Day 176	A Level Maths: B Tier 10-a-day
1 Solve $-3x - 2 \leq 2x - 2$.	
2 Marks are normal: Maths N(55, 10^2), Physics N(72, 9^2). Anna scores 50 in Maths and 90 in Physics. Which is her better performance, relatively?	
3 A box of mass 8 kg rests on a rough horizontal floor, with coefficient of friction 0.6. A horizontal force of 38 N is applied to the box. Take g = 9.8 m s^{-2}. Determine whether the box moves. Find the friction force, or the acceleration if it moves.	
4 Given that $\tan\theta = -\frac{3}{4}$ and $90° < \theta < 180°$, find the exact value of $\cos 2\theta$.	
5 $f(x) = \sqrt{4x + 6}$ for $x \geq -\frac{3}{2}$. Find $f^{-1}(x)$ and state its domain.	

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6 The variables x and y satisfy $y = ax^n$. A graph of ln y against ln x is a straight line with gradient 0.5 that passes through (0, ln 2). Find the values of a and n.	
7 Line l_1 has equation $7x - y = -21$ and line l_2 has equation $7x + 9y = 49$. The lines meet at P. Find the area of the triangle formed by l_1, l_2 and the x-axis.	
8 Given that $\sin A = \frac{3}{5}$ and $\cos B = \frac{24}{25}$, where A is obtuse and B is acute, find the exact value of sin(A + B).	
9 A coach accelerates uniformly from rest at 1 m s^{-2} for 8 s, then travels at constant speed for 20 s, and finally decelerates uniformly at 1 m s^{-2} to rest. Find the total distance travelled and the total time of the journey.	
10 A survey covers 120 urban, 40 suburban and 40 rural households. A stratified sample of size 25 is taken. Find the number selected from each group.	