POWER DISCOVERY ZONE

KS2

FACTSHEET 5

Puzzle Hub

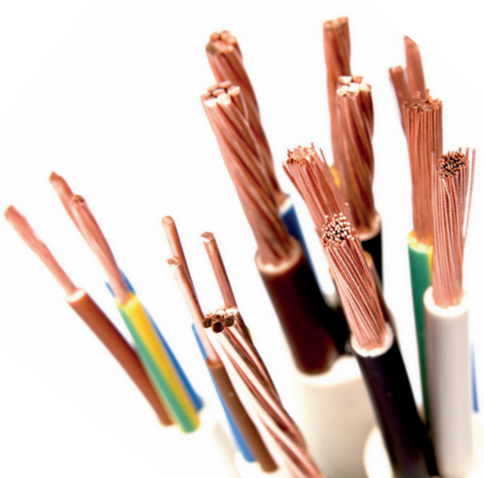
SCIENCE

How to use this worksheet

- Show the children a simple version of the puzzle hub (two lengths of wire) with the lid off. Have a circuit ready, as shown in the diagram on the worksheet. Attach one of the crocodile clips from the circuit to one of the four ends of the wires in the puzzle hub. Attach the other crocodile clip to the wire the children think might be the other end of it. If the bulb does not light, ask them why this is and try another one until they select the other end of the same wire so that the bulb lights up.
- Join the other end to another wire and ask why the bulb doesn't light. Next children should make the puzzle hub on the worksheet. A deep ice cream tub is ideal for this activity. Use as many wires as you wish. The wires don't need to be long, but long enough to knot the two ends of each wire together once they have been identified.
- If the children pull a wire, they will see where the other end is, so a 'no pulling' rule might be necessary. Or, they could tape the wires to the inside of the tub so the wires won't move. **(See Now try this!)**
- To organise their testing, children should keep the first crocodile clip attached to the same wire until they have found the other end.
- After the children have made the puzzle hub, ask them how they used the circuit to find the other end of any piece of wire. They should explain their answer.
- The children can then use the circuit and their puzzle hub wires with the **worksheet 8: Safety quiz.**

Key Electricity Facts

- An electric circuit needs an unbroken metal path. It can be broken or joined using a switch or other connection.



Exercise Extension: The students could also be tasked with making the puzzle harder, making it so people could not cheat and more advanced.

National Curriculum supporting information

SCIENCE

Sc1 Investigative skills:
2c) think about what might happen or try things out when deciding what to do, what kind of evidence to collect, and what equipment and materials to use

2l) use their scientific knowledge and understanding to explain observations

Sc4 Physical processes, Electricity:
1a) to construct circuits, incorporating a battery or power supply to make electrical devices work

DESIGN & TECHNOLOGY

Knowledge & understanding of materials and components:
4d) how electrical circuits, including those with simple switches, can be used to achieve results that work

Related Material
www.bbc.co.uk/bitesize/ks2/science/physical_processes/

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POWER DISCOVERY ZONE

KS2

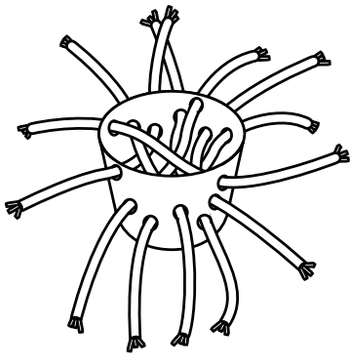
WORKSHEET 5

Puzzle Hub

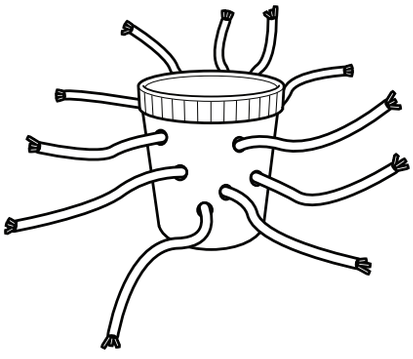
SCIENCE

Make a puzzle hub and use it to find out how a circuit works.

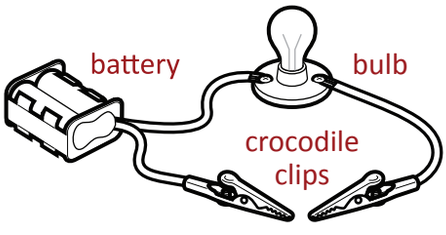
1. Cut an even number of holes in an ice cream tub then push lengths of wire through them so these come out through other holes.



2. Put on the lid.



3. How can you use a circuit like this one to find the two ends of one of the wires?



4. Swap hubs with another group. Take turns for a player from each group to guess two ends that might be pairs, then check them. Are they the same wire? If someone gets it right, they tie the ends together and have another turn. Keep score on the chart below.

Name	Number Correct

Now try this!

See if you can improve the puzzle hub to stop anyone pulling the wires to find the other ends of them.

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