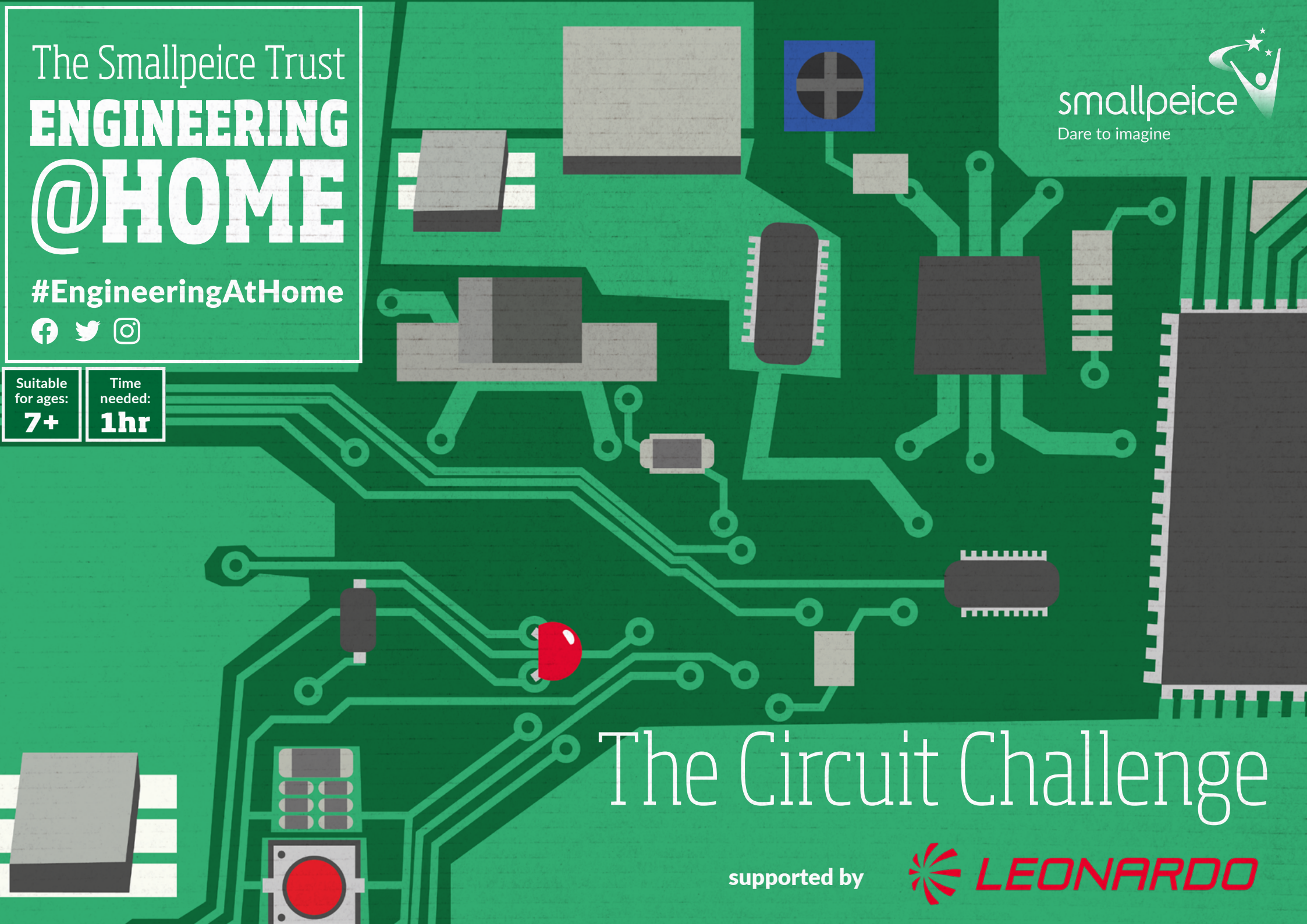
The Smallpeice Trust

ENGINEERING @HOME

#EngineeringAtHome

smallpeice
Dare to imagine

Suitable for ages:	Time needed:
7+	1hr



The Circuit Challenge

supported by LEONARDO

smallpeice

Dare to imagine

As it's half term, our Smallpeice team has put together five extra-special Engineering@Home challenges, perfect to complete as a family. This is number 1 in the series.

1

Objectives

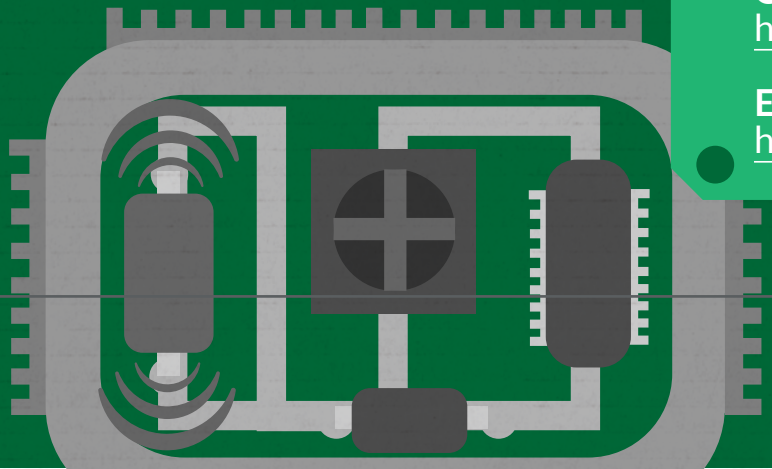
- To learn how electricity works
- To make a simple circuit
- To learn about conductive materials

Engineering Themes

ELECTRICITY
https://youtu.be/Uf76pThNXZc

CONDUCTIVITY
https://youtu.be/PafSqL1riS4

ELECTRICAL CIRCUITS
https://youtu.be/VnnpLaKsqGU



These are the tools and materials we used. If you're missing any items, why not substitute them with something similar?

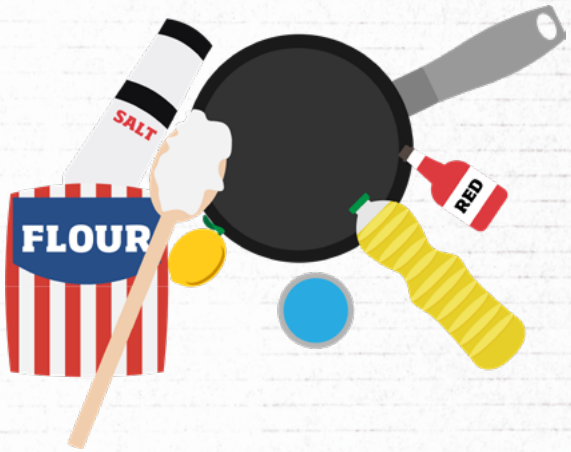
- Play Doh*
- 9V Battery
- LED bulb
  (you can find these everywhere - try a keyring torch)

*Or, to make your own:

- Flour (155g + 80g for kneading)
- Salt (70g)
- Water (240ml)
- Lemon juice (9tbsp)
- Vegetable oil (1tbsp)
- Food colouring (optional)

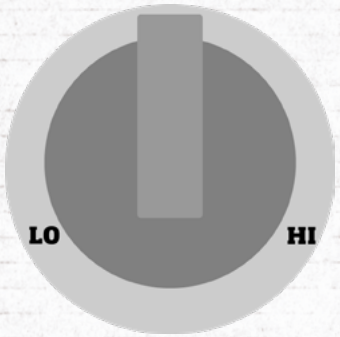
TO MAKE YOUR OWN CONDUCTIVE DOUGH

1



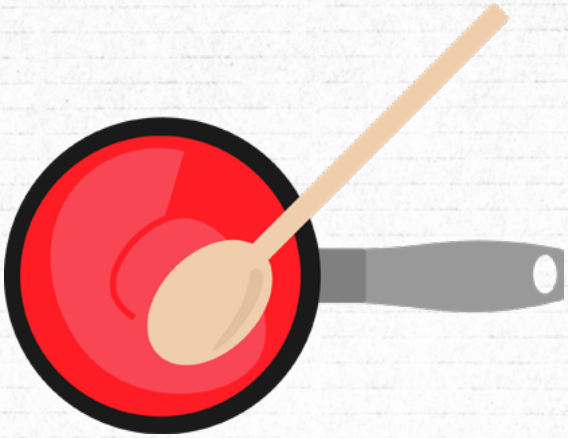
Add all the ingredients to a non-stick saucepan.

2



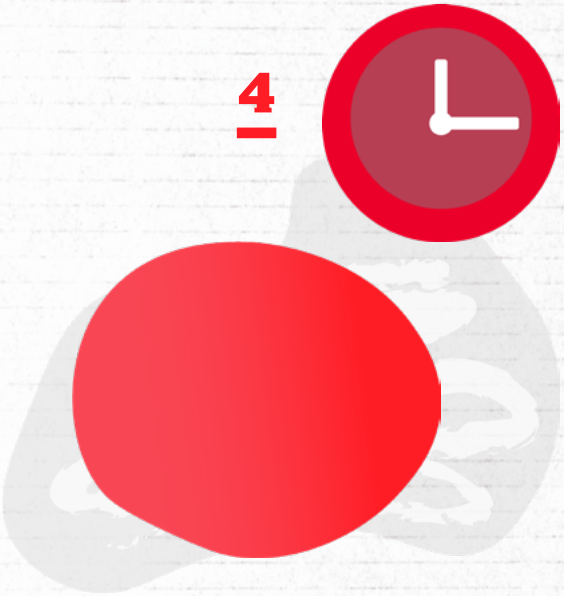
Heat the mixture over a medium heat.

3



Stir continuously. The mixture should thicken until it forms a ball.

4



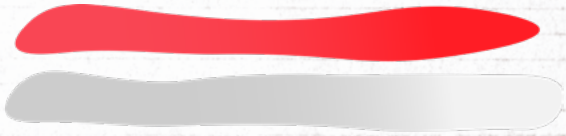
Empty onto a surface covered in the 80g of flour and leave to cool for approximately 15 minutes.

5

Knead in the rest of the flour until the mixture is no longer sticky.

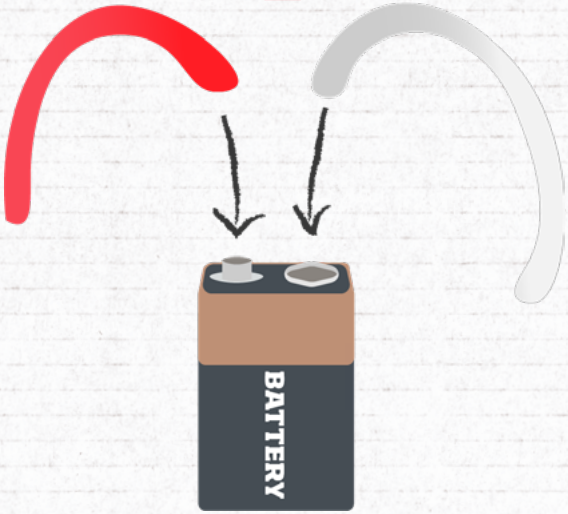
CONSTRUCTING A SIMPLE CIRCUIT

1



Roll your playdoh out into 2 cylinders. These are going to be your “wires”.

2



Attach the red one to the small circular terminal (+ve) and the white one to the larger hexagonal terminal (-ve).

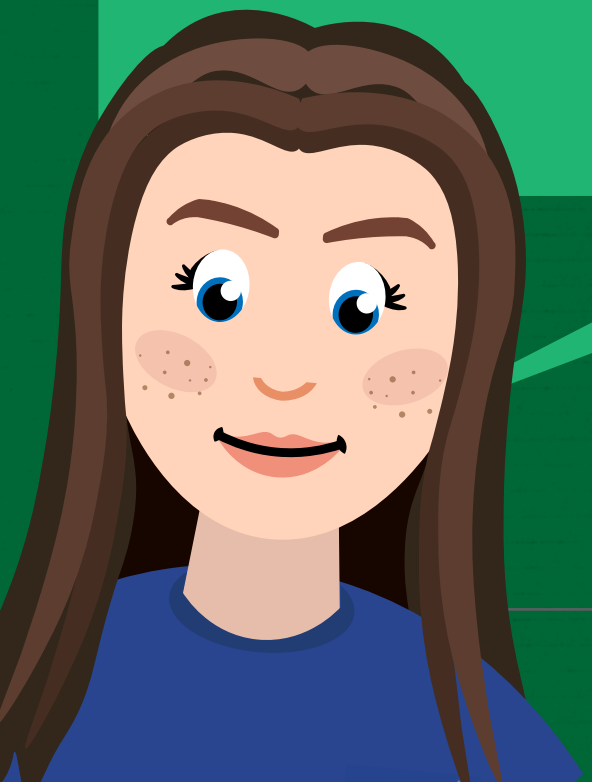
3

Put the LED into the playdoh. Make sure the longer leg is in positive side. Your LED should light up.

Need a Challenge?

If you want to challenge yourself further:

1. Make some insulating dough and think about its possible uses.
2. Make a switch or a button to add to your circuit.
3. Experiment with other conductive materials you can find around the house to add to your circuit.
4. Do some research. What ingredient do you think makes the playdoh conductive? (Hint: look up ionic compounds).



Once you've completed your circuit, film it in action and share your video on:

www.facebook.com/TheSmallpeiceTrust

www.twitter.com/SmallpeiceTrust
Use the hashtag **#EngineeringAtHome**

www.instagram.com/TheSmallpeiceTrust

Thanks again to LEONARDO for supporting this challenge.

Employing around 7,500 people across 6 main UK sites, Leonardo are one of the UK's largest employers of engineering graduates and apprentices with over 400 young people at any one time undertaking one of the company's accredited training schemes. Check out the company's UK website at https://uk.leonardocompany.com/en/people-careers to find out more about work experience, university placements, graduate and apprentice opportunities offered by Leonardo.

Applications for 2021 roles are available now!

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