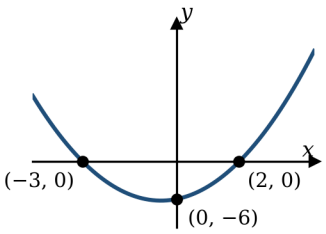
Day 218	S Tier 10-a-day

1 The diagram shows a sketch of a quadratic curve. It crosses the axes at the points shown.
Find an equation of the curve.
Give your answer in the form $y = ax^2 + bx + c$.



2 Solve $\tan x = -\frac{\sqrt{3}}{3}$ for $0° \leq x \leq 360°$.
Do not use a calculator.

3 The volume of a cube is directly proportional to the cube of the length of its edge.
The length of its edge is increased by 100%.
Work out the percentage change in the volume of a cube.

4 Triangle ABC has AB = 16 cm and BC = 10 cm.
The area of triangle ABC is 40 cm^2.
Angle ABC is acute.
Work out the size of angle ABC.
Do not use a calculator.

5 Work out $(8.55 \times 10^{-6}) \div (1.5 \times 10^{-1})$
Give your answer in standard form.

Day 218	S Tier 10-a-day
6 Simplify fully $\frac{x^2 + x - 20}{x^2 + 6x} \times \frac{x^2 - 3x}{x - 4}$	
7 Convert the recurring decimal $0.42\dot{9}\dot{3}$ to a fraction. Give your fraction in its simplest form.	
8 Write $\frac{2^{n+2} \times 8^n}{4^n}$ in the form 2^{an+c} where a and c are integers.	
9 In a population of 20,000 people, 8% have a certain disease. A test gives a positive result for 80% of people who have the disease and for 1% of people who do not. A person is chosen at random and tests positive. Work out the probability that they have the disease.	
10 A point A is on level ground in line with the base of a lighthouse. (Calculator) The angle of elevation of the top of the lighthouse from A is 35°. B is a point on the same line, 80 m further from the lighthouse than A. The angle of elevation of the top of the lighthouse from B is 18°. Work out the height of the lighthouse. Give your answer to 1 decimal place.	