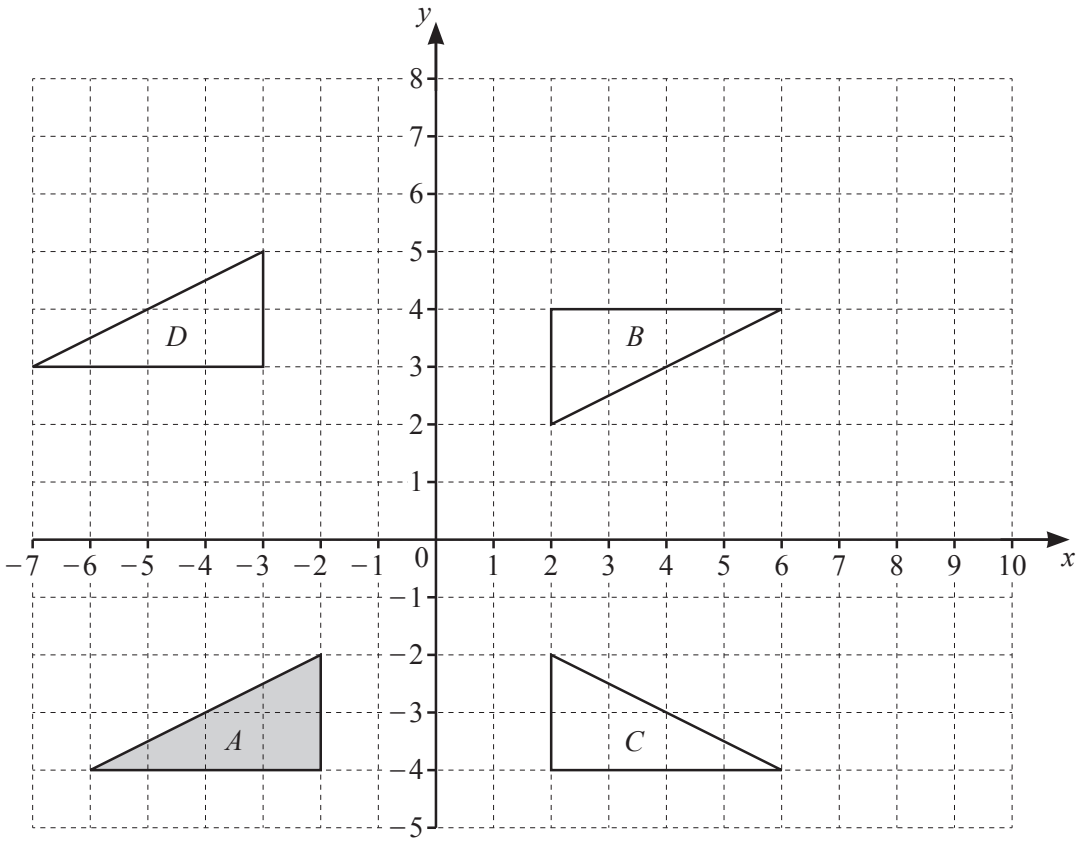
7



(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

View solution

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]

View solution

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

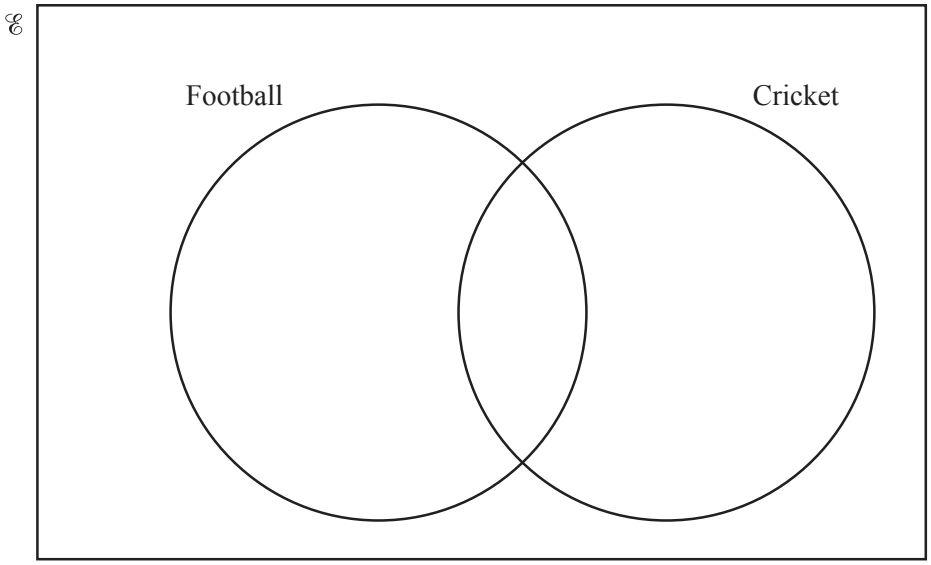
Sport	Athletics	Swimming	Hockey	Diving
Probability	0.12		0.09	0.4

Complete the table. [2]

View solution

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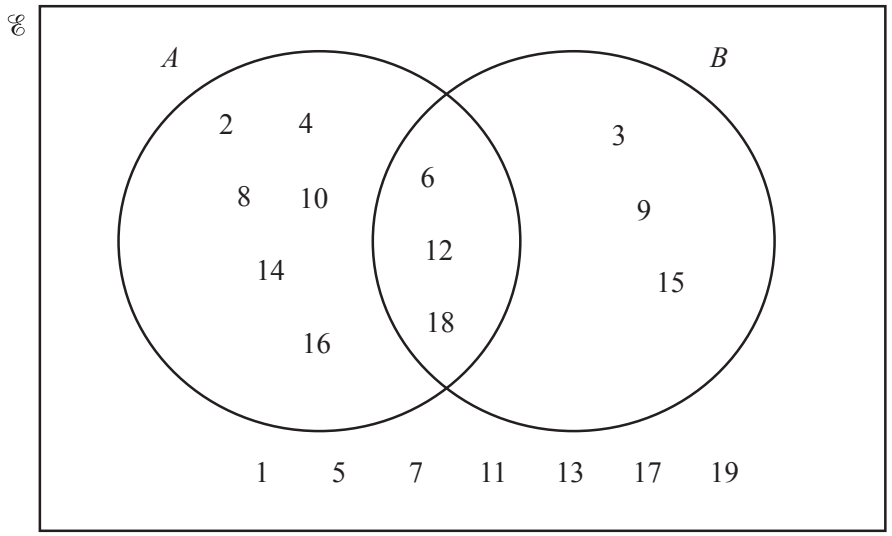
(d) $\mathscr{E} = \{x : x \text{ is a positive integer less than } 20\}$
$A = \{x : x \text{ is an even number}\}$
$B = \{x : x \text{ is a multiple of } 3\}$

View solution



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

..... [1]

View solution

(ii) List the elements of set B.

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

View solution

(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]

View solution

(iv) Complete the statement.

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

9 **(a)** Simplify.

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

View solution

..... [2]

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

View solution

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

..... cents [2]

(c) Solve.

$5(2x + 4) = 85$

View solution

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

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

View solution

Work out the value of m.

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

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

View solution

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.

View solution

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.

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

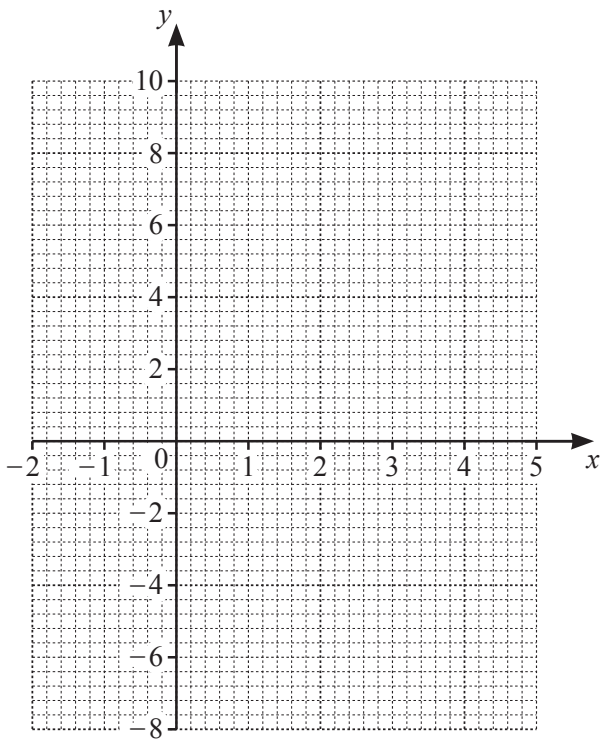
View solution

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

[2]

View solution

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



[4]

View solution

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

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

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