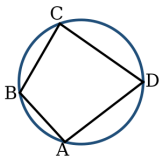
Day 226	S Tier 10-a-day

1 A, B, C and D are points on a circle. Angle DAB = (x + 30)°, angle BCD = (5x + 6)° and angle ABC = (3x + 10)°.
(a) Work out the value of x.
(b) Work out the size of angle ADC.
The diagram is not drawn accurately.

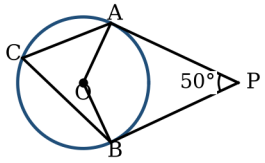


2 Solve $\frac{x + 1}{4} + \frac{x - 5}{2} = 3$

3 A metal crate in the shape of a cuboid weighs 570 N.
Its smallest face has area 1000 cm^2. Its largest face has area 2,000 cm^2.
Pressure = force ÷ area
Work out (a) the greatest pressure and (b) the least pressure the metal crate can exert on the ground, in N/m^2.

4 S is 50% less than C.
C is 80% more than R.
Work out S as a percentage of R.

5 PA and PB are tangents to a circle, centre O. C is a point on the circle. Angle APB = 50°.
(a) Work out the size of angle AOB.
(b) Work out the size of angle ACB.
The diagram is not drawn accurately.



Day 226	S Tier 10-a-day
6 The radius of a circle is decreased by 20%. Work out the percentage change in the area of the circle.	
7 A is the point $(-2, 0)$ and B is the point $(6, 2)$. Find an equation of the perpendicular bisector of AB. Give your answer in the form $ax + by = c$, where a, b and c are integers.	
8 C is directly proportional to the cube of d. When $d = 2$, $C = 56$. (a) Find a formula for C in terms of d. (b) Work out the value of C when $d = 3$.	
9 The line $y = kx - 3$ is a tangent to the curve $y = x^2 + 1$. Find the possible values of k. Give any surds in their simplest form.	
10 The time for a pendulum to swing is directly proportional to the square root of the length of the pendulum. The length of the pendulum is increased by 96%. Work out the percentage change in the time for a pendulum to swing.	