Day 302	A Level Maths: C Tier 10-a-day
1 Of 80 people, 33 are girls. 21 of the girls and 22 of the boys walk to work. One person is chosen at random. Given that the person walks to work, find the probability they are a girl.	
2 Simplify $4 - 4\sin^2 x$.	
3 A box of mass 20 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.	
4 Find the coefficient of x^2 in the expansion of $(1 + x)^7$.	
5 A has coordinates (2, 4, 2) and B has coordinates (0, 13, 8). Find (a) the vector AB, (b) the distance AB, (c) the midpoint of AB.	

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6 A circle has equation $x^2 + y^2 - 2x + 4y - 40 = 0$. Find the centre and the radius of the circle.	
7 The probability that a machine is set up wrongly is 0.5. If so, the probability that an item is faulty is 0.4; otherwise it is 0.3. Given that an item is faulty, find the probability that a machine is set up wrongly.	
8 A particle of mass 12 kg hangs from a light string and is raised vertically with acceleration 0.5 m s^{-2}. Taking g = 9.8 m s^{-2}, find the tension.	
9 Solve $\sin x = \frac{\sqrt{3}}{2}$ for $0 \leq x \leq 2\pi$. Give your answers in terms of π.	
10 Find the remainder when $x^3 - 4x^2 - 2x - 1$ is divided by $(2x - 5)$.	