

**Science - Year 5**

**Forces – Block 5F**

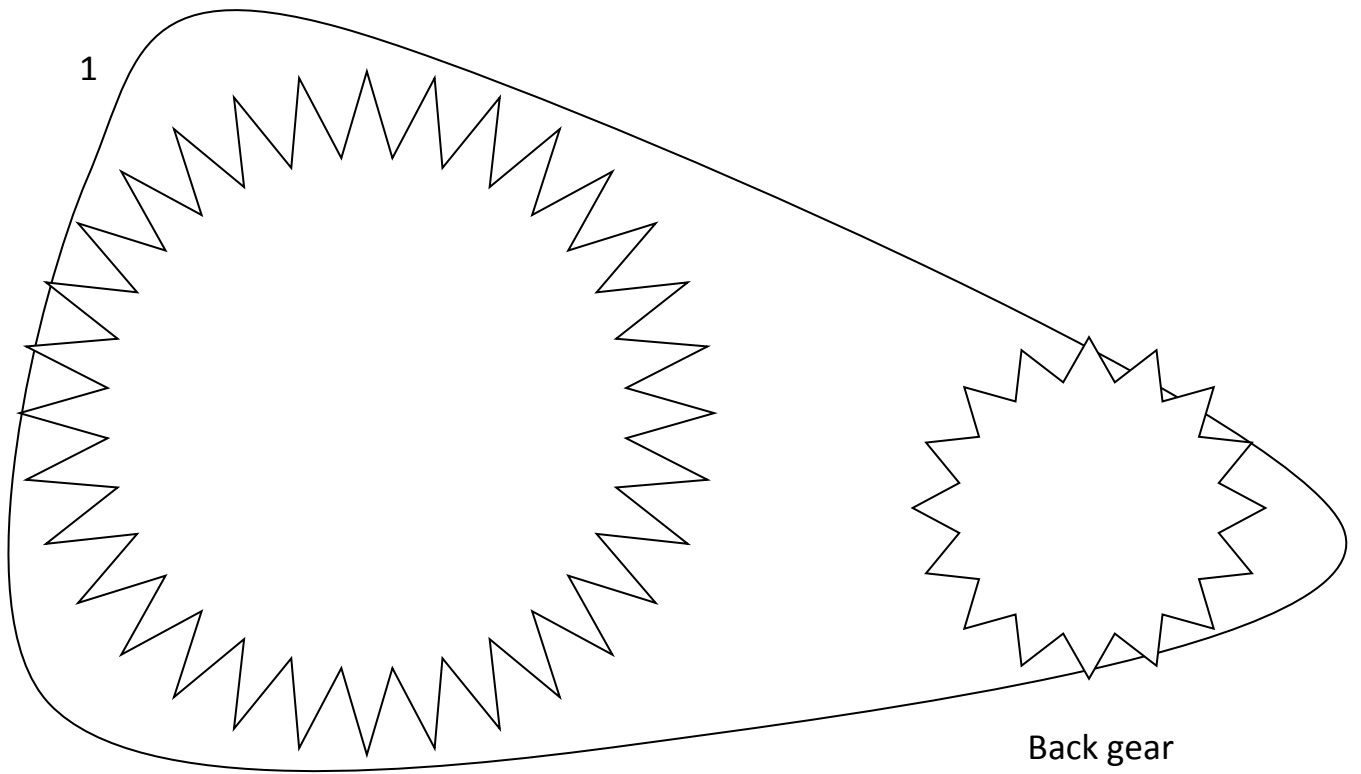
# **May the Forces Be With You**

Session 4

Resource pack

**Bike gear images and statements**

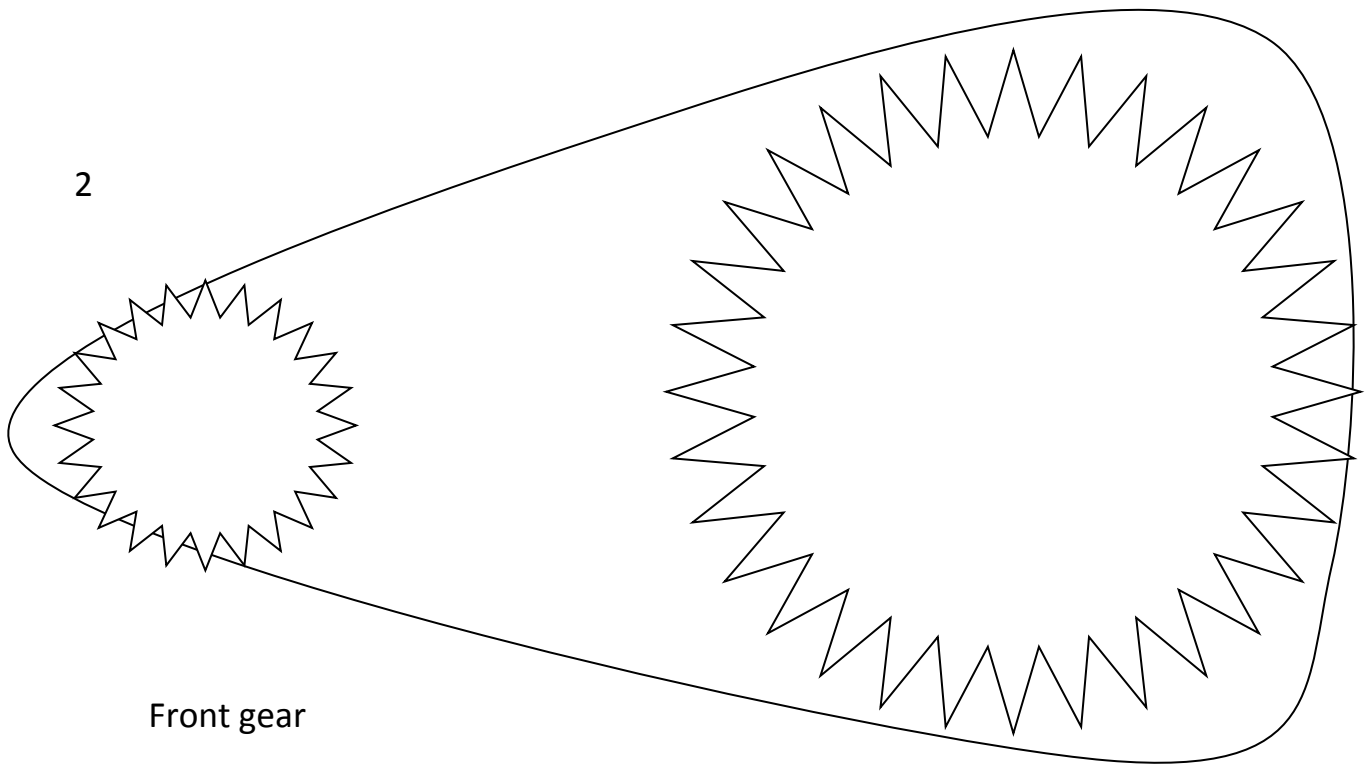
1



Front gear

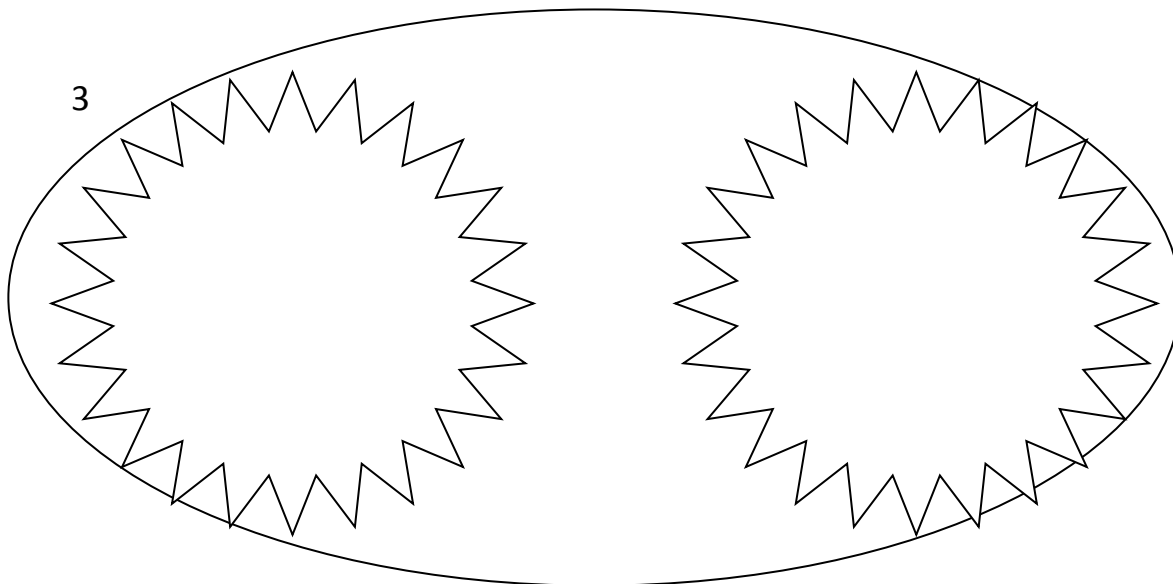
Back gear

2



Front gear

Back gear



Front gear

Back gear

*The front gear allows the pedals to go round easily, gradually moving the back gear and wheels. It may take a few rotations before the back wheel completes a turn.*

*The front and back gears need to go round at the same rate. For every turn of the pedals the back wheel completes a turn.*

*The front gear needs to turn the back gear multiple times for each complete pedal which makes the back wheel rotate multiple times for one turn of the pedal.*

1=downhill  
2=flat or gently uphill  
3= uphill

### Questions for investigations

- *How many 'teeth' do the gears have?*
- *How many more 'teeth' does this gear have in comparison to the other one?*
- *How far round do you think you will have to turn the first gear to get the second gear to do a complete rotation in example 1?*
- *How many times do you think you will have to turn the first gear to get the second gear to do a complete rotation in examples 2 and 3?*
- *Can you work out the gear ratio?*
- *Why do you think that this combination would help cycling uphill?*
- *Does going uphill require a greater or similar force to cycling on the flat?*
- *Why does this gear suit travelling going downhill/uphill?*