Day 44	A Tier 10-a-day
1 A lock code uses 4 digits chosen from the digits 1 to 8. No digit can be used more than once. (a) How many different codes are possible? (b) Work out the probability of guessing the code in one attempt.	
2 Rationalise the denominator of $\frac{6}{2\sqrt{7}}$ Give your answer in its simplest form.	
3 The probability that Lena wins a game is 0.7. The probability that Omar wins a game is 0.8. The two events are independent. Work out the probability that at least one of them will win a game.	
4 Solve $x - 2 > 3x - 17$	
5 Change 0.02 m^3 to cm^3.	

Day 44 **A Tier 10-a-day**

6 Here are four fractions: $\frac{3}{8}$ $\frac{14}{16}$ $\frac{3}{10}$ $\frac{2}{7}$

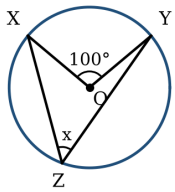
Which one of these fractions is equal to a recurring decimal?

7 A straight line has equation $-3x + 2y = -15$

(a) Find the gradient of the line.

(b) Find the coordinates of the point where the line crosses the x-axis.

8 X, Y and Z are points on a circle with centre O.
Angle XOY = 100°.
Work out the size of angle x.
Give a reason for your answer.



9 (a) Show that the equation $x^3 + 5x - 11 = 0$ can be rearranged to give $x = \sqrt[3]{11 - 5x}$

(b) Show that the equation has a solution between x = 1 and x = 2

10 OAB is a triangle. $\overrightarrow{OA} = \mathbf{a}$ and $\overrightarrow{OB} = \mathbf{b}$.
P is on OA with OP : PA = 4 : 3.
Q is on OB with OQ : QB = 4 : 3.

(a) Find $\overrightarrow{PQ}$ in terms of **a** and **b**.

(b) What do you notice about PQ and AB?

