

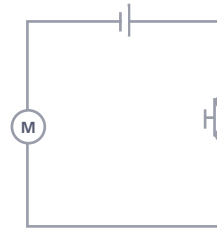
Time is running out

Help us engineer a net zero world

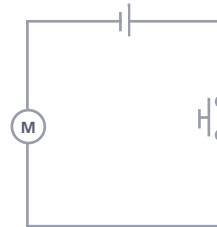
Activity Booklet: *Answers*

Can we keep travelling?

When the e-bike is being pedalled, the switch would be **closed** and the circuit would be **complete**. This means the motor would be powering the e-bike.



When the e-bike is not being pedalled, the switch would be **open** and the circuit would **break**. This means that the motor would not be powering the e-bike.



Why don't we value water?

If it rained 1200mm in a year, and you saved every drop of water from a roof with an area of 5 metres squared, how many litres of water would you save?

1200 millimetres × 5 metres squared = 1200 × 5 = **6000** litres of water saved

6000 litres of water is enough for 75 baths, but people often use water saved in this way for things like watering plants in the garden. This is because it saves them money, but it is also more energy efficient and so releases less carbon dioxide into the atmosphere.

What can we do to end waste?

When thinking about stuff that becomes waste after just one use, think:

Refuse - Can we stop using this altogether?

Reduce - Can we use much less of it?

Reuse - Can we actually use it more than once?

Repair - If it breaks, can we fix it rather than throw it away?

Recycle - Can we turn the waste into something else?

Where will our energy come from?

The Sun's light...	The Sun's heat...
<p>Photosynthesis in the tree leaves helps the tree to grow. This helps shade the house sun in summer (keeping the house cooler) and also makes wood, which is a renewable building material.</p>	<p>Evaporation of the water in the puddle makes clouds in the sky, which can keep us cool. These clouds then produce rain, which ends up in rivers and reservoirs which can help generate electricity through hydroelectric power.</p>
<p>Photovoltaic (solar) cells on the roof of the house generate electricity without directly emitting any carbon dioxide.</p>	<p>Convection in the atmosphere moves air around which helps to create wind, this turns the turbine which generates electricity without emitting carbon dioxide.</p>
<p>White doors, window frames and shutters reflect sunlight helping to keep the house cooler.</p>	<p>The solar water heating system on the roof warms up water for the house, meaning less gas is burned to heat up water in a boiler.</p>

How do we live with flooding?

The best plants for flood control are ones that can capture a large volume of water on their leaves and in their roots. Trees are really good at this, but if you don't have enough space for a tree then shrubs (e.g. heather) and hedges (e.g. privet) are also good.

Adding sand and gravel into soil can also help it absorb more water.

Think about how you might write a letter to persuade an adult of your flood prevention plan. What are your strategies for persuasive writing? Can you use repeated words or alliteration? Would emotional language or rhetorical questions work? And can you make a strong argument, backed up with evidence?

Do we need smarter cities?

The shortest route is 4 steps, e.g. via routers C, F and H. Other 4 step routes exist though, can you find them?

The longest route (without going through the same router twice) is 10 steps. This goes through every router once in the order B, C, F, A, D, E, G, H and I. If you could go through every router more than once then the longest route would be an infinitely long loop!

If router E is on your route and it breaks, then being part of a network enables the information to travel on another route. It will avoid the broken router and find a different path.