YOU & MATHS **Increasing diameters** The length of a circumference is measured in metres. How much does it increase if its diameter increases by a metre? And by a kilometre? What happens when the diameter doubles?

a. If the diameter increases by a metre, and its measure d is expressed in metres, you get:

$$C(d+1) = \pi(d+1) = \pi d + \pi = C(d) + \pi.$$

So, the length of the circumference increases by π metres.

b. In the same way, if the diameter increases by a kilometre, you get:

$$C(d+1000) = \pi(d+1000) = \pi d + 1000\pi = C(d) + 1000\pi.$$

The circumference length increases by 1000π metres.

c. If the diameter doubles:

$$C(2d) = \pi(2d) = 2\pi d = 2 \cdot C(d),$$

that is, the length of the circumference doubles as well.