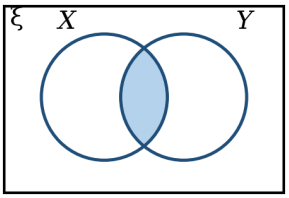
Day 222 **IGCSE 10-a-day**

1 Given that $\frac{5^3 \times 25}{25^2} = 5^n$,
find the value of n.

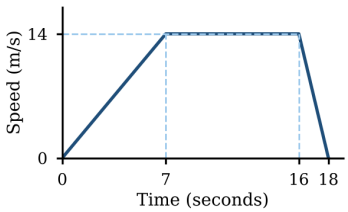
2 $y = x(x + 1)(2x - 2)$
Find $\frac{dy}{dx}$.

3 Work out the value of $3m - n^3$
when $m = -4$, $n = -4$ and $k = 2$.

4 Write down the set notation for the region shaded in the Venn diagram.



5 The graph shows the speed of a car during 18 seconds.
(a) Work out the acceleration during the first 7 seconds.
(b) Work out the average speed over the whole 18 seconds.



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6 The graph of y = f(x) has a maximum point at (0, −4). Write down the coordinates of the turning point of the graph of (a) y = 2f(x) (b) y = f(x − 1) + 1	
7 $f(x) = -x^3 - 3x^2 - 5$ for $-4 \leq x \leq 2$. Find the greatest value and the least value of f(x) on this interval.	
8 Machine A makes 60% of the items and machine B makes the rest. 9% of items from A are faulty and 2% of items from B are faulty. An item is chosen at random. (a) Work out the probability that the item is faulty. (b) The item is faulty. Work out the probability that it came from machine A.	
9 Show algebraically that the sum of the squares of any two odd numbers is 2 more than a multiple of 8.	
10 A curve has equation $y = ax^2 + \frac{b}{x}$, where a and b are constants. The point (1, −3) lies on the curve and the gradient of the curve at this point is −3. Find the values of a and b.	