Day 83	A Tier 10-a-day
1 A radio mast is at point A. Its signal reaches up to 5 km. A radio mast at B reaches up to 7 km. Describe the region where both signals can be received.	
2 Work out the value of $3x^2 - 3x + 1$ when $x = -5$	
3 A triangle has sides of length 24 cm, 28 cm and 10 cm. Is the triangle right-angled? You must show your working.	
4 Work out $(5 \times 10^4)^2$ Give your answer in standard form.	
5 The probability that Maya hits the target is 0.4. The probability that Kai hits the target is 0.1. The two events are independent. Work out the probability that both Maya and Kai hit the target.	

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6 Two similar statues have heights 2 cm and 4 cm.
The surface area of the smaller one is 2 cm^2.
Work out the surface area of the larger one.

7 The line L has equation $y = 5x - 7$
Find the equation of the line that is perpendicular to L and passes through the point $(0, -3)$.

8 $A = 2^2 \times 3^2 \times 7$
$B = 2 \times 3^2 \times 7^3$
Find the highest common factor (HCF) and the lowest common multiple (LCM) of A and B.
Give your answers as products of prime factors.

9 Rationalise the denominator of $\frac{28}{3+\sqrt{2}}$
Give your answer in the form $a + b\sqrt{c}$ where a and b are integers.

10 The table gives information about 103 measurements.
A histogram is drawn using this information.
(a) Work out the missing frequency.
(b) Work out the height of the bar for the class $40 < m \leq 60$.

Mass, m (g)	Frequency
$10 < m \leq 40$	42
$40 < m \leq 60$	44
$60 < m \leq 75$	?
$75 < m \leq 80$	5