



Name: \_\_\_\_\_

Date: \_\_\_\_\_ Hour: \_\_\_\_\_

Go to the website: <http://thefusebox.ce-electricuk.com/page/electricity/objects.cfm>

**Step 1: Click on "How do Electrical Objects Work?" Read the introduction on that page. Fill in the blanks below.**

Light, sound, heat and 'moving' are all forms of energy. Moving is usually called \_\_\_\_\_ energy. All of these forms of energy can be produced using \_\_\_\_\_, which is another form of energy. There are other forms of energy, for example, the food that we eat is \_\_\_\_\_ energy.

It is possible to change one form of energy into another. In our daily lives we frequently use \_\_\_\_\_ to make other forms of energy that we need. This is done using a wide range of pieces of equipment. For example, \_\_\_\_\_ can be used to make light using a torch or a light bulb in our homes. \_\_\_\_\_ can be produced using electrical bells, buzzers or speakers. We use electricity to help prepare our food using such things as kettles, ovens and toasters. Most long underground trains use electricity to make them move.

**Step 2: How do Electrical objects work**

**Click on each of the objects below. Sketch the circuit that is created to make the object work. Fill in the blanks next to each objects description.**



**Description:** The energy starts as - \_\_\_\_\_ energy in the batteries. Inside the batteries the chemicals react together to produce \_\_\_\_\_. This electrical energy is then changed to \_\_\_\_\_ energy by passing it through a bulb.



**Description:** The circuit diagram for a light in a room is - \_\_\_\_\_ as that for a torch. The main difference is that mains electricity gives the supply of the electricity rather than \_\_\_\_\_.



**Description:** The energy starts as \_\_\_\_\_ energy in the batteries. Inside the batteries the chemicals react together to produce \_\_\_\_\_. This electrical energy is then changed to \_\_\_\_\_ energy by passing it through something called an electromagnet, which makes the bell clapper move. The clapper then hits a bell to produce \_\_\_\_\_ energy.

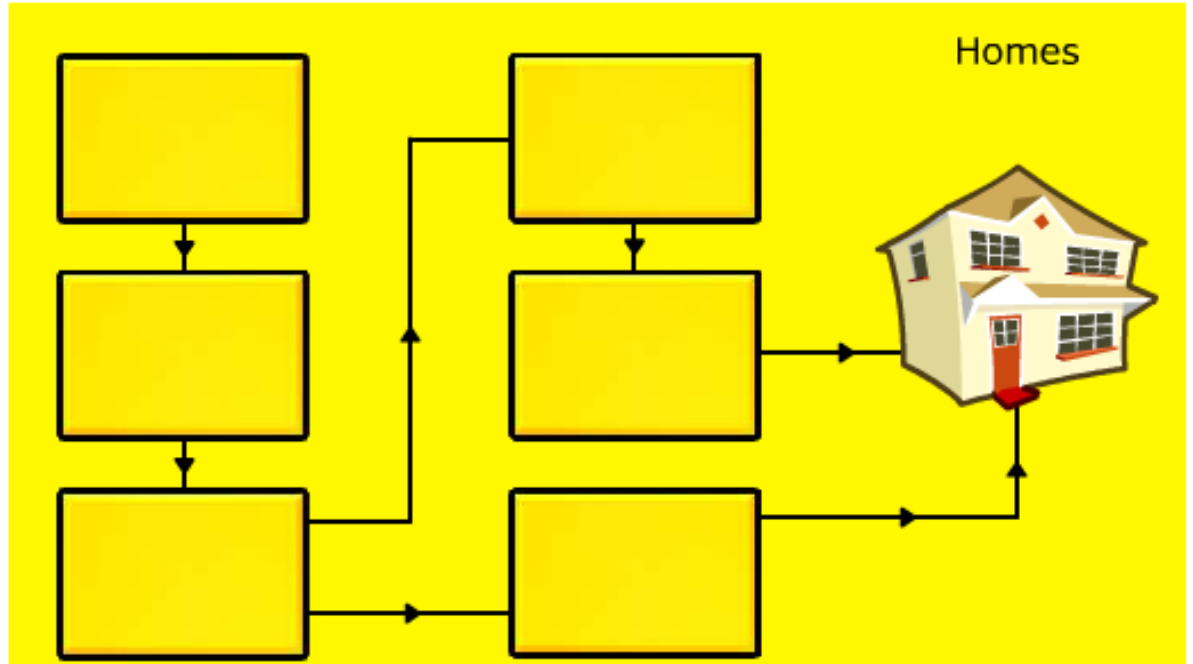
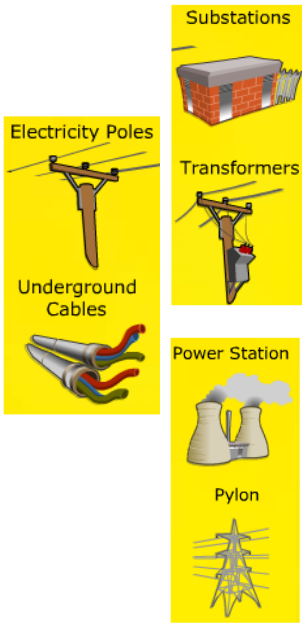
**SKETCH**

**SKETCH**

**SKETCH**

### Part 3: How electricity gets to your home

Fill in the boxes with the appropriate name to follow the path to you home. When you have all the icons moved the correct spot the house will light up.



### Part 4: Circuit Building

Build the following circuits correctly until the light-bulbs work. Sketch a drawing of your working circuit.

#### SERIES CIRCUITS

Series: Level 1.1  
1 bulb, no switch

Series: Level 1.2  
1 bulb, 1 switch

**Series: Level 2.1**  
**2 bulbs, switch**

**Series: Level 2.2**  
**2 bulbs, switch, one bulb out?**

**Series: Level 2.4**  
**3 bulbs, 1 switch**

**Parallel: Level 3.2**  
**2 bulbs, switch, one bulb out?**

**Parallel: Level 3.4**  
**3 bulbs, 1 switch, one out?**

**CHALLENGE:**  
**Parallel, 3 bulbs, 2 switches?**



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**Part 5: Jargon Buster**

Click on the Jargon Buster link and fill in the definitions below.

Word	Definition/Description
a.c.	
Amps	
Ammeter	
Current	
d.c.	
Fuse	
Insulation	
Kilowatt	
Resistor/Resistance	
Transformer	
Voltage	
Volts	
Watts	

## Part 6: Day of Discovery

Go through each chapter. Circle on your paper the dangers and record in the box below why it is dangerous.

### THE FUSEBOX

name \_\_\_\_\_

#### Chapter 1

It's a lovely day and Vic has decided to go on a walk! On his way, he going to take some lunch to his friend Lola Livewire, who is fishing at the river. On his way out, Vic spots Sam and Ollie from next door playing badminton in the garden. Sam is climbing a tree to find a lost shuttle-cock. The branches of the tree are growing close to some electricity wires.



Circle the danger in the picture with a pen or pencil, and write down what you think the danger is.

#### Chapter 2

After making sure Sam climbs down from the tree, Vic sets off on his walk. At the end of the street he passes some young children playing with their ball next to a vandalised streetlight.



Circle the danger in the picture with a pen or pencil, and write down what you think the danger is.

### THE FUSEBOX

name \_\_\_\_\_

#### Chapter 3

After calling the council to report the damage to the streetlight, Vic continues on his way. Arriving at the river, he finds his friend Lola fishing.



Circle the danger in the picture with a pen or pencil, and write down what you think the danger is.

#### Chapter 4

Having dropped off Lola's lunch and making sure she has moved to a safer position at the river, Vic decides to take the scenic route home through the park. He notices a little boy and his father flying a kite.



Circle the danger in the picture with a pen or pencil, and write down what you think the danger is.

### THE FUSEBOX

name \_\_\_\_\_

#### Chapter 5

On the move again, Vic thinks his day can't get any more eventful until he spots a group of people playing Extreme Frisbee at the other end of the park. He notices the frisbee land in a substation and one of the players starts to climb the wall.



Circle the danger in the picture with a pen or pencil, and write down what you think the danger is.

#### Chapter 6

A little exhausted by his day, Vic finally heads back to his house. He comes across some children playing next to a disused building. The doors to the building are not locked and some local children are about to enter.



Circle the danger in the picture with a pen or pencil, and write down what you think the danger is.



name \_\_\_\_\_

## The End

Vic's day should have given you some useful information about the potential dangers of electricity. Use the picture below to test all of your knowledge and see how quickly you can spot the dangers.



Circle the dangers in the picture with a pen or pencil, and write down what you think the 14 dangers are.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

**Part 7: History Time**

Click through the time line and fill in ONE important ideas or event for each time period.

<b>Date</b>	<b>One Major Event or Idea</b>
1831-1840	
1841-1850	
1851-1860	
1861-1870	
1871-1880	
1881-1890	
1891-1900	
1901-1910	
1911-1920	
1921-1930	
1931-1940	
1941-1950	
1951-1960	
1961-1970	
1971-1980	
1981- Present	

## Part 8: Quizzes

Go through **QUIZZES 2 and 4**, and mark your answers below as you go.

### Quiz 2

- When wiring an electrical plug, which colour of wire is connected to the **LIVE** terminal, marked with an L?
  - Blue
  - Green and Yellow
  - Brown
- When wiring an electrical plug, which colour of wire is connected to the **NEUTRAL** terminal, marked with an N?
  - Blue
  - Green and Yellow
  - Brown
- When wiring an electrical plug, which colour of wire is connected to the **EARTH** terminal, marked with an E?
  - Blue
  - Green and Yellow
  - Brown
- During a thunderstorm where is the safest place to be?
  - In the middle of a field
  - Under a tree
  - Inside a building
- What is the purpose of a **fuse** inside a domestic electric plug?
  - To cut off the electricity if a fault develops
  - To let you know how much electricity passes through the plug
  - To complete the circuit so that the appliance works
- If you could see inside the **fuse** used in a domestic electric plug, what would you see?
  - A tube filled with air to stop the electricity flowing
  - A white powder that melts if something goes wrong
  - A thin metal wire that breaks if too much electricity passes through it
- Which one of the following items does not need electricity to make it work?
  - A torch
  - A refrigerator
  - A toilet cistern
- If your football goes inside an electricity substation, what should you do?
  - Climb over the security fence to get it.
  - Ask your parents to contact the local electricity company to get it back for you.
  - Get a long stick and try to reach it over the fence.
- Which one of these electrical appliances uses batteries to make it work?
  - A dishwasher
  - A torch
  - A vacuum cleaner
- Why should you not fly a kite near overhead electricity cables?
  - The kite might damage to cables.
  - The kite interferes with the flow of electricity.
  - Electricity could flow down the kite's string and electrocute you.

### Quiz 4

- Why do electrical appliances have an **EARTH** connection?
  - To allow electricity to flow safely to the ground if a fault develops
  - To complete the circuit so that the appliance works
  - To allow the electricity to return to the power station through the ground
- Which of the following domestic electrical appliances needs the highest electric **current** to make it work properly?
  - An electric kettle
  - A refrigerator
  - A bedside light
- Which one of the following domestic electrical appliances is the most expensive to use for an hour?
  - A tumble dryer
  - A home computer
  - A telephone battery charger
- A **fuse** is a safety device added to a plug to cut off the supply of electricity if a fault develops. In which wire is it connected?
  - Earth
  - Live
  - Neutral
- Electricity is generated at a power station at 11,000 **volts** then changed to 400,000 and 275,000 **volts** for sending around the country through the cables attached to pylons. What is the name of the device that changes the **voltage**?
  - Transformer
  - Transistor
  - Resistor
- Why is a high **voltage** needed to send electricity around the country through the cables attached to pylons?
  - To make the cables buzz so that people know they are there
  - Because it is more efficient so that less electricity is wasted
  - To make sure that it is too dangerous for people to go near them
- What is the name of the meter used for measuring electric **current**?
  - Ammeter
  - Voltmeter
  - Joulemeter
- When was the first working wind powered electricity generator used?
  - 1919
  - 1941
  - 1973
- Which American tried to claim the credit for the invention of the first useable electric light bulb?
  - Michael Faraday
  - Isaac Newton
  - Thomas Edison
- Who used electricity to produce the first ever useable frozen vegetables in 1930?
  - Clarence Birdseye
  - Arthur Findus
  - Hubert Walls