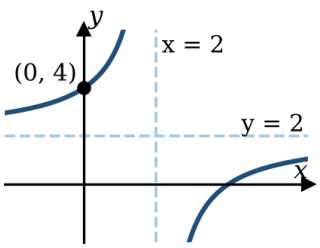
Day 187	A Level Maths: C Tier 10-a-day
1 Find an equation of the line through A(−6, 7) and B(−1, 1), in the form ax + by + c = 0, where a, b and c are integers.	
2 A cyclist moving in a straight line increases its speed from 7 m s^{-1} to 12 m s^{-1} with constant acceleration 0.5 m s^{-2}. Find the time taken.	
3 Prove that $(n + 2)^2 - (n - 2)^2$ is a multiple of 4 for every integer n.	
4 Here are 15 values: 72, 61, 69, 45, 79, 29, 77, 63, 57, 75, 76, 7, 42, 6, 23 Find the median and the interquartile range.	
5 A sector of a circle has radius 5 cm and angle 1.6 radians. Find (a) the arc length, (b) the perimeter of the sector.	

Day 187 **A Level Maths: C Tier 10-a-day**

6 A ball is projected from level ground with velocity $(4\mathbf{i} + 19.6\mathbf{j})$ m s^{-1} ($\mathbf{i}$ horizontal, $\mathbf{j}$ vertically up). Take g = 9.8 m s^{-2}.
(a) Find the time of flight.
(b) Find the horizontal range.

7 $\mathbf{a} = -3\mathbf{i} - \mathbf{j} + 4\mathbf{k}$ and $\mathbf{b} = -2\mathbf{i} + 4\mathbf{j} + \mathbf{k}$.
Find the angle between a and b, to 1 decimal place.

8 The diagram shows the graph of $y = \frac{k}{x - a} + c$ with its asymptotes. Find the values of a, c and k.



9 The probability that a machine is set up wrongly is 0.3. If so, the probability that an item is faulty is 0.8; otherwise it is 0.1.
Given that an item is faulty, find the probability that a machine is set up wrongly.

10 In the diagram, OA = $\mathbf{a}$, OB = $\mathbf{b}$, and P lies on AB with AP : PB = 4 : 3.
Find AB and OP in terms of $\mathbf{a}$ and $\mathbf{b}$.

