Day 237	S Tier 10-a-day
1 Amir, Fatima and Tariq share some sweets. Amir : Fatima = 4 : 9 Fatima : Tariq = 6 : 2 (a) Work out the ratio Amir : Fatima : Tariq. (b) Fatima gets 42 sweets more than Tariq. How many sweets does Tariq get?	
2 A circle has equation $(x - 4)^2 + (y - 2)^2 = 65$. The point P(0, 9) lies on the circle. Find an equation of the tangent to the circle at P. Give your answer in the form ax + by = c, where a, b and c are integers.	
3 The ratio of juniors to seniors in a school is 3 : 5. 75% of the juniors and 15% of the seniors play a sport. What percentage of all of these students play a sport?	
4 Rationalise the denominator of $\frac{13}{3\sqrt{3}}$ Give your answer in its simplest form.	
5 T is directly proportional to the square root of l. When l = 36, T = 12. (a) Find a formula for T in terms of l. (b) Find the value of T when l = 4.	

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6 The graph of y = f(x) has a minimum point at (1, −4). Write down the coordinates of the turning point of the graph of (a) y = f(x) + 3 (b) y = f(x + 3) − 5	
7 In one country, income tax is worked out like this: The first £15,000 of income is not taxed. The next £30,000 is taxed at 20%. All income above that is taxed at 45%. Sofia pays £18,375 in income tax in a year. Work out Sofia's income for the year.	
8 The price of a games console is increased by 15%. Later the new price is reduced by 15% in a sale. The sale price is £156.40. Work out the price before the increase. (Calculator)	
9 A rectangle has area $(7 + 4\sqrt{2})$ cm^2 and length $(3 + 2\sqrt{2})$ cm. Find the width of the rectangle. Give your answer in the form $a + b\sqrt{2}$	
10 A metal pipe is a hollow cylinder with outer radius 8 cm and inner radius 7.5 cm. (Calculator) The density of the metal is 8.9 g/cm^3. The mass of the pipe is 16.3 kg. Work out the length of the pipe. Give your answer in centimetres correct to 3 significant figures.	