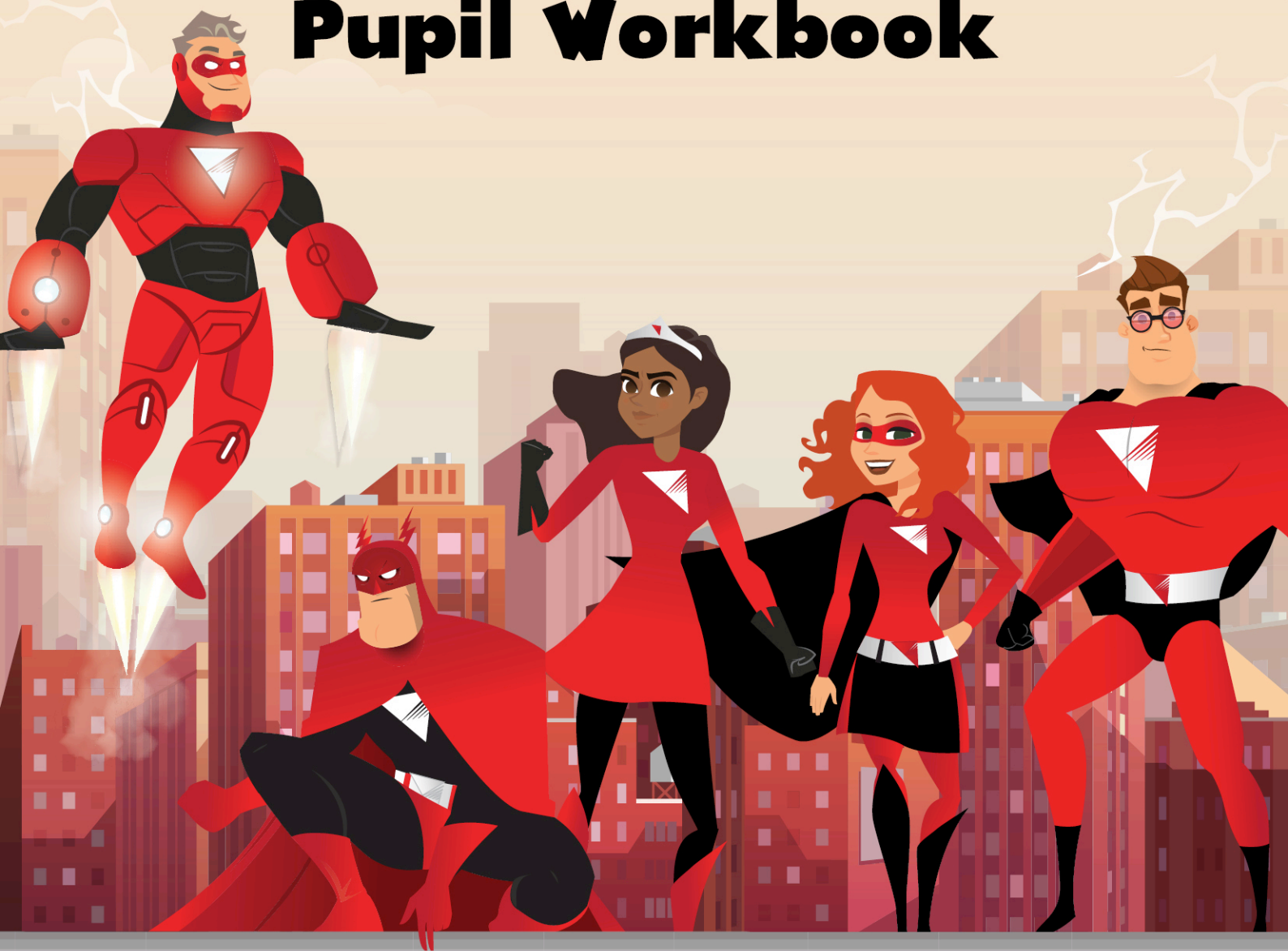


Electricity Day

Pupil Workbook



Welcome to NPG World of Work day.

After today you will:

- Know who Northern Powergrid is and what they do.
- Understand how to stay safe within the home and the local community in situations involving electricity.
- Understand the cost of electricity for an individual household and how it has changed in recent years.
- Identify issues that face future generations when using electricity.
- Explore electricity through scientific enquiry.



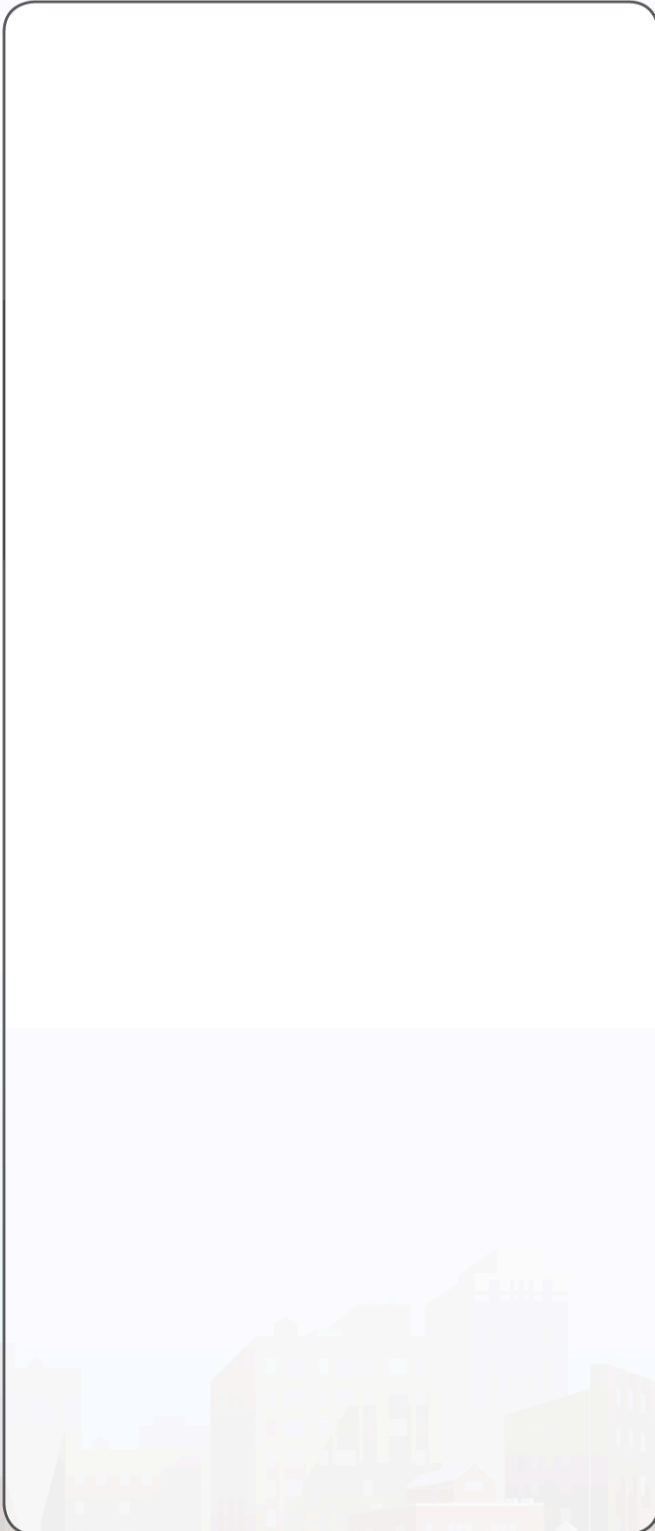
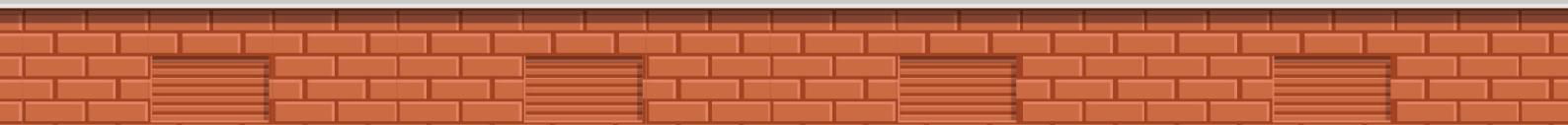
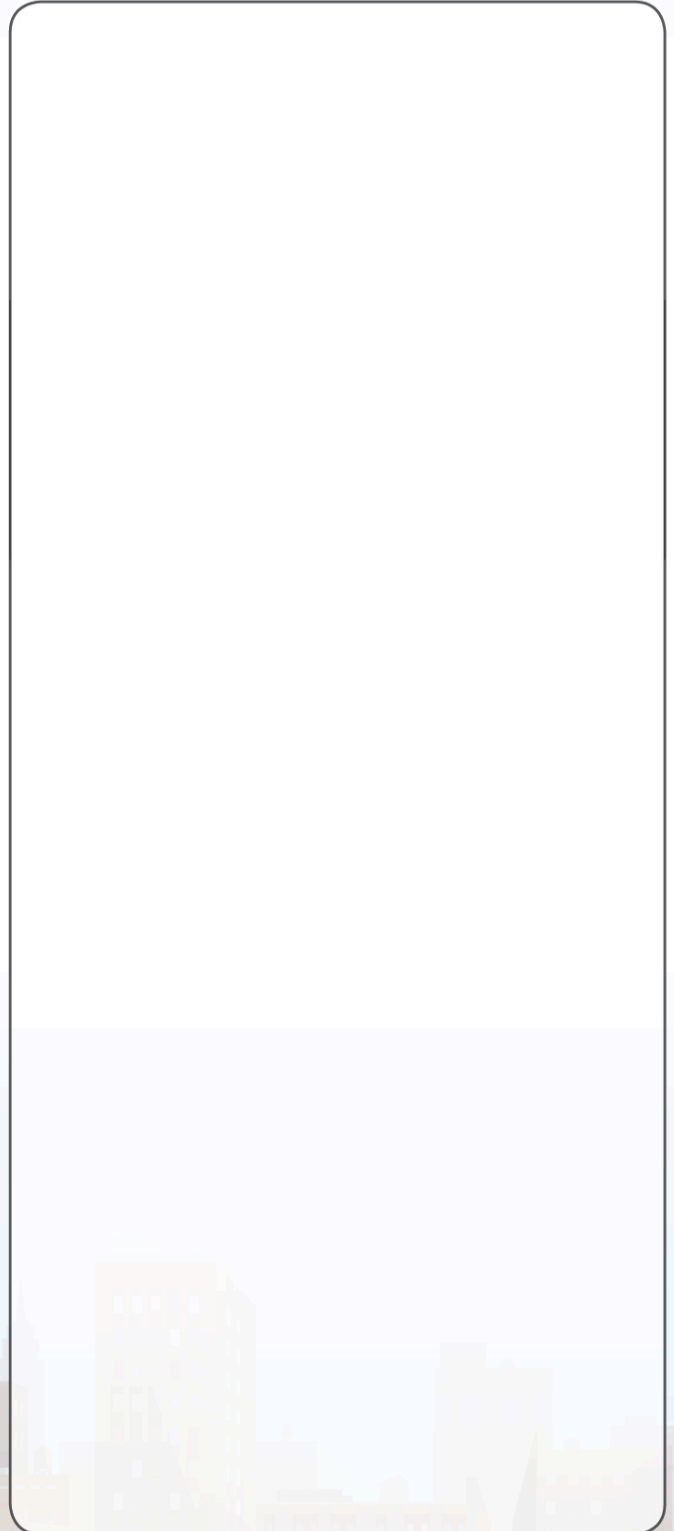
Who are Northern Powergrid?

We keep your power flowing!

You may not know who we are, but we keep the lights on, the kettles boiling and the phones charged for 8 million people across the Northeast, Yorkshire and northern Lincolnshire!

Our always-prepared team of energy experts live in your communities and are proud to play an essential role in keeping the power flowing to all the homes and businesses they serve!



Lesson 1**Warning Signs****Safe****Unsafe**

How electricity gets to your home.

Power Station

Electricity is generated at power stations. After passing through transformers, it leaves the power stations at high voltages (either 400,000 or 250,000 volts) to send it along cables.

Substation

There are many different types of substations. The equipment inside them, including transformers, is used to change the voltage and distribute electricity around the network of overhead lines and underground cables.

Underground cables

In some areas, usually towns and cities or new developments, electricity is usually carried along underground cables, which are insulated wires.

Transformers

Transformers are found both in substations and on wooden poles. They are used to either increase or decrease the voltage of the electricity being transported on the journey from the power stations to your home.

Wooden poles

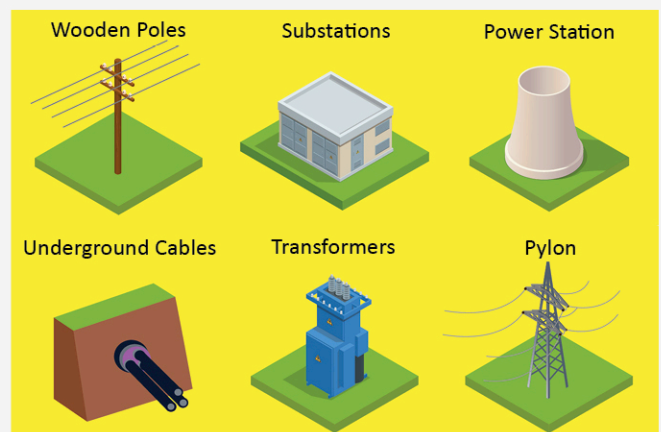
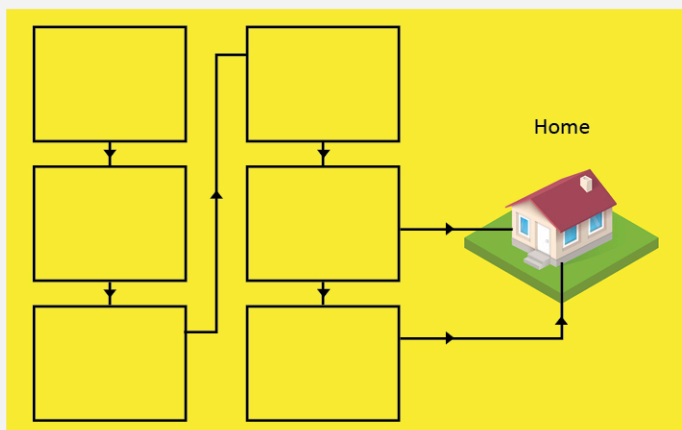
Electricity at lower voltages is sometimes distributed along cables held up by wooden poles. These cables can be mistaken for telephone wires.

Pylons

Pylons are metal structures (sometimes called 'towers') which support cables carrying high voltage electricity.



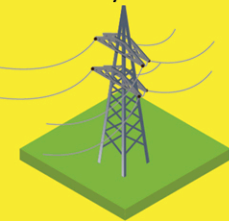
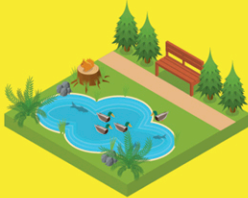

Draw the correct image in each box to complete the diagram:



Keeping Safe




Home Safe and Sound Grid

Power Station 	Power Station 	Pylon 	Pylon 	Wooden Poles 
Pylon 		Park/Playing Field 	Park 	Wooden Poles 
Street of Houses 	Power Station 	Transformers 	Park 	Shops 
Street of Houses 	Substations 	Substations 	Transformers 	
Start School 	Substations 	Substations 	Home Safe and Sound 	

Keeping Safe

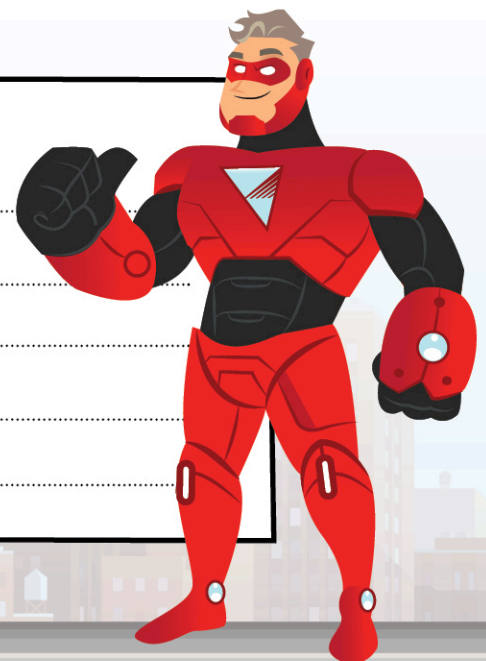
Home Safe and Sound Grid

Draw your directions to help the Beebot get from school to home safely, avoiding all electrical risks and hazards.

 <p>Forward Arrow</p>				

Record the potential electrical risks or hazards that you come across

1.
2.
3.
4.
5.



Lesson 2

Keeping Current

Welcome to Keeping Current! Let's get started:

What appliances would you expect to be used in a 1980s house vs. a house from today?

1980s House

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.....
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Modern House

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What difference would you expect to see in an energy bill from the 1980s vs an energy bill from today?

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How has electricity consumption changed over the past 40 years?

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Explore household income and energy costs. What are the issues?

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Discuss what issues face future decision makers?

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Lesson 3

My Circuit

1. Build a simple circuit below using a bulb, wires with crocodile clips, a switch and the lowest volt battery that you have.
2. Once you have made your circuit draw it below using the appropriate symbols.

	I made my circuit with a battery that had...	How many pieces of paper does it take to block the light?
	volts	
	volts	
	volts	
	volts	
	volts	

Which battery would be most suitable for building a torch with?

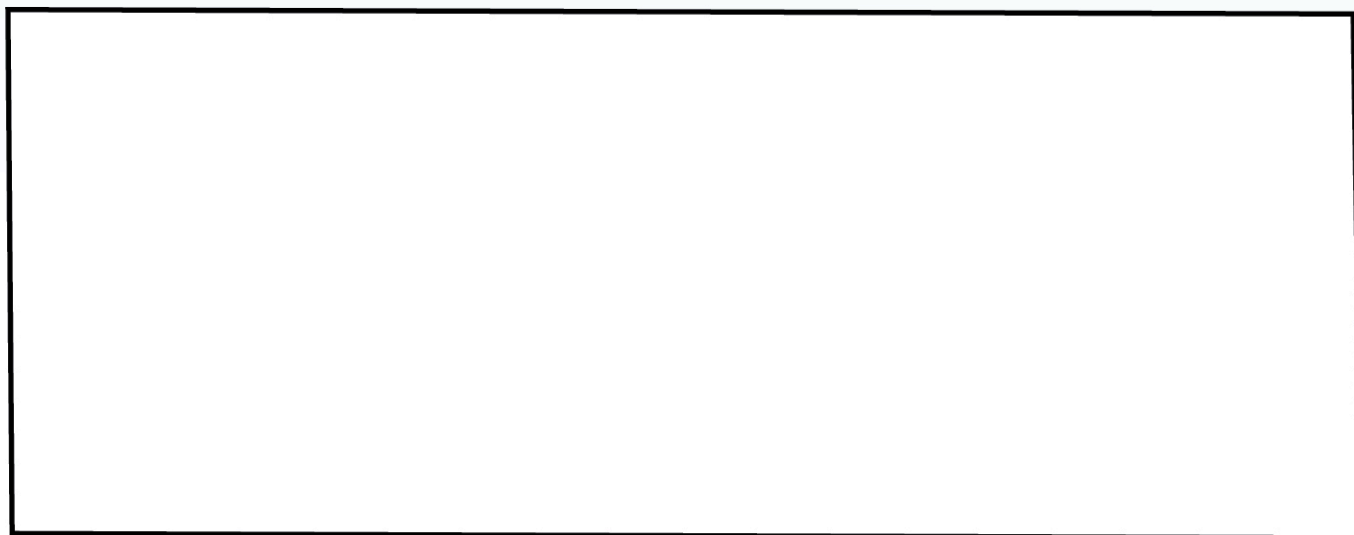
Why?

Was this a fair test? if so, please state why.



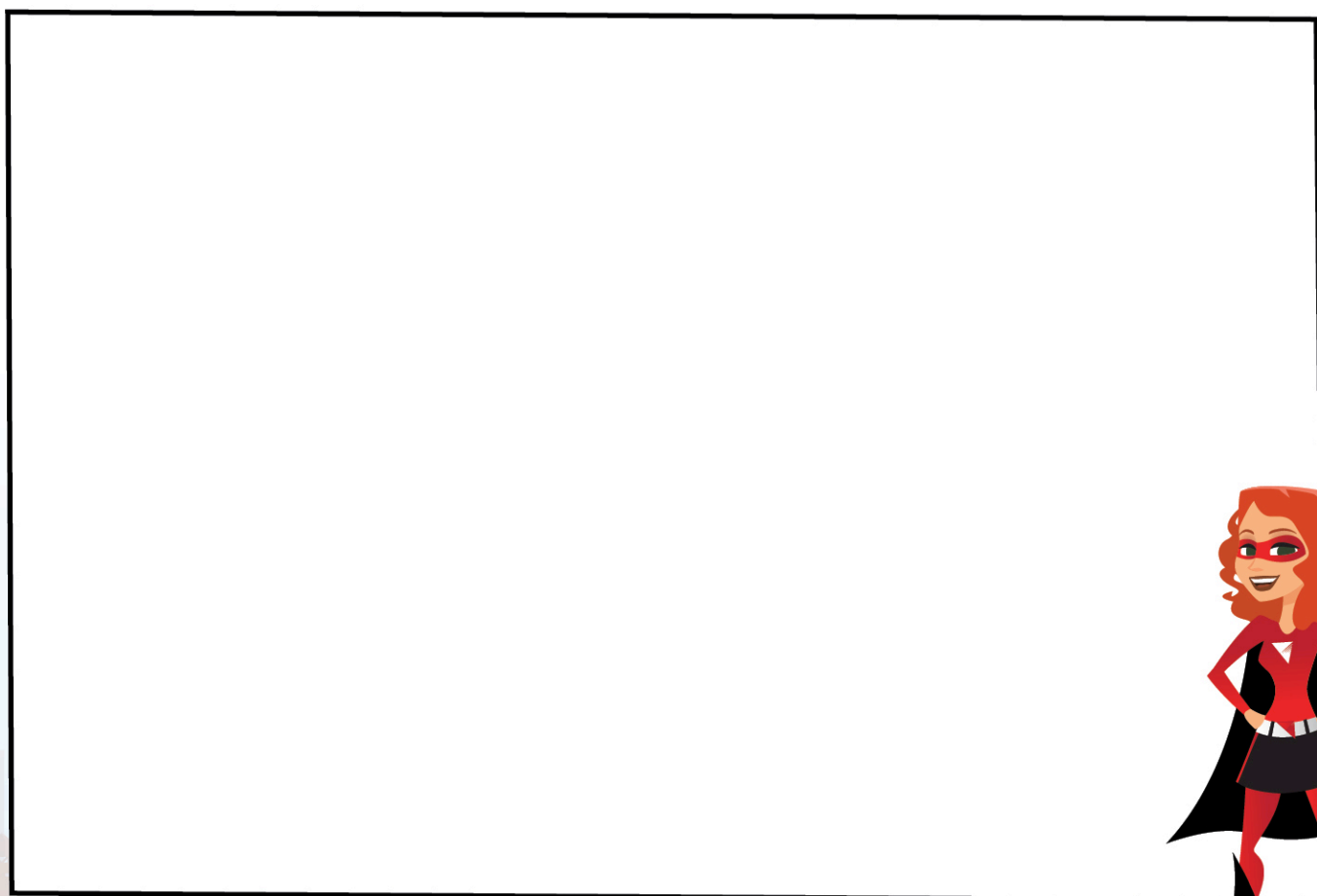
My Torch

Draw the circuit that you think would be most suitably used when designing a torch. Please use the appropriate symbols.



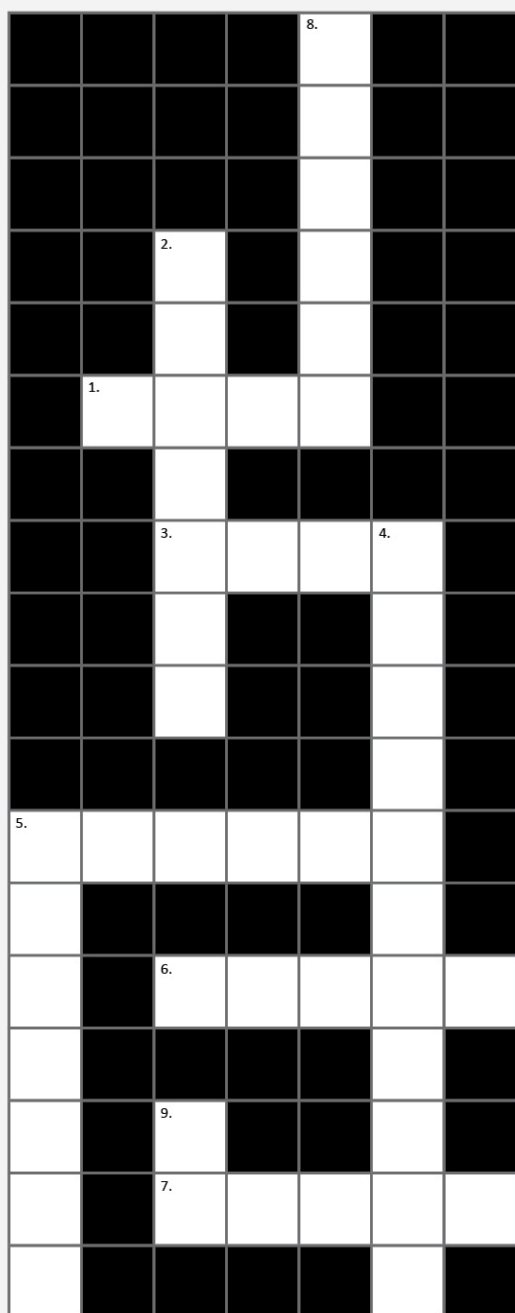
Design the case for your torch.

What would it look like? Shape, size, colour?



Crossword

Use the clues to complete the crossword puzzle.



Across

1. What is the name of the power company we have been learning about?
Northern Power _____
3. kWh is the _____ your electricity bill is measured in.
5. In some areas, usually towns and cities or new developments, electricity is usually carried along by underground _____, which are insulated wires.
6. Metal structures (sometimes called 'towers') which support cables carrying high voltage electricity.
7. Electricity is generated at a _____ station.

DOWN

2. The bulb will turn on when the _____ is complete.
4. They are used to either increase or decrease the voltage of the electricity being transported on the journey from the power stations to your home.
5. This type of electricity flows into your home.
8. Another word for risk or danger.
9. The price of electricity is going ____.



Wordsearch

Find the following words below in the word search:

CIRCUIT

SUBSTATION

TRANSFORMERS

ELECTRICITY

PYLONS

VOLTAGE

UNIT

POWER

SAFE

HAZARD

RISK

CURRENT

T	D	E	B	N	G	H	A	Z	A	R	D
R	W	N	P	K	G	S	F	Y	B	N	S
A	U	Q	O	T	M	I	E	W	I	P	A
N	X	D	N	I	H	R	L	P	U	O	G
S	V	G	W	S	T	R	E	C	Y	W	I
F	O	T	K	V	M	A	C	I	Q	E	L
O	L	M	P	E	C	L	T	A	N	R	F
R	T	Y	D	F	Q	Z	R	S	E	I	J
M	A	B	U	A	R	J	I	O	B	H	R
E	G	L	O	S	H	K	C	R	J	U	I
R	E	T	I	N	U	G	I	B	K	W	S
S	C	U	R	R	E	N	T	S	A	T	K
J	D	Z	N	A	G	P	Y	L	t	N	U