Day 119	A Level Maths: C Tier 10-a-day
1 Classify each variable as qualitative, discrete or continuous. (a) the volume of water in a bottle (b) the number of texts sent in a day (c) the make of a car	
2 Find an equation of the line through A(−3, 1) and B(−2, 6), in the form ax + by + c = 0, where a, b and c are integers.	
3 Write down the exact values of (a) sec 150° (b) cot 225°	
4 A lift of mass 250 kg is raised by a vertical cable with constant acceleration 1 m s^{-2} upwards. Take g = 9.8 m s^{-2}. Find the tension in the cable.	
5 The heights in cm for two groups: Group A has mean 67, standard deviation 18; Group B has mean 62, standard deviation 11. Compare the two sets of data.	

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6 A car of mass 800 kg is driven along a straight horizontal road by a driving force of 1200 N against a constant resistance of 400 N. Find the acceleration of the car.	
7 $a = 3\mathbf{i} - 3\mathbf{j} - 3\mathbf{k}$ and $b = \mathbf{i} - 3\mathbf{k}$. Find the angle between a and b, to 1 decimal place.	
8 Prove by contradiction that there are no integers x and y such that $2x + 4y = 111$.	
9 £2000 invested at 2% compound interest per year. After how many whole years will it first exceed £4000?	
10 The circle $(x + 3)^2 + y^2 = 25$ passes through $P(-7, -3)$. Find the gradient of the tangent to the circle at P.	