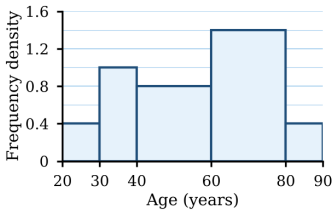
Day 114	S Tier 10-a-day
1 20 fish in a lake are caught, tagged and put back. Later, a second sample of 20 fish is caught. 4 of these are tagged. (a) Work out an estimate for the number of fish in a lake. (b) State one assumption you have made.	
2 ABC is an isosceles triangle with AB = AC. Angle BAC = $(3x - 20)°$ Angle ABC = $(3x - 17)°$ (a) Work out the value of x. (b) Work out the size of angle BAC.	
3 The curve $y = 2x^2 - 20x + 32$ crosses the x-axis at the points A and B. (a) Find the coordinates of A and B. (b) Find the coordinates of the minimum point of the curve.	
4 Work out $3\frac{1}{4} \times 2\frac{5}{6} - 2\frac{1}{3}$ Give your answer as a mixed number or a fraction in its simplest form.	
5 Two shapes are mathematically similar. The smaller has height 16 cm and area 36 cm^2. The larger has area 225 cm^2. Work out the height of the larger shape.	

Day 114 **S Tier 10-a-day**

6 A train travels a distance of 1500 km, correct to 2 significant figures.
The journey takes 3.7 hours, correct to 1 decimal place.
Work out the lower bound of the speed.
Give your answer correct to 3 significant figures. (Calculator)

7 The histogram shows the ages of visitors to a museum.
(a) Work out the total number of visitors.
(b) Estimate the number of visitors with an age between 25 years and 35 years.



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
$20 < a \leq 35$	1.8
$35 < a \leq 50$	0.8
$50 < a \leq 70$	1.6

9 Simplify fully $\dfrac{7^{m+2} - 7^m}{48}$

10 Prove that the difference between the squares of any two odd numbers is a multiple of 8.