Day 358	S Tier 10-a-day
1 A stone block in the shape of a cuboid weighs 1200 N. Its smallest face has area 150 cm^2. Its largest face has area 600 cm^2. Pressure = force ÷ area Work out (a) the greatest pressure and (b) the least pressure the stone block can exert on the ground, in N/m^2.	
2 Zip Taxis has a fixed charge of £1.50 plus £4.50 per mile. Go Cabs has a fixed charge of £28.50 plus £1.50 per mile. (a) Work out the number of miles for which the two costs are the same. (b) Which is cheaper for 15 miles, and by how much?	
3 A sector of a circle has radius 13 cm and angle 216°. (a) Work out the length of the arc of the sector. (b) Work out the area of the sector. Give each answer in terms of π.	
4 A is 25% more than S. S is 15% less than D. Work out A as a percentage of D.	
5 A metal pipe is a hollow cylinder of length 20 cm. (Calculator) The outer radius is 5 cm and the inner radius is 3.5 cm. The density of the metal is 8.5 g/cm^3. Work out the mass of the pipe. Give your answer in kilograms correct to 3 significant figures.	

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6 A bag contains 2 orange sweets, 5 purple sweets and 4 pink sweets. Two sweets are taken at random without replacement. Work out the probability that (a) at least one is pink, (b) exactly one is pink.	
7 Given that $x > 0$, solve $x^{\frac{2}{3}} = 9$	
8 Solve the simultaneous equations $x^2 + y^2 = 40$ $y = -2x + 10$	
9 ABCD is a rectangle with AB = 6 cm and AD = 7 cm. A point P inside the rectangle is such that AP $\leq$ 2 cm and P is nearer to AB than to AD. Work out the area of the region in which P can lie. Give your answer in terms of π.	
10 The line $y = 3x + k$ is a tangent to the curve $y = 3x^2 - x + 4$. Find the value of k.	