Day 275	A Level Maths: C Tier 10-a-day
1 A horizontal force of 85 N acts on a sledge of mass 50 kg on a smooth horizontal surface. Find the acceleration.	
2 Simplify $\sqrt{150} + \sqrt{54}$, giving your answer in the form $p\sqrt{6}$.	
3 Find the equation of the tangent to the curve $y = 2x^3 + 3x^2 + 1$ at the point where $x = 2$.	
4 A light plank rests on a pivot. A child of mass 45 kg sits 2.5 m from the pivot on one side. Where must a child of mass 15 kg sit on the other side for the plank to balance horizontally?	
5 Solve $4 \sin x = -1$ for $0 \leq x \leq 2\pi$. Give your answers to 3 significant figures.	

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6 The table shows grouped data. Class: $0 \leq x < 5$; $5 \leq x < 10$; $10 \leq x < 15$; $15 \leq x < 20$ Frequency: 11, 7, 3, 13 Estimate the median, to 3 s.f.	
7 Solve $25^x = 125$.	
8 Use a double angle formula to find $\int \sin 3x \cos 3x \, dx$.	
9 A bag has 4 red and 4 blue marbles. Two are taken at random without replacement. Find the probability that they are different colours.	
10 The diagram shows the curve $y = ab^x$, where $b > 0$. Find the values of a and b. 	