

**YOU & MATHS** **Split the chain** Dividing a chain of twenty-nine rings into two parts the number of rings in the first part divided by the number of rings in the second part is equal to eighteen divided by eleven. Find the number in each of the two parts.



The chain has twenty-nine rings. Let  $m$  be the number of rings in the first part and let  $n$  be the number of rings in the second part; we get:

$$\begin{cases} m + n = 29 \\ \frac{m}{n} = \frac{18}{11} \end{cases} .$$

We can either immediately notice that  $m = 18, n = 11$  is the solution; or we can solve the system:

$$\begin{cases} n = 29 - m \\ 11m = 18n \end{cases} \rightarrow \begin{cases} n = 29 - m \\ 11m = 18 \cdot (29 - m) \end{cases} \rightarrow \begin{cases} n = 29 - m \\ 29m = 18 \cdot 29 \end{cases} \rightarrow \begin{cases} n = 11 \\ m = 18 \end{cases} .$$