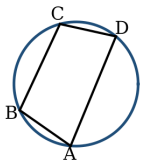
Day 21 **S Tier 10-a-day**

1 Simplify fully $\frac{x^2 - 25}{x^2 + x - 20}$

2 A, B, C and D are points on a circle. Angle DAB = (2x)°, angle BCD = (5x + 12)° and angle ABC = (3x + 25)°.
(a) Work out the value of x.
(b) Work out the size of angle ADC.
The diagram is not drawn accurately.

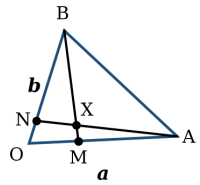


3 The ratio of Year 10 students to Year 11 students in a school is 5 : 1.
65% of the Year 10 students and 50% of the Year 11 students have a part-time job.
What percentage of all of these students have a part-time job?

4 Write $0.40\dot{7}$ as a fraction in its simplest form.

5 The table shows information about 93 employees.
(a) An employee who travels to work by bus is chosen at random. Work out the probability that this employee is a man.
(b) Two of the 93 employees are chosen at random. Work out the probability that both are men.

	Bus	Car	Walk
Men	22	23	10
Women	6	13	19

Day 21	S Tier 10-a-day
6 Here are the first five terms of a quadratic sequence. −2, −9, −20, −35, −54 Find an expression for the nth term.	
7 A van is worth £800 when new. Its value decreases by 8% each year. After how many whole years will it first be worth less than £550? (Calculator)	
8 OAB is a triangle. OA = **a** and OB = **b**. M is on OA with OM : MA = 1 : 2. N is on OB with ON : NB = 1 : 4. AN and BM intersect at X. (a) Find BM in terms of **a** and **b**. (b) Find OX in terms of **a** and **b**. The diagram is not drawn accurately. 	
9 Solve $x - 10\sqrt{x} + 24 = 0$	
10 Work out $(3.8 \times 10^2)^3$ Give your answer in standard form.	