Cambridge Assessment International Education

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MATHEMATICS **0580/33**

Paper 3 (Core) **May/June 2024**

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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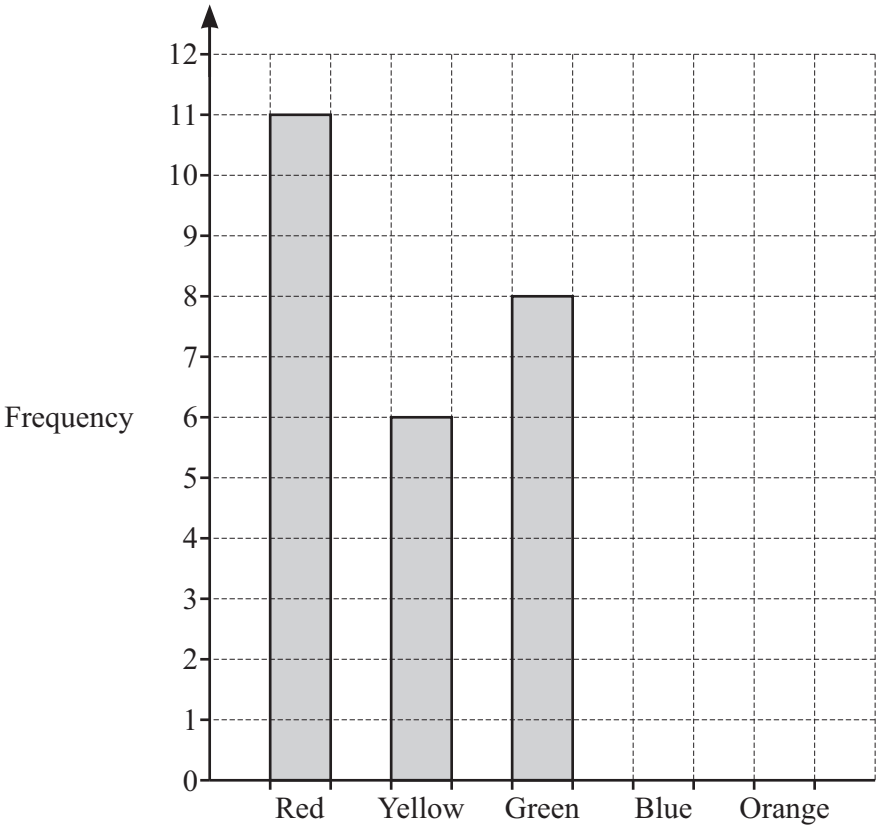
View solution

1 **(a)** 40 football players vote on the colour of new shirts.
The results for red, yellow and green are shown in the bar chart.



(i) Twice as many football players vote blue than vote orange.

Complete the bar chart.

[3]

View solution

(ii) Write down the mode.

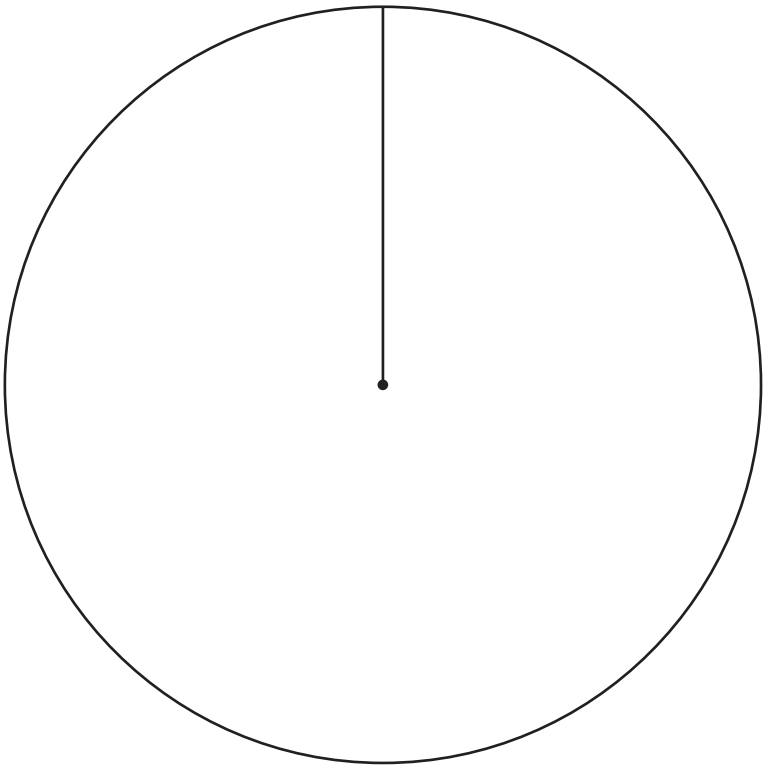
..... [1]

View solution

(b) 40 hockey players vote on the colour of new shirts.
The table shows the results.

Colour	Frequency
White	21
Grey	12
Pink	7

(i) Complete the pie chart.



[4]

View solution

(ii) Work out the percentage of hockey players who vote grey.

..... % [1]

View solution

2 **(a)** Here is part of the timetable for buses from the station to the city centre.
All buses take the same time to travel from the station to the city centre.

Station	09 24	11 06
City centre	10 03	.....

(i) Complete the timetable.

[2]

View solution

(ii) Beth walks 4 km from her home to the station at a speed of 6 km/h.
She wants to travel on the 09 24 bus.

Work out the latest time she can leave her home.

..... [3]

View solution

(iii) 45 seats on the bus are occupied.
This is $\frac{3}{5}$ of the total number of seats on the bus.

Work out the total number of seats on the bus.

..... [2]

View solution

(b) Beth buys 2.4 kg of onions costing \$1.25 per kilogram and 4.5 kg of potatoes.
The total cost is \$11.64 .

Find the cost of 1 kg of potatoes.

\$ ..... [3]

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(c) (i) One day 140 people enter a shop.
The ratio adults : children = 3 : 2.

View solution

Find the number of adults who enter the shop.

..... [2]

(ii) The price of a television in this shop is $624.
37.5% of this price is profit.

View solution

Calculate the profit on this television.

$ ..... [1]

(iii) The price of a phone in this shop is $420.
This price increases by 12%.

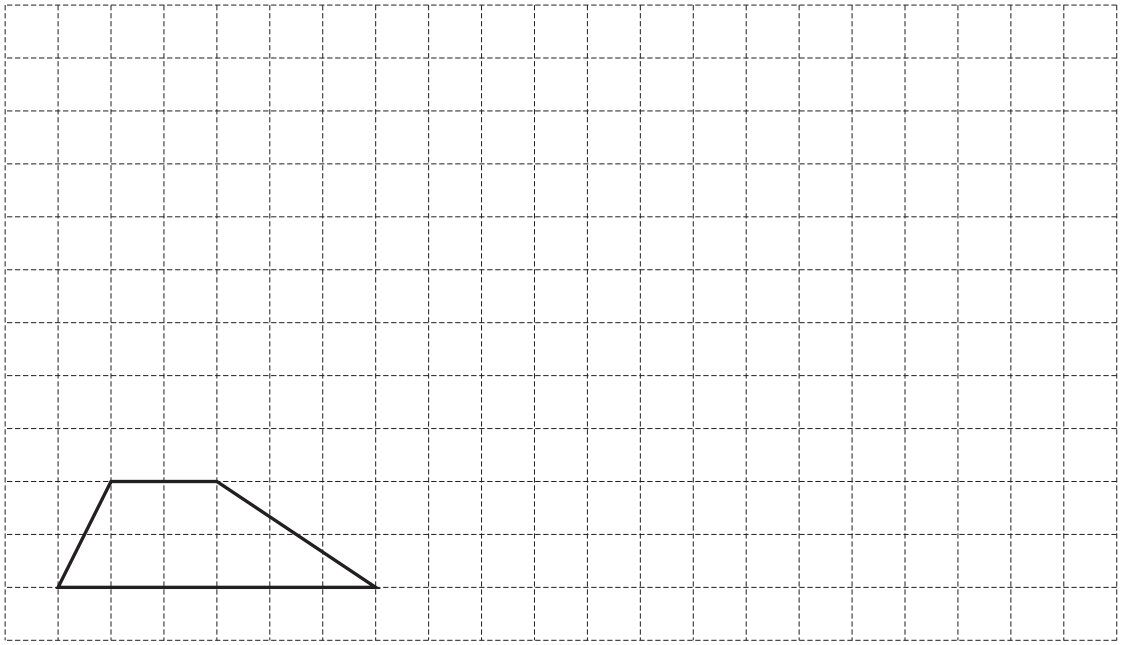
View solution

Calculate the new price.

$ ..... [2]

View solution

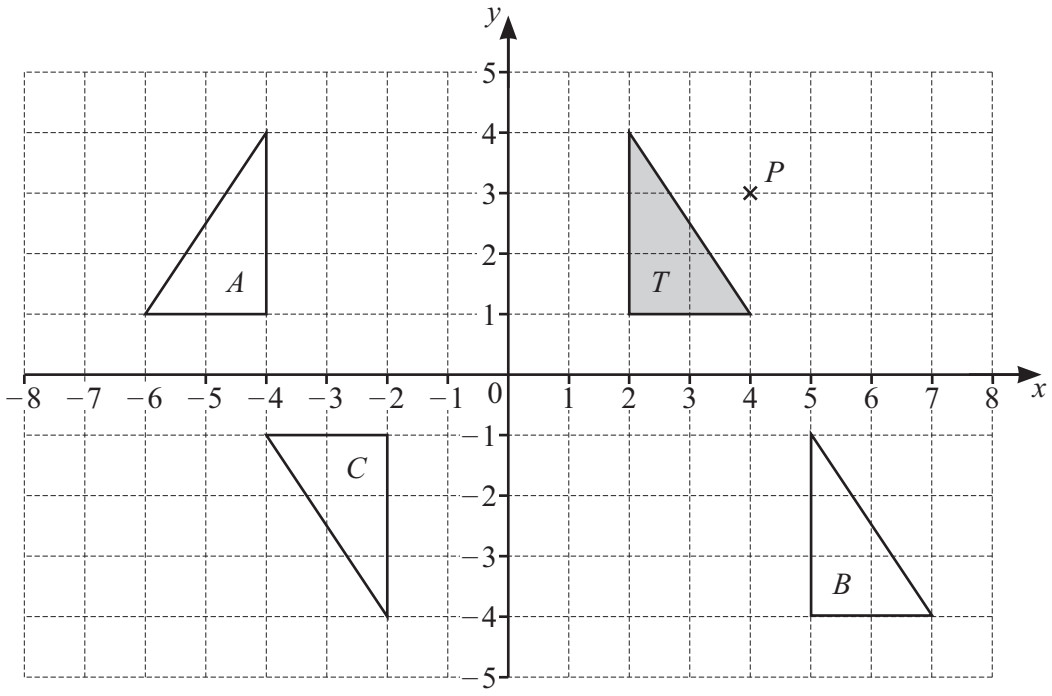
3 **(a)** The grid shows a trapezium.



On the grid, draw an enlargement of the trapezium with scale factor 3. [2]

View solution

(b) The diagram shows four triangles, A, B, C and T, and a point P on a grid.



(i) Write down the coordinates of point P.

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

View solution

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

(a) triangle T onto triangle A

.....

..... [2]

(b) triangle T onto triangle B

.....

..... [2]

(c) triangle T onto triangle C.

.....

..... [3]

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4 **(a)** Write down the value of the 8 in the number 39 829.

View solution

..... [1]

(b) Write down all the factors of 18.

View solution

..... [2]

(c) Show that 57 is **not** a prime number.

View solution

[1]

(d) $\sqrt{x} = 64$

Find the value of x.

View solution

$x =$ ..... [1]

(e) Find the first multiple of 40 that is greater than 620.

View solution

..... [1]

(f) Find the reciprocal of $\frac{2}{3}$.

View solution

..... [1]

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(g) Find a fraction between $\frac{1}{5}$ and $\frac{1}{4}$.

View solution

..... [1]

(h) Write down an irrational number with a value between 9 and 10.

View solution

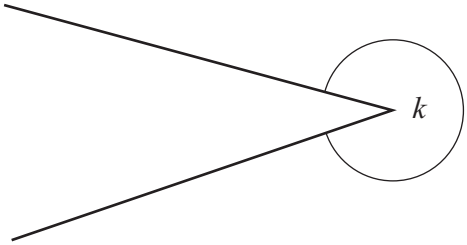
..... [1]

(i) Find the highest common factor (HCF) of 72 and 180.

View solution

..... [2]

5 (a)



View solution

(i) Measure angle k.

..... [1]

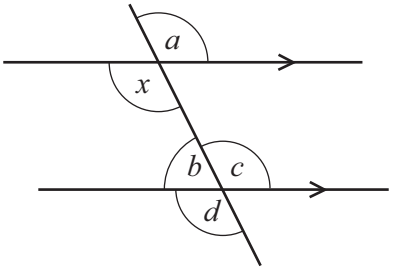
(ii) Write down the mathematical name for this type of angle.

View solution

..... [1]

(b) The diagram shows a pair of parallel lines and a straight line.
Angles a, b, c, d and x are labelled.

View solution



NOT TO SCALE

Complete the statements.

Angle ..... is alternate to angle x.

Angle ..... is corresponding to angle x. [2]

(c) The diagram shows a parallelogram.

View solution

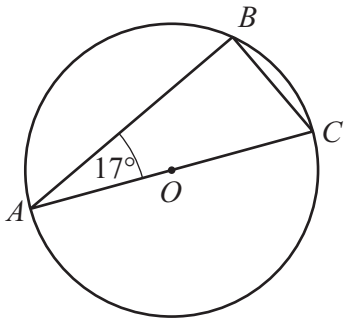


NOT TO SCALE

Find the value of y.

$y =$ ..... [1]

(d)



NOT TO SCALE

View solution

A, B and C lie on a circle, centre O.

Find angle ACB.

Angle ACB = ... [2]

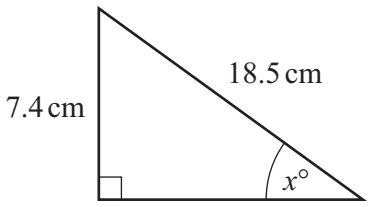
(e) The interior angle of a regular polygon is 171°.

View solution

Work out the number of sides of this polygon.

..... [2]

(f)



NOT TO SCALE

View solution

Calculate the value of x.

x = ... [2]

6 **(a)** In a sport, teams are given points using the formula

View solution

number of points = number of wins × 4 + number of draws × 2 + bonus points.

One team has 15 wins, 7 draws and 6 bonus points.

Calculate the total number of points for this team.

..... [2]

(b) Solve.

View solution

$\frac{x}{2} = 18$

$x =$ ..... [1]

(c) Solve.

View solution

$4x + 12 = 18$

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

(d) Expand and simplify.

View solution

$6(3x - 4) + 5(x - 2)$

..... [2]

(e) $T = 5r - 6$

View solution

Make r the subject of this formula.

$r =$ ..... [2]

View solution

(f) Bo has a green bag and a blue bag.
Each bag contains some marbles.

The green bag has x marbles.
There are 5 times as many marbles in the blue bag than in the green bag.

Bo now adds 6 marbles to each bag.
There are now 4 times as many marbles in the blue bag than in the green bag.

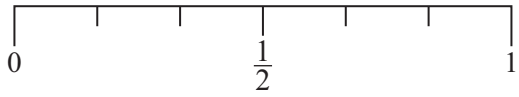
Use this information to write down an equation and solve it to find the value of x.

$x =$ ..... [5]

7 **(a)** Li spins a fair 6-sided spinner numbered 1 to 6.

(i) On the probability scale, draw an arrow (↓) to show the probability that the spinner lands on the number 2.

View solution



[1]

(ii) Find the probability that the spinner lands on a prime number.

View solution

..... [1]

(iii) Find the probability that the spinner lands on the number 7.

View solution

..... [1]

(b) A bag contains 3 red balls and 12 green balls.
Li picks a ball at random.

View solution

Find the probability that it is a green ball.
Give your answer as a fraction in its simplest form.

..... [2]

(c) Li spins two fair 4-sided spinners, each numbered 1 to 4.
The two numbers are multiplied to give the score.

View solution

×	1	2	3	4
1	1	2	3	4
2	2	4	6	8
3	3	6	9	12
4	4	8	12	16

Find the probability that the score is

(i) an even number

..... [1]

(ii) an integer

View solution

..... [1]

(iii) at least 10.

View solution

..... [1]

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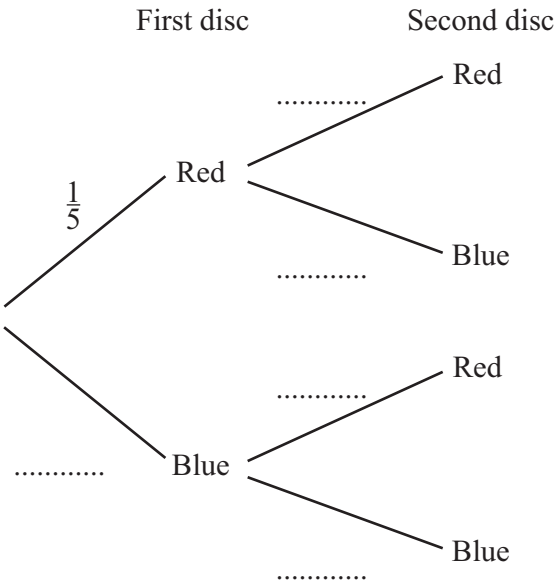
View solution

(d) A bag contains red discs and blue discs.

The probability that a disc picked at random is red is $\frac{1}{5}$.

Li picks a disc at random, notes its colour and then replaces it in the bag.
She then picks another disc at random.

(i) Complete the tree diagram.



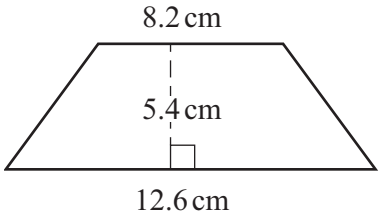
[2]

(ii) Work out the probability that both of the discs she picks are blue.

View solution

..... [2]

8 **(a)**



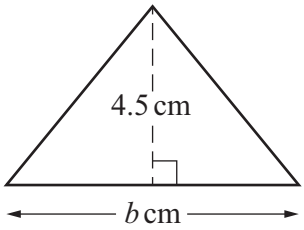
NOT TO SCALE

View solution

Find the area of this trapezium.

..... cm^2 [2]

(b)



NOT TO SCALE

View solution

The area of this triangle is 15.3 cm^2.

Find the value of b.

$b =$ ..... [2]

(c) A circle has a circumference of 58.6 cm.

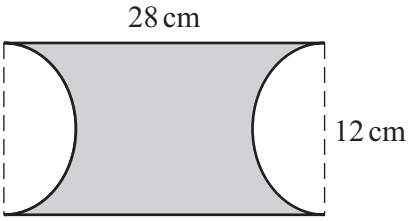
View solution

Find the radius of this circle.

..... cm [2]

View solution

(d)



NOT TO SCALE

The diagram shows a rectangle with two semicircles removed.

Calculate the shaded area.

..... cm^2 [4]

9 **(a)** Line L has a gradient of 4 and passes through the point (0, 3).

View solution

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

$y =$ ..... [1]

(b) Line G has the equation $y = 2 - 6x$.
Line G passes through the point $(a, 5)$.

View solution

Find the value of a.

$a =$ ..... [3]

(c) **(i)** Complete the table of values for $y = x^2 - 6$.

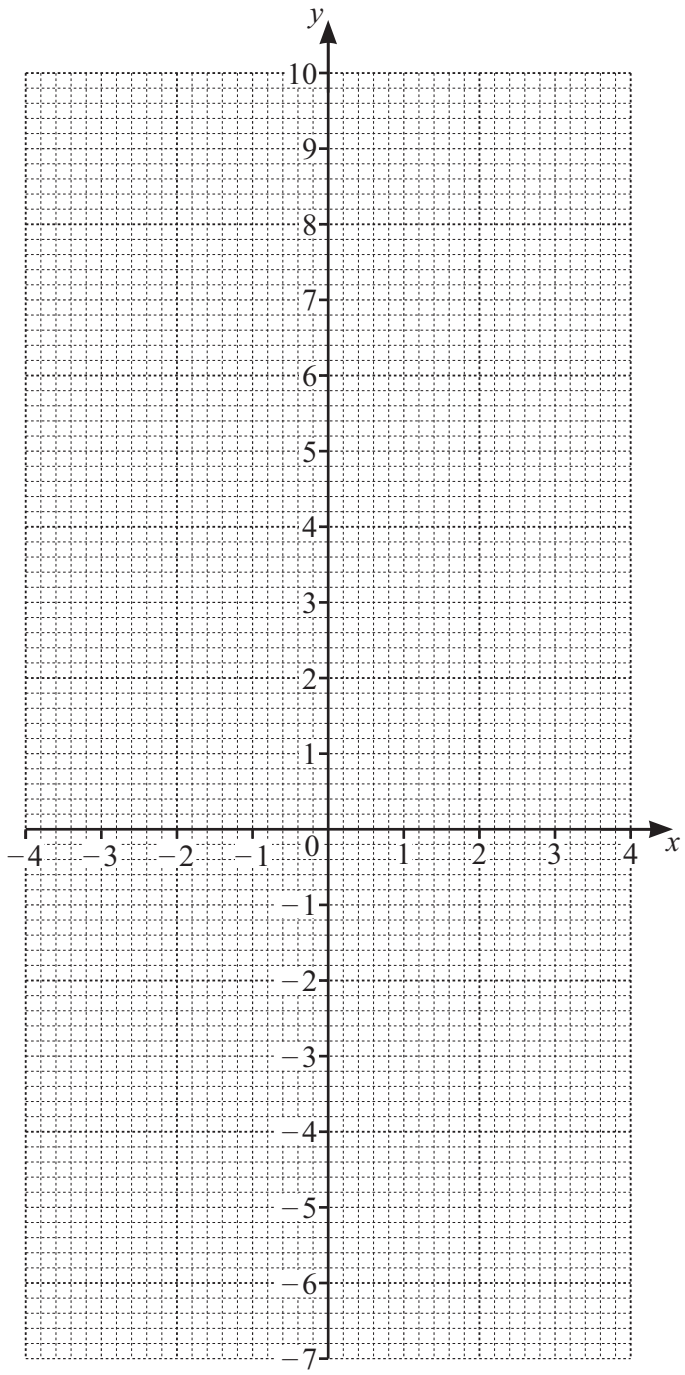
View solution

x	−4	−3	−2	−1	0	1	2	3	4
y	10		−2	−5		−5	−2		10

[2]

View solution

(ii) On the grid, draw the graph of $y = x^2 - 6$ for $-4 \leqslant x \leqslant 4$.



[4]

View solution

(iii) Write down the equation of the line of symmetry of the graph.

..... [1]

View solution

(iv) Use your graph to solve the equation $x^2 - 6 = 0$ for $x > 0$.

$x =$ ..... [1]

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