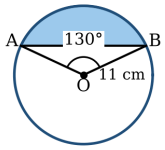
Day 202	S Tier 10-a-day
1 A sector of a circle has radius 12 cm and angle 90°. The sector is made into a cone by joining the two straight edges together. (a) Work out the radius of the base of the cone. (b) Work out the exact volume of the cone. Give your answer in terms of π, as a surd if necessary.	
2 Solve $\frac{x+2}{2} + \frac{x-4}{4} = 6$	
3 A flight leaves London at 17:50 (London time). It takes 12 hours 10 minutes. When it is 12:00 in London it is 07:00 in New York. At what time, in New York time, does the flight land? Say if it is on a different day.	
4 Make u the subject of $v = \frac{6}{\sqrt{u}}$	
5 A concrete slab in the shape of a cuboid weighs 870 N. Its smallest face has area 200 cm^2. Its largest face has area 1,500 cm^2. Pressure = force ÷ area Work out (a) the greatest pressure and (b) the least pressure the concrete slab can exert on the ground, in N/m^2.	

Day 202	S Tier 10-a-day

6 A rectangle has area $(34 + 14\sqrt{5})$ cm^2 and length $(4 + 2\sqrt{5})$ cm.
Find the width of the rectangle.
Give your answer in the form $a + b\sqrt{5}$

7 The circle has centre O and radius 11 cm. A and B are points on the circle and angle AOB = 130°. (Calculator)
Work out the area of the shaded segment. Give your answer correct to 3 significant figures.
The diagram is not drawn accurately.



8 The probability that a bus is more than 5 minutes late on any morning is $\frac{3}{20}$.
Events on different occasions are independent.
Work out the probability that this happens at least once in 4 mornings.
Give your answer correct to 3 significant figures. (Calculator)

9 Simplify $\frac{1}{3+\sqrt{6}} - \frac{1}{3-\sqrt{6}}$
Give your answer with a rational denominator.

10 The line $y = 2x + k$ is a tangent to the circle $x^2 + y^2 = 12$.
Find the possible values of k.
Give any surds in their simplest form.