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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.

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 .

$$V = \frac{1}{3}\pi r^2 h$$

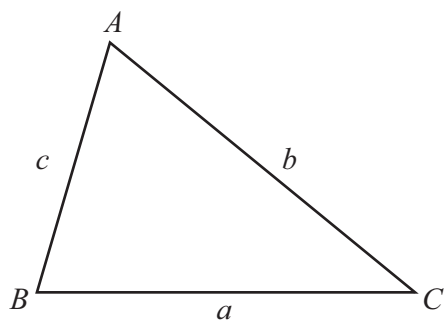
Volume, V , of sphere of radius r .

$$V = \frac{4}{3}\pi r^3$$

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,



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

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

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

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

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

..... % [2]

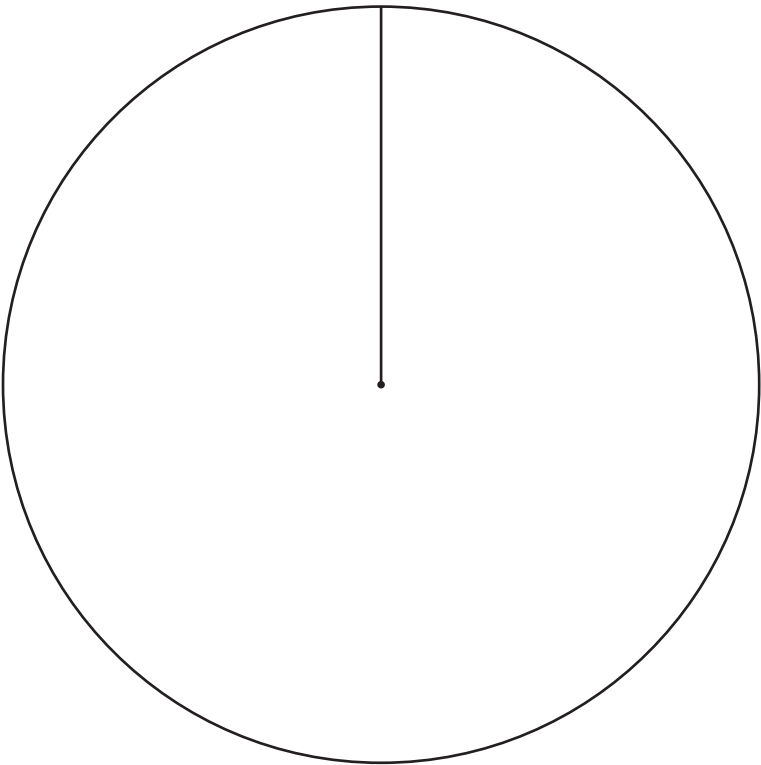
2 The table shows information about the favourite drink of each of 60 students.

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

(a) Complete the table.

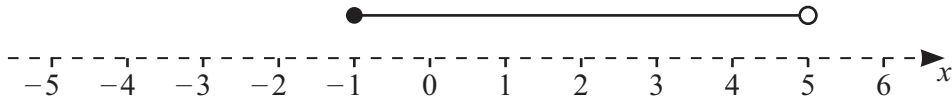
[2]

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



[2]

3



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

(a) Work out the median.

\$ [2]

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

.....
..... [1]



DO NOT WRITE IN THIS MARGIN

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

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

..... [1]

(b) Reem spins the spinner 200 times.

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

..... [1]

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

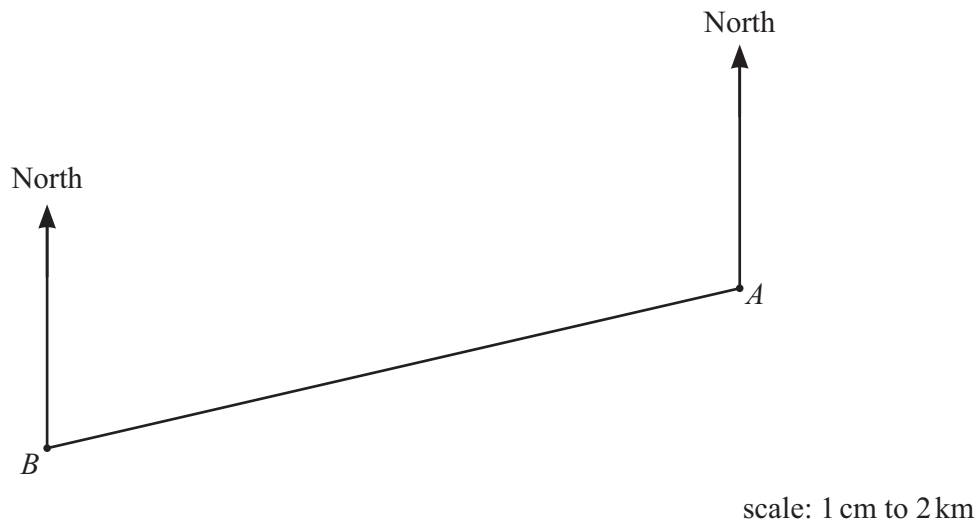
Find the next time that the two lights flash together.

..... [3]



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

The scale is 1 cm represents 2 km.



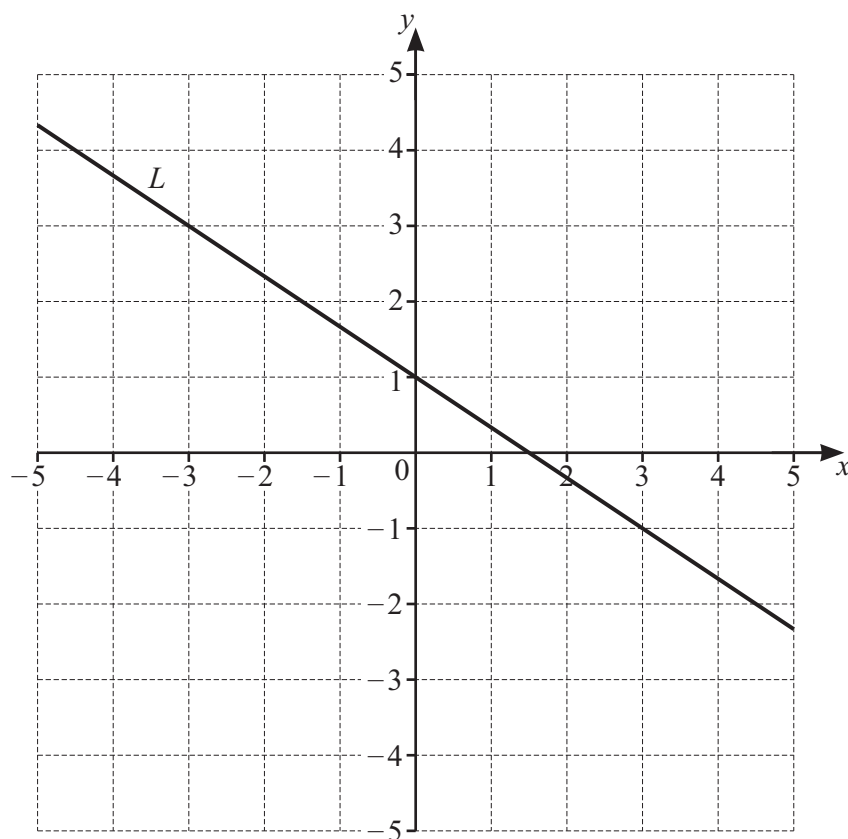
(a) Work out the actual distance between A and B .

..... km [2]

(b) Find the bearing of B from A .

..... [1]

8 The line L is shown on the grid.



(a) Find the gradient of line L .

..... [2]

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

[2]

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

..... [1]

- (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 $\overrightarrow{AB} = \begin{pmatrix} -7 \\ 5 \end{pmatrix}$.

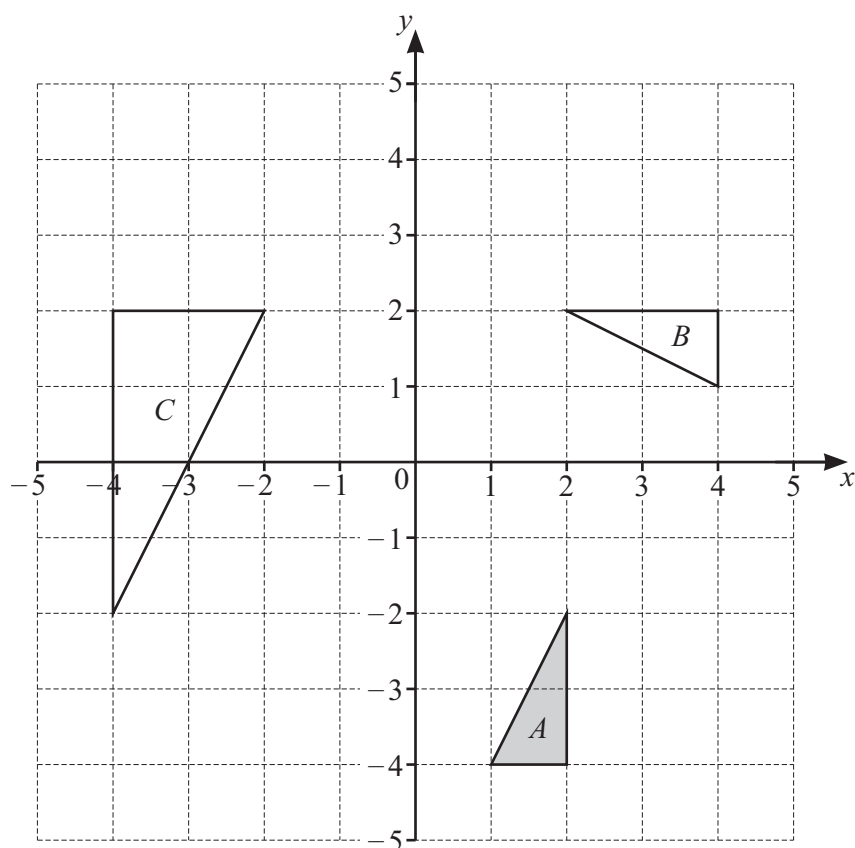
Find the position vector of B .

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

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

Find the number of sides of this regular polygon.

..... [2]



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

(i) triangle A onto triangle B

.....
 [3]

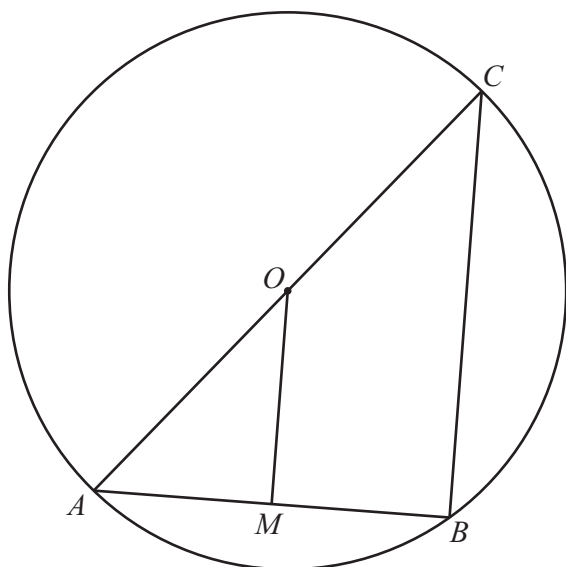
(ii) triangle A onto triangle C .

.....
 [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]



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 .
 $AB = 6$ cm and $OM = 4$ cm.

(a) Work out OA .

$OA = \dots\dots\dots$ cm [2]

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

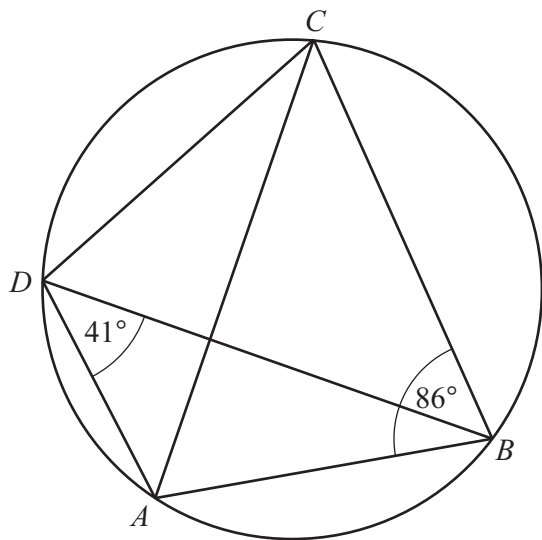
$\dots\dots\dots$ [1]

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

Find the radius of the sphere.

..... cm [2]

- 15



NOT TO SCALE

The diagram shows a cyclic quadrilateral $ABCD$.

Find

- (a) angle ACB

angle $ACB =$ [1]

- (b) angle BDC .

angle $BDC =$ [2]

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

Find y when $x = 4$.

$$y = \dots\dots\dots [3]$$

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

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

$$c = \dots\dots\dots [2]$$

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

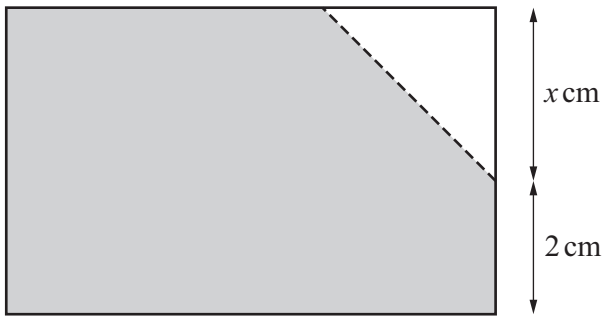
Rearrange the formula to write x in terms of y .

$$x = \dots\dots\dots [4]$$





18



NOT TO SCALE

The diagram shows a rectangle.

The shaded area is 30 cm^2 .

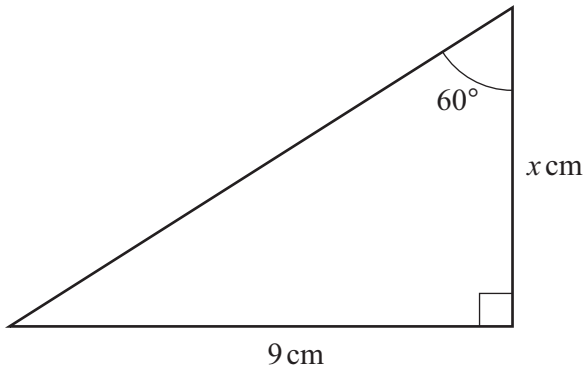
(a) Show that $x^2 + 16x - 36 = 0$.

[3]

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

$x = \dots\dots\dots \text{ cm}$ [3]





NOT TO SCALE

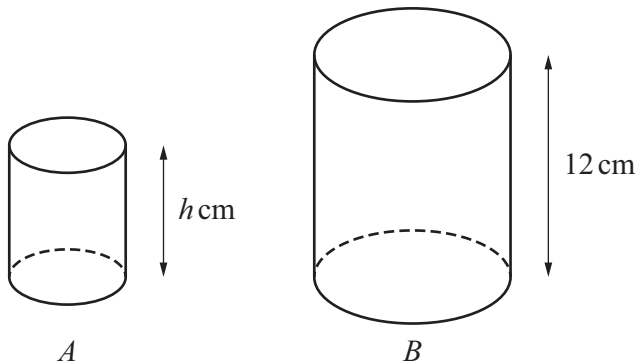
Find the exact value of x .

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 cm^2 and the surface area of B is 180 cm^2 .
The height of A is h cm and the height of B is 12 cm.

Find the value of h .

$h = \dots\dots\dots$ [3]

21 (a) Simplify.

$(\sqrt{0.1})^2$

$\dots\dots\dots$ [1]

(b) Rationalise the denominator.

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

Give your answer in its simplest form.

$\dots\dots\dots$ [3]

[Turn over



22 (a) Simplify.

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

..... [2]

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

..... [2]

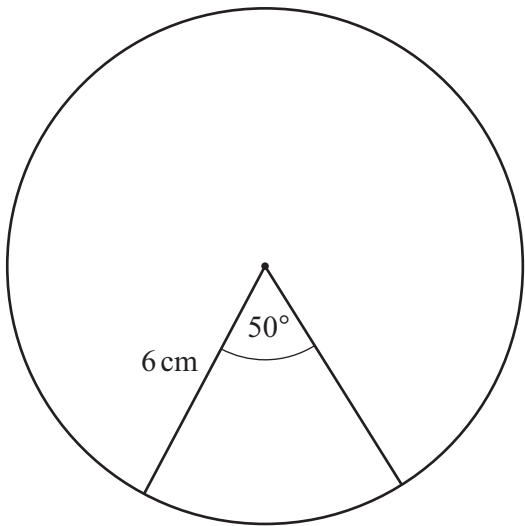
(b) $16^n = 64$

Find the value of n .

$n =$ [2]



23



NOT TO SCALE

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]

24 Write as a single fraction in its simplest form.

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

..... [4]

25 x is an integer.

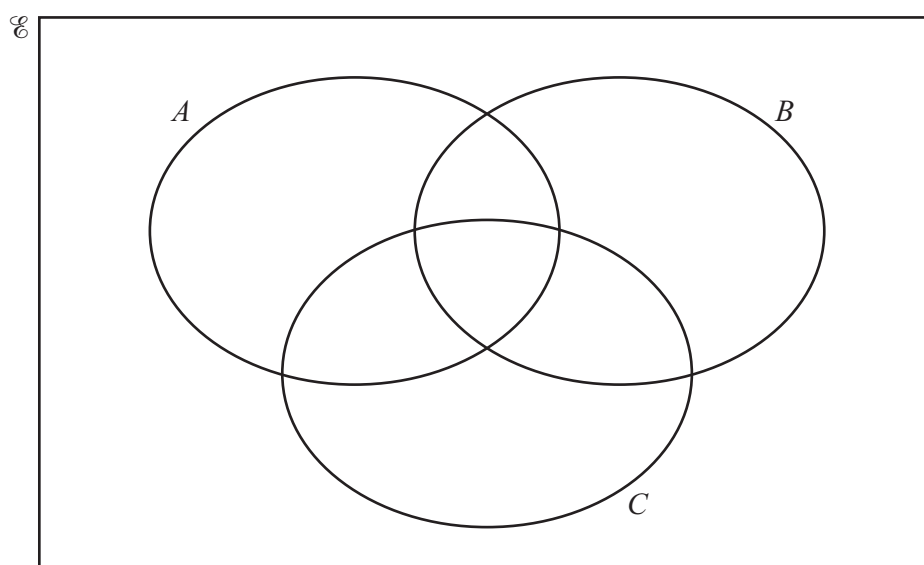
$$\mathcal{C} = \{x : 1 \leq x \leq 12\}$$

$$A = \{x : x \text{ is a square number}\}$$

$$B = \{x : 4 \leq x \leq 8\}$$

$$C = \{x : x \text{ is a factor of } 12\}$$

(a) Complete the Venn diagram.



[3]

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

..... [1]





DO NOT WRITE IN THIS MARGIN

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

..... [3]

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

(..... ,) [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.

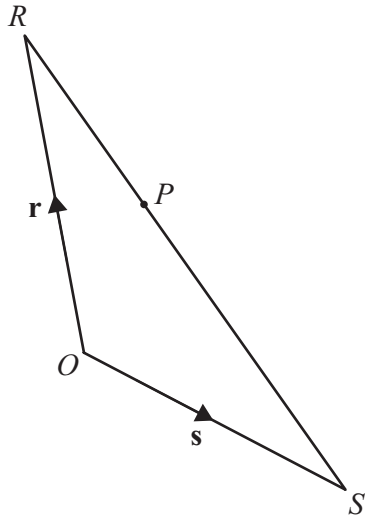
Find the probability that the two counters are different colours.

..... [4]

Question 28 is on the back page.



28



NOT TO SCALE

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 $\mathbf{r}$ and $\mathbf{s}$, in its simplest form.

..... [3]

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