Day 155	S Tier 10-a-day
1 60 fish in a lake are caught, tagged and put back. Later, a second sample of 50 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 ABC is an isosceles triangle with AB = AC. Angle BAC = (4x + 10)° Angle ABC = (x + 16)° (a) Work out the value of x. (b) Work out the size of angle BAC.	
3 The 2nd term of an arithmetic sequence is 24. The 6th term of the sequence is 32. (a) Find an expression for the nth term of the sequence. (b) Is 97 a term of the sequence? You must show your working.	
4 A bag contains sweets. $\frac{1}{3}$ of the sweets are orange and $\frac{1}{4}$ of the sweets are lemon. The rest of the sweets, 30 of them, are strawberry. How many sweets are in the bag?	
5 10 painters can paint a hall in 20 days. After 5 days, 5 of the painters leave. The rest carry on working at the same rate. How many more days does it take to finish?	

Day 155 **S Tier 10-a-day**

6 Write $12^4 \times 9^3$ as a product of powers of prime numbers.

7 Solve $x^4 - 26x^2 + 25 = 0$

8 The table gives information about the ages of some people.
Work out an estimate for the mean age.
Give your answer correct to 1 decimal place.
(Calculator)

Age, a (years)	Frequency density
$10 < a \leq 20$	0.2
$20 < a \leq 40$	0.8
$40 < a \leq 70$	1.2
$70 < a \leq 110$	0.9

9 Show that the line $y = x - 10$ is a tangent to the circle $x^2 + y^2 = 50$.
Find the coordinates of the point where the line touches the circle.

10 ABC is a right-angled triangle.
Work out the exact value of x. Give your answer in its simplest form.
The diagram is not drawn accurately.

