

## Circles

### KS3 Maths

- Sophie** Can we stop for a break now Ati?
- Ati** But Sophie, we've only just got to the cycle path.
- Sophie** But my poor roller-skates have only got little wheels.
- Ati** Hey, I wonder whose wheels really will work harder, your roller-skates' or my scooter's?
- Sophie** Yeah. Ummm...
- Mathsmutt! We need your help.
- Mathsmutt** Well guys, it all depends on the size of your wheels.
- Ok, now give 'em a push.
- Sophie** The bigger wheel takes longer to turn round.
- Ati** But how can we work out how many times our wheels go round during a lap of the park?
- Mathsmutt** Well, we know the path is 1000 metres long, so all we need to know now is how big the wheels are.
- Let's break it down!
- The diameter of Sophie's wheel is 0.06 metres. Circumference is equal to  $\pi \times \text{diameter}$  right? And, because we know diameter is two times the radius, we can use the equation  $C = 2 \times \pi \times r$ ... Or  $C = \pi \times D$ !
- Sophie** OK so if circumference is  $\pi \times 0.06$  that makes... 0.1885 metres.
- Mathsmutt** And Ati's wheels have a diameter of 0.08 metres. So their circumference must be...?

# Bitesize

- Sophie** 0.2513 metres! Now all we need to do is work out how many of these there are in the whole of the 1000 metre long path.
- Mathsmutt** Correctamundo! Now get your skates on!
- Sophie** So Ati, for my small wheels we divide 1000m by 0.1885m. That's 5305 revolutions.
- Ati** And for mine, we divide 1000 by 0.2513.
- Sophie** That means your big wheels only do 3979 revolutions.
- Hey wait for me!
- Mathsmutt** What?
- Ati** Wow, I never knew this park was so big.
- Mathsmutt** Well, seeing as we're 'on a roll' Ati, I can tell you exactly how big it is. To find the area of a circle you just do  $\pi \times \text{Radius squared}$ .
- Here hold this Sophie.
- Ok the radius is 159.15 metres. So we do  $\pi \times 159.15 \text{ squared}$ .
- Ati** That's 79572.5 square metres.
- Sophie** Yay! Oops! Good boy.
- Mathsmutt** (mumbles)
- Sorry.
- So does all that make sense, or are your heads still spinning?
- Sophie** Well, it 'turns' out that circles are 'wheelie' easy, when you know how.
- All** Hehehe!