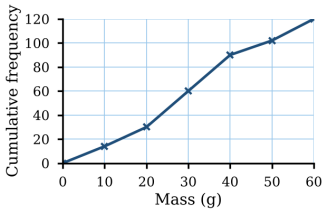
Day 182	S Tier 10-a-day

1 80 beetles in a field are caught, marked and put back.
Later, a second sample of 80 beetles is caught. 10 of these are marked.
(a) Work out an estimate for the number of beetles in a field.
(b) State one assumption you have made.

2 The HCF of two numbers is 8 and their LCM is 96.
One of the numbers is 32.
Work out the other number.

3 The cumulative frequency graph gives information about the masses of 120 apples picked from a tree.
(a) Find an estimate for the median and the interquartile range.
(b) Estimate how many of the 120 had a mass greater than 25.



4 Work out $(5.1 \times 10^{-5}) - (7.9 \times 10^{-8})$
Give your answer in standard form.

5 Show that $\frac{6}{2x + 5} + \frac{x - 1}{2x + 1}$ can be written as $\frac{2x^2 + 15x + 1}{(2x + 5)(2x + 1)}$

Day 182	S Tier 10-a-day
6 8x = 3y Work out the ratio (6x + 2y) : (2y − 5x) Give your answer in its simplest form.	
7 The graph of y = f(x) has a maximum point at (−3, 6). Write down the coordinates of the turning point of the graph of (a) y = f(x − 1) (b) y = f(x − 3) + 1	
8 Write $\frac{4+\sqrt{3}}{2+\sqrt{3}}$ in the form $p + q\sqrt{3}$ where p and q are rational numbers.	
9 F is directly proportional to the square of d. When d = 8, F = 640. (a) Find a formula for F in terms of d. (b) Find the value of F when d = 4.	
10 ABCD is a rectangle with AB = 8 cm and AD = 4 cm. A point P inside the rectangle is such that AP ≤ 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.	