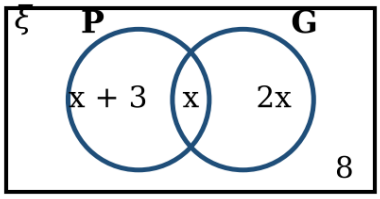
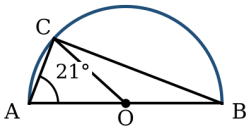
Day 108	S Tier 10-a-day
1 Work out the value of $(p - q)^2 - (p + q)^2$ when $p = -2$, $q = 3$ and $r = 3$.	
2 The Venn diagram shows how many of 27 students play the piano (P) or the guitar (G). (a) Work out the value of x. (b) A student is chosen at random from those who play the guitar. Work out the probability that this student also plays the piano. 	
3 AB is a diameter of a circle, centre O. C is a point on the circle. Angle BAC = 21°. (a) Work out the size of angle ACB. (b) Work out the size of angle COB. The diagram is not drawn accurately. 	
4 The mean of 11 numbers is 99. One number is removed and the mean of the remaining 10 numbers is 107.2. Work out the number that was removed.	
5 ABCD is a rectangle with AB = 6 cm and AD = 6 cm. A point P inside the rectangle is such that AP ≤ 4 cm and P is nearer to AB than to AD. Work out the area of the region in which P can lie. Give your answer in terms of π.	

Day 108 **S Tier 10-a-day**

6 Sofia invests £10,000 for 3 years at 2% per year simple interest.
Jess invests £10,000 for 3 years at 2% per year compound interest.
Work out how much more interest Jess earns than Sofia.
Give your answer to the nearest penny.
(Calculator)

7 The table gives information about 94 times.
Work out an estimate for the median.
Assume the values in each class are evenly spread.

Time, t (minutes)	Frequency
$10 < t \leq 20$	21
$20 < t \leq 30$	19
$30 < t \leq 40$	20
$40 < t \leq 50$	26
$50 < t \leq 60$	8

8 Given that $x > 0$, solve $x^{\frac{1}{3}} = 3$

9 Show algebraically that the sum of the cubes of any three consecutive integers is a multiple of 9.

10 Given that $(a + \sqrt{14})^2 = 39 + 10\sqrt{14}$,
where a is a positive integer, find the value of a.