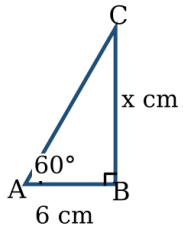
Day 134	S Tier 10-a-day

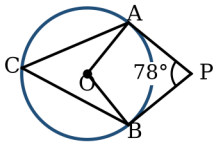
1 ABC is a right-angled triangle.
Work out the exact value of x. Give your answer in its simplest form.
The diagram is not drawn accurately.



2 Factorise $3x^2 + 2x - 8$

3 A wooden block in the shape of a cuboid weighs 990 N.
Its smallest face has area 100 cm^2. Its largest face has area 1,200 cm^2.
Pressure = force ÷ area
Work out (a) the greatest pressure and (b) the least pressure the wooden block can exert on the ground, in N/m^2.

4 PA and PB are tangents to a circle, centre O. C is a point on the circle. Angle APB = 78°.
(a) Work out the size of angle AOB.
(b) Work out the size of angle ACB.
The diagram is not drawn accurately.



5 A red light flashes every 6 minutes.
A blue light flashes every 12 minutes.
A green light flashes every 18 minutes.
They all flash together at 10:00 am.
(a) At what time do they next flash together?

Day 134	S Tier 10-a-day
6 A solid metal sphere of radius 12 cm is melted down and recast into a solid cylinder of radius 8 cm. Work out the height of the cylinder. The volume of a sphere of radius r is $\frac{4}{3}\pi r^3$.	
7 Solve $3x^2 + 15x \leq 0$	
8 $f(x) = \frac{2x + 3}{x - 2}$ where $x \neq 2$ (a) Show that $ff(x) = x$. (b) Write down $f^{-1}(x)$.	
9 A rectangle has area $(6 + 5\sqrt{3})$ cm^2 and length $(3 + 2\sqrt{3})$ cm. Find the width of the rectangle. Give your answer in the form $a + b\sqrt{3}$	
10 The mean of the marks in a test for the men is 67. The mean of the marks in a test for the women is 60. The mean for all of the men and women together is 62.8. Work out the ratio of the number of men to the number of women.	