Day 53	A Level Maths: C Tier 10-a-day
1 Write down the exact value of cos 315°.	
2 A particle of mass 12 kg hangs from a light string and is raised at constant speed. Taking g = 9.8 m s^{-2}, find the tension in the string.	
3 The mean of 15 ages of the men is 68. The mean of 15 ages of the women is 63. Find the mean of all 30 values.	
4 A geometric series has common ratio $\frac{2}{3}$ and sum to infinity 18. Find the first term.	
5 A rectangle has perimeter 50 cm. Find the maximum possible area of the rectangle and the dimensions that give it.	

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6 Sketch $y = \frac{3}{x-2} + 2$. Write down the equations of the asymptotes and the coordinates where the curve meets the axes.	
7 Of 90 people, 58 are girls. 35 of the girls and 21 of the boys play an instrument. One person is chosen at random. Given that the person is a girl, find the probability that they play an instrument.	
8 A curve has equation $xy = 2$. Find dy/dx in terms of x and y, and hence the gradient at (2, 1).	
9 Car P passes a point O at constant speed 4 m s^{-1}. At that instant car Q starts from rest at O with constant acceleration 1 m s^{-2} in the same direction. Find the time when Q catches up P.	
10 $f(x) = -5x - 6$. Find $f^{-1}(x)$.	