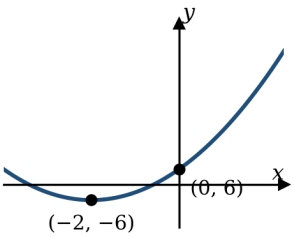
Day 224	S Tier 10-a-day

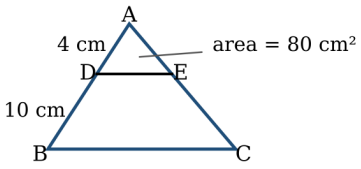
1 30 fish in a lake are caught, tagged and put back.
Later, a second sample of 120 fish is caught. 3 of these are tagged.
(a) Work out an estimate for the number of fish in a lake.
(b) State one assumption you have made.

2 The diagram shows a sketch of a quadratic curve with a turning point at $(-2, -6)$.
The curve crosses the y-axis at (0, 6).
Find an equation of the curve.
Give your answer in the form $y = ax^2 + bx + c$.



3 Work out $(2\frac{1}{2} - \frac{1}{2}) \div 2\frac{1}{5}$
Give your answer as a mixed number or a fraction in its simplest form.

4 In the diagram, DE is parallel to BC. AD = 4 cm, DB = 10 cm and the area of triangle ADE is 80 cm^2.
Work out the area of the trapezium DBCE.
The diagram is not drawn accurately.



5 A circle has centre C(−5, 3) and passes through the point P(3, 0).
Find an equation of the circle.

Day 224	S Tier 10-a-day
6 A shop mixes two types of tea. Type A costs £8.00 per kg and type B costs £11.00 per kg. They are mixed in the ratio A : B = 1 : 4. The mixture is sold for £14.56 per kg. Work out the percentage profit.	
7 Nia puts £3,000 in a savings account. Compound interest is paid at 4% in year 1, 5% in year 2 and 4% in year 3. Work out the amount in the account at the end of year 3. Give your answer to the nearest penny. (Calculator)	
8 The value of a house increases by 20% each year. After 2 years it is worth £7,200. Work out its value 2 years ago. (Calculator)	
9 $f(x) = \frac{3x + 2}{x - 3}$ where $x \neq 3$ (a) Show that $ff(x) = x$. (b) Write down $f^{-1}(x)$.	
10 The graph of $y = f(x)$ has a minimum point at $(2, -4)$. Write down the coordinates of the turning point of the graph of (a) $y = f(x/2)$ (b) $y = \frac{1}{2}f(x + 4)$	