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MATHEMATICS **0580/23**

Paper 2 Non-calculator (Extended) **May/June 2026**

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. Do **not** use correction fluid or tape.
- Do **not** write on any bar codes.
- Calculators must **not** be used in this paper.
- You may use tracing paper.
- You must show all necessary working clearly.

INFORMATION
- The total mark for this paper is 100.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **20** pages.

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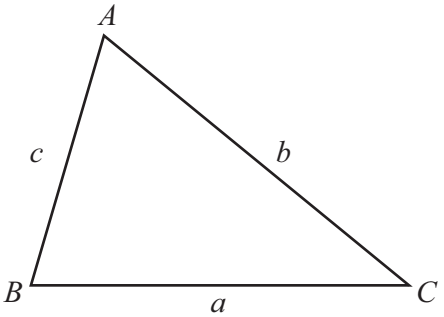
List of formulas

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$
For the equation $ax^2 + bx + c = 0$, where $a \neq 0$,	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

For the triangle shown,



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc\cos A$$

$$\text{Area} = \frac{1}{2}ab\sin C$$

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Calculators must **not** be used in this paper.

View solution

1 Write \$30 as a percentage of \$120.

..... % [2]

2 The table shows information about the favourite drink of each of 60 students.

favourite drink	number of students	pie chart angle
tea	24	144°
chocolate	4	
coffee	32	

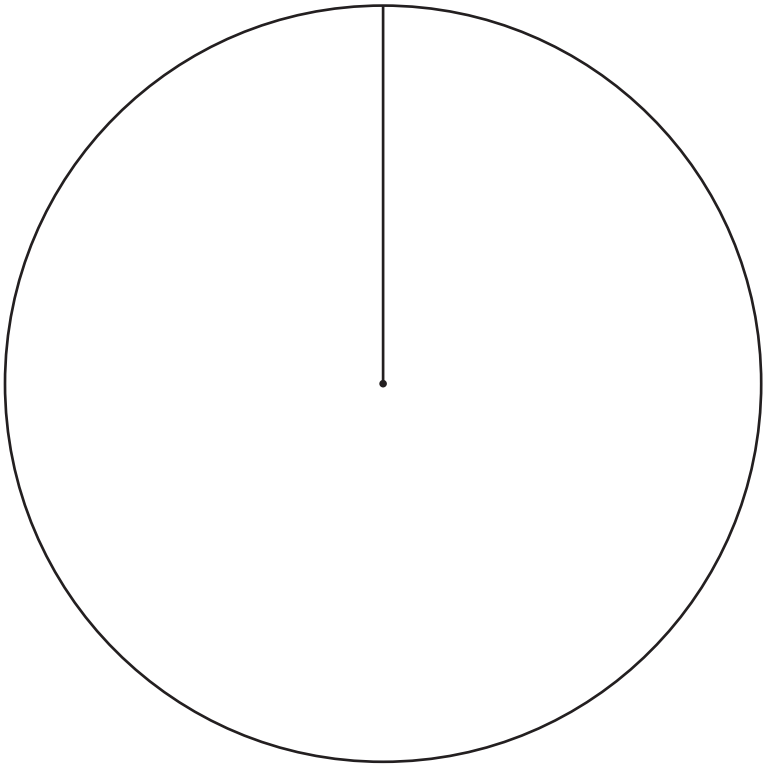
View solution

(a) Complete the table.

[2]

View solution

(b) Draw a pie chart to show the information in the table.



[2]

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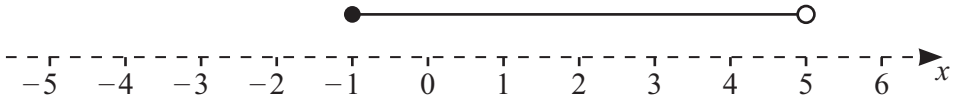
3

View solution



Write down the inequality shown by the number line.

..... [2]

4 These are the wages of 8 office workers.

$220 $210 $850 $265 $245 $230 $245 $235

View solution

(a) Work out the median.

$ ..... [2]

View solution

(b) Give a reason why the mean may not be a suitable average to represent the data.

.....

..... [1]

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5 Reem has a six-sided spinner numbered 1 to 6.
Reem spins the spinner 50 times.
Her results are shown in the table.

number on spinner	1	2	3	4	5	6
frequency	8	7	5	9	12	9

View solution

(a) Write down the relative frequency of the spinner landing on the number 4.

..... [1]

View solution

(b) Reem spins the spinner 200 times.

Find how many of these 200 spins are expected to land on the number 4.

..... [1]

View solution

6 A red light flashes every 20 minutes.
A blue light flashes every 35 minutes.
The two lights flash together at 10 00.

Find the next time that the two lights flash together.

..... [3]

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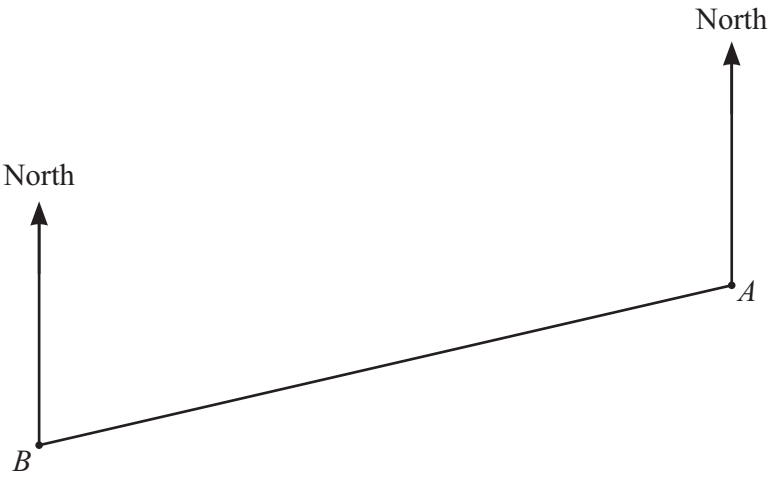
7 The diagram shows the position of two towns, A and B.

The scale is 1 cm represents 2 km.



scale: 1 cm to 2 km

(a) Work out the actual distance between A and B.

View solution

..... km [2]

(b) Find the bearing of B from A.

View solution

..... [1]

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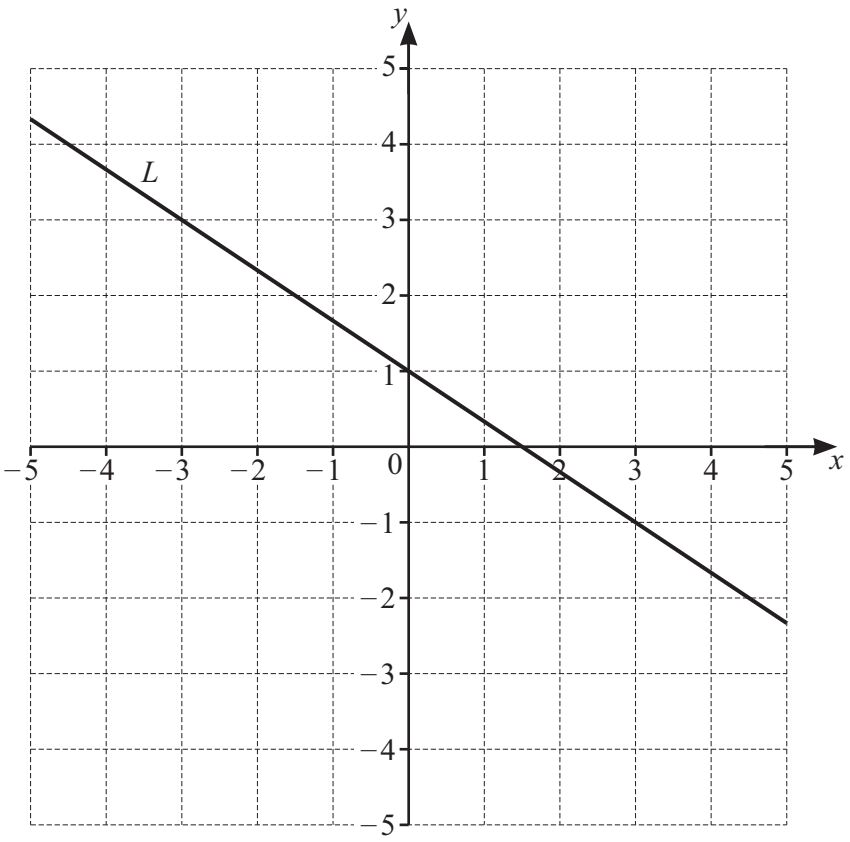
8 The line L is shown on the grid.



(a) Find the gradient of line L.

View solution

..... [2]

(b) On the grid, draw the line $y-2x+3=0$.

View solution

[2]

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9 **(a)** Write 7.83×10^{-2} as an ordinary number.

View solution

..... [1]

View solution

(b) Work out.

$$(5.5 \times 10^{6}) \times (2 \times 10^{-3})$$

Give your answer in standard form.

..... [2]

10 The position vector of A is $\begin{pmatrix} 4 \\ -1 \end{pmatrix}$ and $\overrightarrow{AB} = \begin{pmatrix} -7 \\ 5 \end{pmatrix}$.

View solution

Find the position vector of B.

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

11 The interior angle of a regular polygon is 135°.

View solution

Find the number of sides of this regular polygon.

..... [2]

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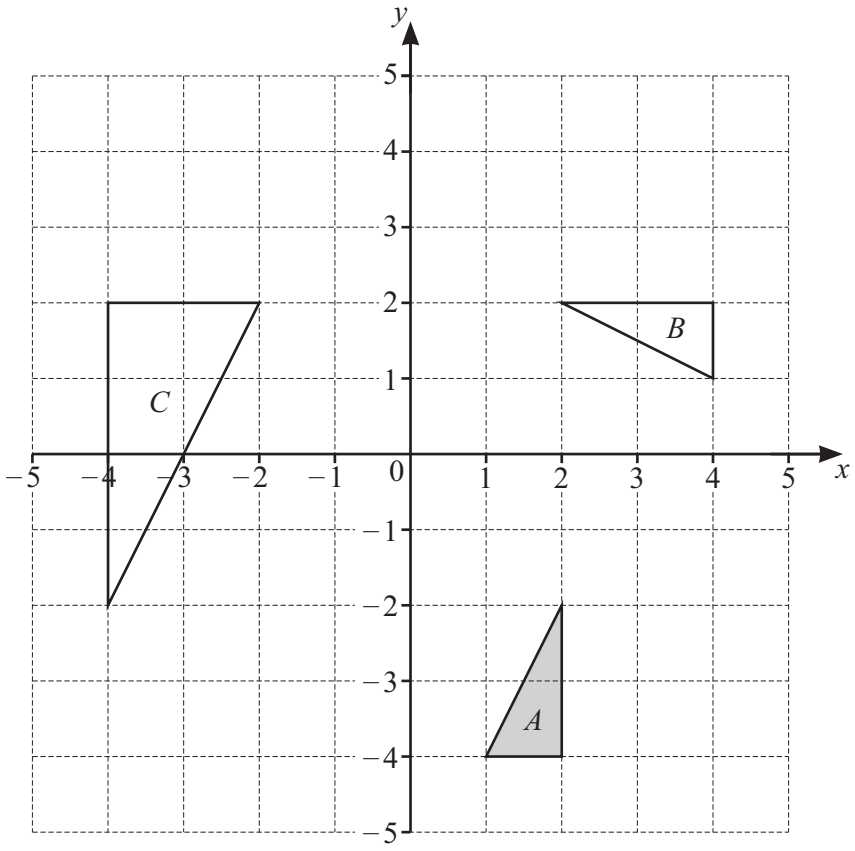

(a) Describe fully the **single** transformation that maps

(i) triangle A onto triangle B

.....

..... [3]

(ii) triangle A onto triangle C.

.....

..... [3]

(b) On the grid, draw the image of

(i) triangle A after a reflection in the y-axis [1]

(ii) triangle A after a translation by the vector $\begin{pmatrix} -1 \\ 3 \end{pmatrix}$. [2]

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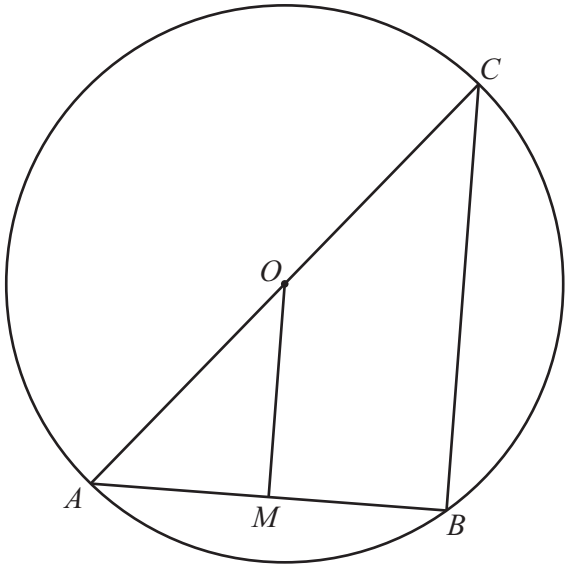

NOT TO SCALE

A, B and C are points on a circle with centre O.
AOC is a straight line and M is the midpoint of AB.
$AB = 6\,\text{cm}$ and $OM = 4\,\text{cm}$.

(a) Work out OA.

View solution

$OA =$ ..... cm [2]

(b) Give a geometrical reason why angle ABC is 90°.

View solution

..... [1]

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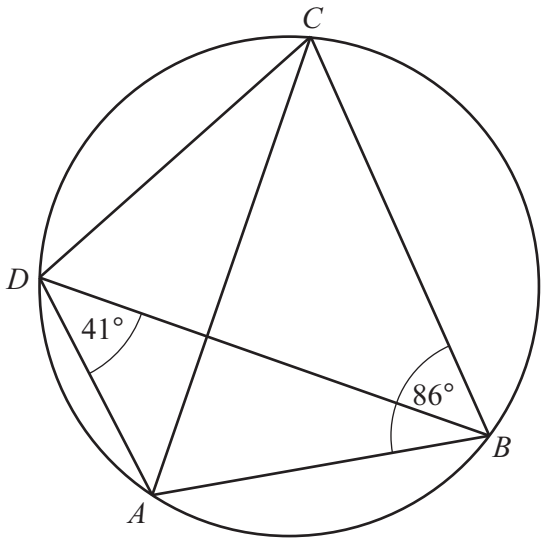
14 A sphere has volume $36\pi\,\text{cm}^3$.

Find the radius of the sphere.

View solution

..... cm [2]

15



NOT TO SCALE

The diagram shows a cyclic quadrilateral $ABCD$.

Find

(a) angle ACB

View solution

angle ACB = ... [1]

(b) angle BDC.

View solution

angle BDC = ... [2]

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16 y is inversely proportional to x.
When $y = 5$, $x = 20$.

View solution

Find y when $x = 4$.

$y =$ ..... [3]

17 **(a)** $c = 4a^2 + 2b$

View solution

Find the value of c when $a = -2$ and $b = 3$.

$c =$ ..... [2]

(b) $y = \dfrac{2(x-3)}{x-5}$

View solution

Rearrange the formula to write x in terms of y.

$x =$ ..... [4]

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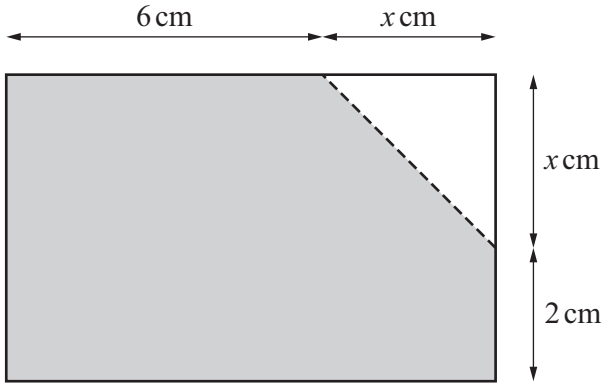

NOT TO SCALE

The diagram shows a rectangle.

The shaded area is $30\,\text{cm}^2$.

(a) Show that $x^2 + 16x - 36 = 0$.

View solution

[3]

(b) Solve by factorisation $x^2 + 16x - 36 = 0$ to find the length x cm.

View solution

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

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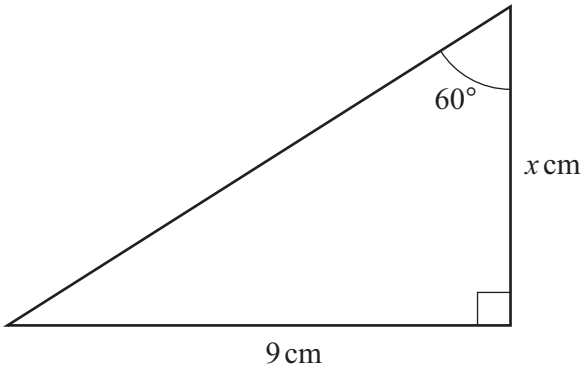
19



NOT TO SCALE

View solution

Find the exact value of x.

Give your answer in the form $a\sqrt{b}$.

$x =$ ..... [4]

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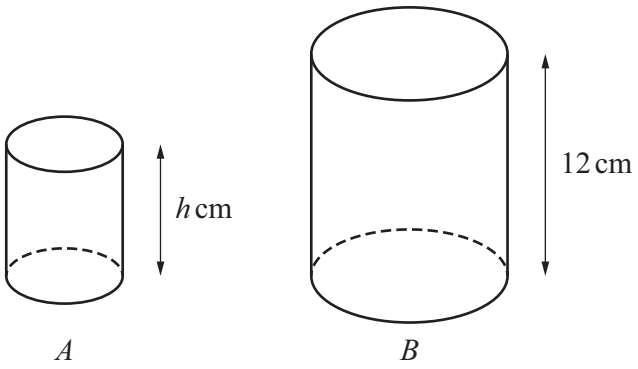

NOT TO SCALE

The two cylinders, A and B, are mathematically similar.
The surface area of A is $80\,\text{cm}^2$ and the surface area of B is $180\,\text{cm}^2$.
The height of A is h cm and the height of B is 12 cm.

Find the value of h.

$h =$ ..... [3]

21 **(a)** Simplify.

$$(\sqrt{0.1})^2$$

..... [1]

(b) Rationalise the denominator.

$$\frac{4}{2-\sqrt{2}}$$

Give your answer in its simplest form.

..... [3]

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22 **(a)** Simplify.

(i) $(10b^4)^{-3}$

View solution

..... [2]

(ii) $(8p^{15})^{\frac{2}{3}}$

View solution

..... [2]

(b) $16^n = 64$

View solution

Find the value of n.

$n =$ ..... [2]

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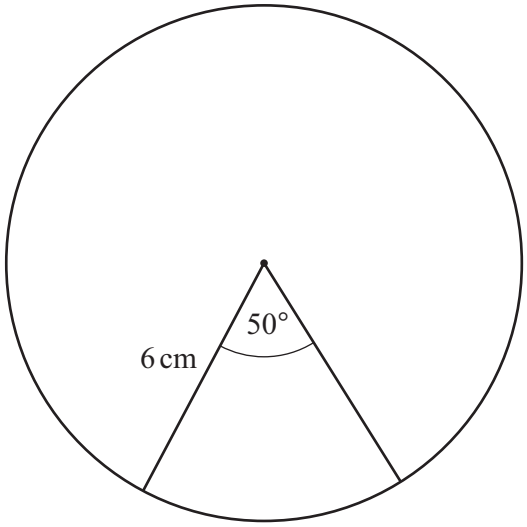
23



NOT TO SCALE

View solution

A minor sector of a circle of radius 6 cm has sector angle 50°.

Find the area of the major sector.
Give your answer in terms of π in its simplest form.

..... cm^2 [3]

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24 Write as a single fraction in its simplest form.

$$\frac{x-2}{x+3}+\frac{x+3}{x-2}$$

View solution

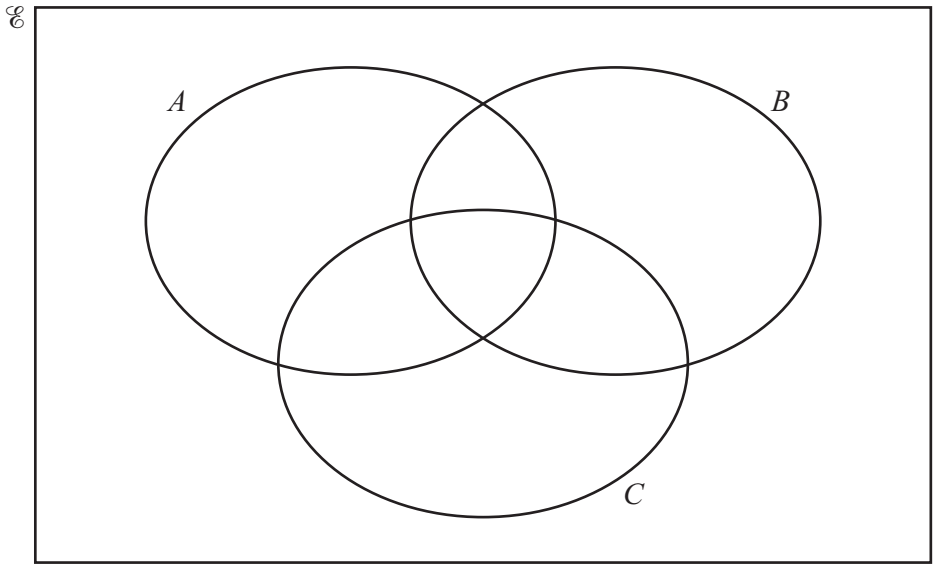
..... [4]

25 x is an integer.

$\mathscr{E} = \{x : 1 \leqslant x \leqslant 12\}$
$A = \{x : x \text{ is a square number}\}$
$B = \{x : 4 \leqslant x \leqslant 8\}$
$C = \{x : x \text{ is a factor of } 12\}$

(a) Complete the Venn diagram.

View solution



[3]

(b) Find $\mathrm{n}(A \cap B \cap C')$.

View solution

..... [1]

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26 **(a)** Write $3x^2 - 6x + 5$ in the form $a(x+b)^2 + c$.

View solution

..... [3]

(b) Write down the coordinates of the turning point of the graph of $y = 3x^2 - 6x + 5$.

View solution

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

27 Juan has a bag containing 2 red counters, 3 green counters and 5 blue counters.
Juan picks two counters from the bag at random, without replacement.

View solution

Find the probability that the two counters are different colours.

..... [4]

Question 28 is on the back page.

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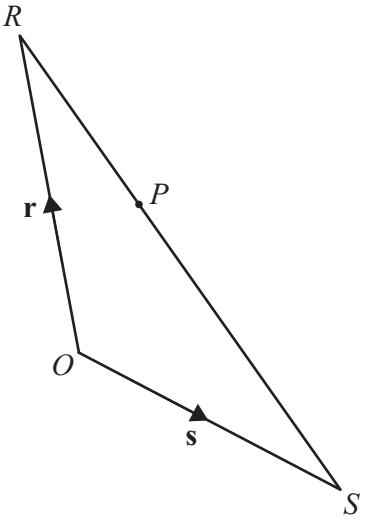
28



NOT TO SCALE

View solution

In the diagram, O is the origin, $\overrightarrow{OR} = \mathbf{r}$ and $\overrightarrow{OS} = \mathbf{s}$.
P is a point on RS and $RP : PS = 2 : 5$.

Find the position vector of P.
Give your answer, in terms of **r** and **s**, in its simplest form.

..... [3]

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