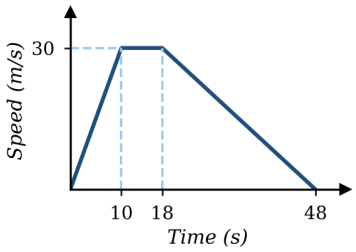
Day 259 **S Tier 10-a-day**

1 The 4-digit number 4k01 is a multiple of 3.
k is a single digit.
Find all the possible values of k.

2 The graph shows the speed of a train between two stations.
(a) Work out the acceleration in the first 10 seconds.
(b) Work out the total distance.



3 A metal pipe is a hollow cylinder with outer radius 6 cm and inner radius 5 cm. (Calculator)
The density of the metal is 11.3 g/cm^3.
The mass of the pipe is 31.2 kg.
Work out the length of the pipe. Give your answer in centimetres correct to 3 significant figures.

4 Expand and simplify $(6 - \sqrt{3})^2$
Give your answer in the form $p + q\sqrt{3}$

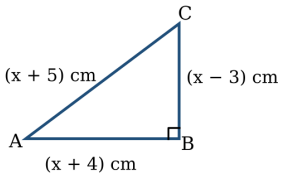
5 Solve $5^{2x-1} = \frac{1}{625}$

Day 259 **S Tier 10-a-day**

6 The table shows information about 73 students.
(a) A student who studies German is chosen at random. Work out the probability that this student is a boy.
(b) Two of the 73 students are chosen at random. Work out the probability that both are boys.

	French	Spanish	German
Boys	19	10	5
Girls	6	27	6

7 ABC is a right-angled triangle with sides (x + 4) cm, (x − 3) cm and (x + 5) cm. The longest side is (x + 5) cm.
(a) Find the value of x.
(b) Work out the area of the triangle.
The diagram is not drawn accurately.



8 A circle has equation $x^2 + y^2 = 169$.
The point P(−5, −12) lies on the circle.
(a) Find the equation of the tangent to the circle at P. Give your answer in the form ax + by = c, where a, b and c are integers.
(b) The tangent meets the x-axis at the point T.
Write down the coordinates of T.

9 A is the point (8, −7) and B is the point (14, −17).
Find an equation of the perpendicular bisector of AB.
Give your answer in the form y = mx + c.

10 A car loses 20% of its value each year.
After 3 years it is worth £3,584.
Work out its value when it was new.
(Calculator)