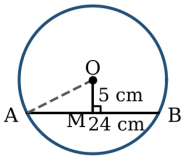
**Day 127** **S Tier 10-a-day**

**1** A rectangle has length 9 cm and width 13 cm. Both measurements are correct to the nearest centimetre.
Ivan says that the perimeter of the rectangle could be exactly 39 cm.
Is Ivan correct? You must show your working.

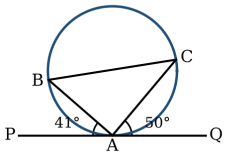
**2** AB is a chord of a circle, centre O. M is the midpoint of AB. (Calculator)
(a) Work out the radius of the circle.
(b) Work out angle AOB, to 1 decimal place.
The diagram is not drawn accurately.




**3** Solve the simultaneous equations
$-4x - 2y = -36$
$-5x + y = -24$

**4** Fatima drives 60 km at an average speed of 30 km/h.
The drive then continues for another 160 km at an average speed of 80 km/h.
Work out the average speed for the whole journey.

**5** The vectors $\begin{pmatrix} 2k \\ 18 \end{pmatrix}$ and $\begin{pmatrix} 3 \\ 3k \end{pmatrix}$ are parallel.
k is a positive number.
Work out the value of k.

| Day 127 | S Tier 10-a-day |
|---|---|
| **6** (a) Write 280 and 1176 as products of prime factors.<br>(b) Find the HCF and the LCM of 280 and 1176.<br>Give your answers as numbers. | |
| **7** Make u the subject of $v = \frac{4u + 6}{2u - 5}$ | |
| **8** A train travels at a constant speed of 72 km/h.<br>It takes 25 seconds to cross completely over a bridge which is 210 m long.<br>Work out the length of the train, in metres. | |
| **9** PAQ is a tangent to the circle at A. B and C are points on the circle. Angle PAB = 41° and angle CAQ = 50°.<br>(a) Work out the size of angle ABC.<br>(b) Work out the size of angle ACB.<br>The diagram is not drawn accurately.<br> | |
| **10** Show that the line $y = -x - 12$ is a tangent to the circle $x^2 + y^2 = 72$.<br>Find the coordinates of the point where the line touches the circle. | |