Day 178	A Level Maths: C Tier 10-a-day
1 Write down the exact value of tan 150°.	
2 Find the remainder when $-2x^3 + 3x^2 + 2x + 6$ is divided by $(3x - 5)$.	
3 Evaluate $\int_0^3 (x^3 + 3)\,dx$.	
4 A brick is dropped from rest from the top of a tower of height 122.5 m. Take $g = 9.8$ m s^{-2} and ignore air resistance. Find (a) the time taken to reach the ground, (b) its speed on hitting the ground.	
5 20 pairs of data on daily mean temperature and sunshine hours have $r = 0.44$. Test, at the 5% significance level, for evidence of positive correlation. The critical value is 0.3783.	

Day 178	A Level Maths: C Tier 10-a-day
6 Solve $\|2x + 3\| = 5$.	
7 A box of mass 4 kg rests on rough horizontal ground. The coefficient of friction is 0.2. Taking g = 9.8 m s^{-2}, find the maximum friction force that can act on the box.	
8 Use the product rule to differentiate $y = x^1 \sin 3x$.	
9 X ~ B(12, p). H_0: p = 0.4, H_1: p < 0.4. In a sample, x = 2. It is given that $P(X \leq 2) = 0.0834$. Test H_0 at the 10% significance level.	
10 Write $\sqrt{108}$ in the form $p\sqrt{q}$, where q is an integer as small as possible.	