

# Electricity

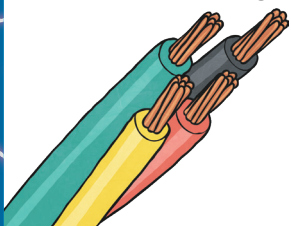
Many things that we use every day are powered by electricity.



...and many more things rely on electricity to work properly. When charged particles move through a wire or a conductor, we call this current 'electricity'.

## Did You Know...?

- The first electric motor was invented around 1821 by Michael Faraday.
- Electricity can be very dangerous as you can get an electric shock from it. You need to be sensible around electrical devices.
- Electrical current flows more easily through silver, copper, and gold.



## Energy Sources Used to Generate Electricity



### Fossil fuels (gas, coal and oil)

- These will run out.
- Burning them releases pollution and can cause harm to animals and people.



### Nuclear

- Some electricity is generated in nuclear power stations.
- Many of these older power stations are being closed and new ones are being built.



### Renewable energy

- Energy sources include wind, wave, hydro, biomass and solar.
- They will not run out.
- Using them causes a lot less pollution.

## Where is Electricity Generated?

Electricity can be generated in power stations, wind turbines and solar panels. Electrical charge flows through wires to where it needs to be used, like in homes, hospitals and factories.

# Questions

1. Which of the following is not powered by electricity? Tick one.

- hair dryer  
 radio  
 bicycle  
 All of the above

2. Find and copy one word that means 'made'.

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3. Draw **three** lines to match each energy source with each fact.

Nuclear

These will not run out.

Renewable energy

These will run out.

Fossil fuels

Many of these older power stations are being closed and replaced with new ones.

4. Tick the boxes to say whether the statements below are **true** or **false**.

| Statement   | true | false |
|---|------|-------|
| Oil is a renewable source of energy.  |      |       |
| Electricity generated from renewable energy sources causes less pollution than electricity generated from fossil fuels. |      |       |
| All electricity is generated in nuclear power stations.   |      |       |

5. How does electrical charge get to where it needs to be used? Tick one.

- it travels through air particles
- it flows through wires
- it is transported by car
- it travels through the ground

6. Fill in the missing words.

Electricity can be generated in power stations, \_\_\_\_\_  
and solar panels.

7. Electrical current flows more easily through silver, copper, and gold.

Which material do you think is most often used for electrical wires?

Explain your answer using evidence from the text.

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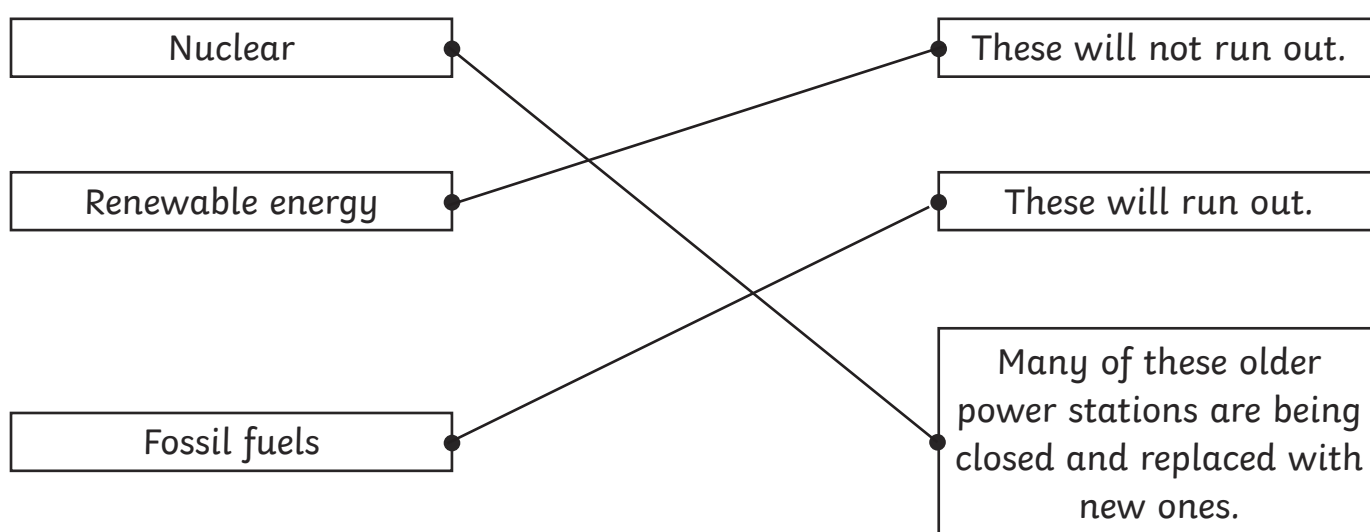
# Answers

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- hair dryer
- radio
- bicycle**
- All of the above

2. Find and copy one word that means 'made'.  
**generated**

3. Draw **three** lines to match each energy source with each fact.



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| Statement   | true | false |
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| Oil is a renewable source of energy.  |      | ✓     |
| Electricity generated from renewable energy sources causes less pollution than electricity generated from fossil fuels. | ✓    |       |
| All electricity is generated in nuclear power stations.   |      | ✓     |

5. How does electrical charge get to where it needs to be used? Tick one.

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- it flows through wires**
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- it travels through the ground

6. Fill in the missing words.

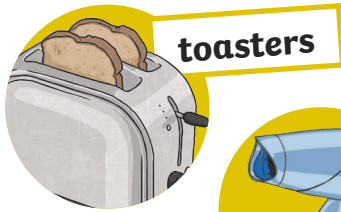
Electricity can be generated in power stations, **wind turbines** and solar panels.

7. Electrical current flows more easily through silver, copper, and gold. Which material do you think is most often used for electrical wires? Explain your answer using evidence from the text.

**Pupils' own responses, such as: I believe that electrical wires are most often made out of copper because it says that electrical current flows more easily through copper, silver and gold. I think copper is less expensive than silver and gold, so copper would probably be used more than those.**

# Electricity

Many things that we use every day are powered by electricity.



toasters



hair dryers



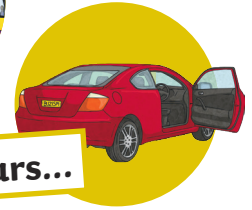
lights



radios



trains



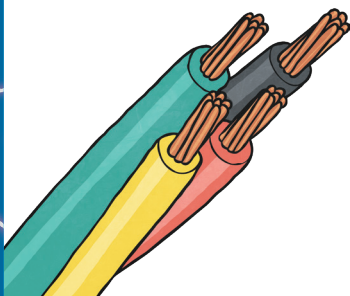
some cars...

and many other items rely on electricity to work properly.

When charged particles move through a wire or a conductor, we call this current 'electricity'. Silver, copper and gold are good electrical conductors - this means that electrical current flows more easily through them.

## Did You Know...?

- The first electric motor was invented around 1821 by Michael Faraday
- Electricity can be very dangerous as you can get an electric shock from it. You need to be sensible around electrical devices.
- Electrical current is measured in amps.



## Energy Sources Used to Generate Electricity



### Fossil fuels (natural gas, coal and oil)

- Most power stations burn the fossil fuel natural gas, but some also use coal. Burning these fuels releases pollution.
- Fossil fuels are a non-renewable source of energy. This means they will run out one day.



### Nuclear

- Some electricity is generated from nuclear reactors in power stations. They use an element called uranium. In the UK, many old stations are being closed and new ones are being built.

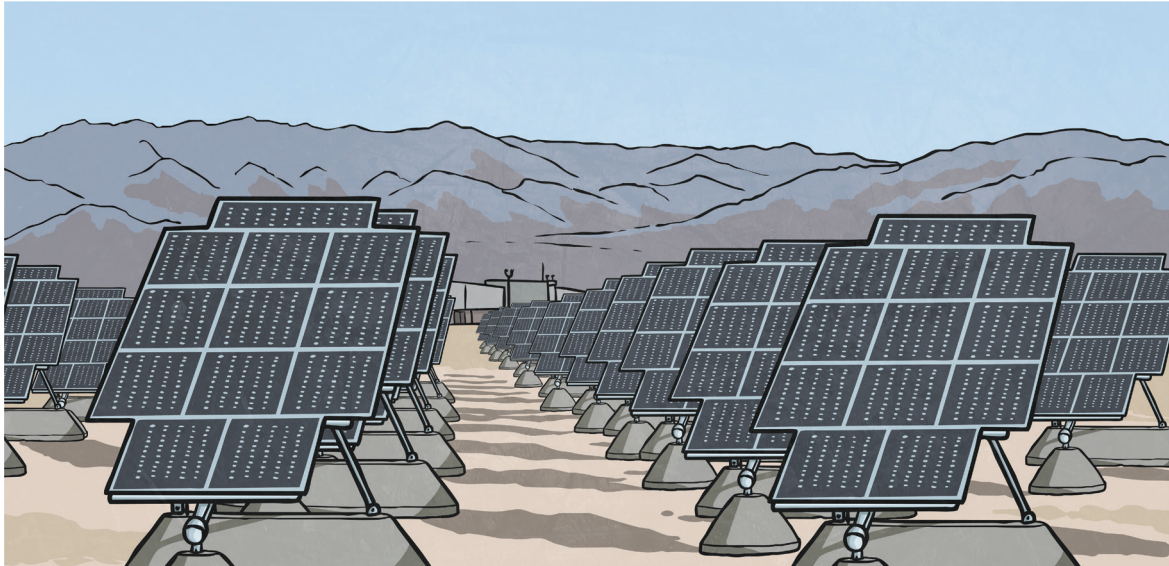


### Renewable energy

- Energy sources include wind, wave, hydro, biomass and solar. The energy from these sources is harvested through different technologies, for example, wind turbines. Once these have been built, using them causes minimal further pollution. They are also renewable - wind and the sun will not run out.

## Where is Electricity Generated?

Electricity can be generated in power stations, through wind turbines and solar panels. Electrical charge flows through a complicated grid of wires called the National Grid, to get to where it needs to be used, like in homes, hospitals and factories.



# Questions

1. What is electricity? Tick one.

- the movement of charged particles
- when charged particles stop
- when particles vibrate
- when particles change state

2. Find and copy **three** materials that allow an electrical current to move more easily.

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

3. Draw **four** lines and to match each energy source to its type.

coal

uranium

wind

biomass

renewable energy

nuclear

fossil fuels

4. Fill in the missing words.

Electrical charge flows through a complicated grid of wires called the \_\_\_\_\_  
\_\_\_\_\_, to get to where it needs to be used, like in homes, hospitals and  
factories.



5. Number the facts from **1-5** to show the order in which they appear in the text. The first one has been done for you.

|          |  |
|----------|--|
|          | Electricity can be generated in power stations, through wind turbines and solar panels.                |
|          | The energy from these sources is harvested through different technologies, for example, wind turbines. |
| <b>1</b> | Many things are powered by electricity.  |
|          | Electricity can be very dangerous as you can get an electric shock from it.                            |
|          | Most power stations burn the fossil fuel natural gas, but some also use coal.                          |

6. What is electrical current measured in? Tick one.

- amps  
 centimetres  
 grams  
 wattage

7. Which material do you think is used most regularly for electrical purposes?

Explain your answer using evidence from the text.

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8. Compare renewable energy sources and fossil fuels in 40 words or fewer.

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# Answers

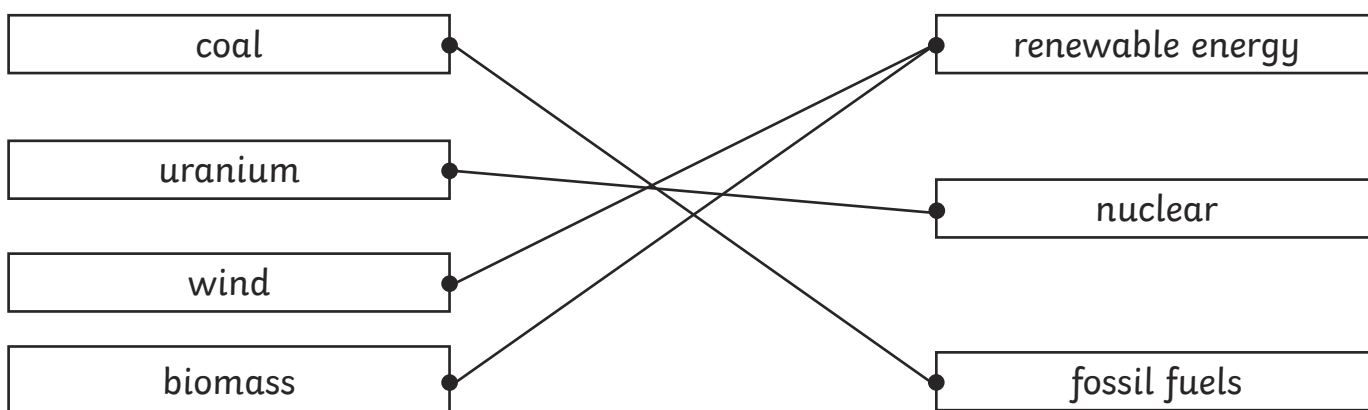
1. What is electricity? Tick one.

- the movement of charged particles**
- when charged particles stop
- when particles vibrate
- when particles **change state**

2. Find and copy **three** materials that allow an electrical current to move more easily.

- **silver**
- **copper**
- **gold**

3. Draw **four** lines and to match each energy source to its type.



4. Fill in the missing words.

Electrical charge flows through a complicated grid of wires called the **national grid**, to get to where it needs to be used, like in homes, hospitals and factories.

5. Number the facts from **1-5** to show the order in which they appear in the text. The first one has been done for you.

|          |  |
|----------|--|
| <b>4</b> | Electricity can be generated in power stations, through wind turbines and solar panels.                |
| <b>3</b> | The energy from these sources is harvested through different technologies, for example, wind turbines. |
| <b>1</b> | Many things are powered by electricity.  |
| <b>5</b> | Electricity can be very dangerous as you can get an electric shock from it.                            |
| <b>2</b> | Most power stations burn the fossil fuel natural gas, but some also use coal.                          |

6. What is electrical current measured in? Tick one.

- amps**  
 centimetres  
 grams  
 wattage

7. Which material do you think is used most regularly for electrical purposes? Explain your answer using evidence from the text.

**Pupils' own responses, such as: I believe that electrical wires are most often made out of copper because it says in the text copper, silver and gold are good electrical conductors. As copper is less expensive than silver and gold, I think it would probably be used most often.**

8. Compare renewable energy sources and fossil fuels in 40 words or fewer.

**Pupils' own responses, such as: Renewable energy sources are sources such as wind and sun, they do not run out and generating electricity with them does not create pollution. Fossil fuels are burned to make electricity and this causes pollution, they can also run out.**

# Electricity

Many things that we use every day are powered by electricity.



toasters



hair dryers



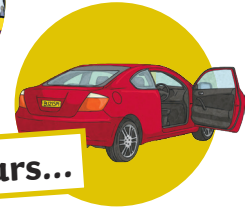
lights



radios



trains



some cars...

...and many other items rely on electricity to work properly.

When charged particles move through a wire or a conductor, we call this current 'electricity'. Silver, copper and gold are good electrical conductors - this means that electrical current flows more easily through them.

## Energy Sources Used to Generate Electricity

Electricity can be generated from a variety of energy sources. The main sources are:



### Fossil fuels (natural gas, coal and oil)

- Most power stations burn the fossil fuel natural gas, but some also use coal. Burning these fuels releases pollution into the air and damages the environment. In addition, fossil fuels are non-renewable sources of energy. This means they will run out one day.



### Nuclear

- There are currently 15 nuclear reactors in the UK which create just over 20% of the total electricity generated in the UK. Many of the older power stations are being closed and new ones are being built. The uranium used in this method of generating electricity will eventually run out, however, as this process doesn't involve the burning of fuels, it doesn't create air pollution. It does, however, create nuclear waste.



### Renewable energy

- These energy sources include wind, wave, hydro, biomass and solar. The energy from these sources is harvested through different technologies, for example, wind turbines. Once these have been built, using them causes minimal pollution. They are also renewable - wind and the sun will not run out.

## Where is Electricity Generated?

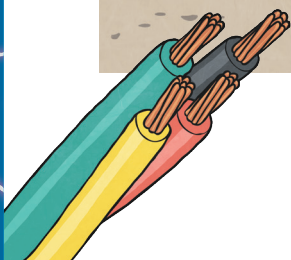
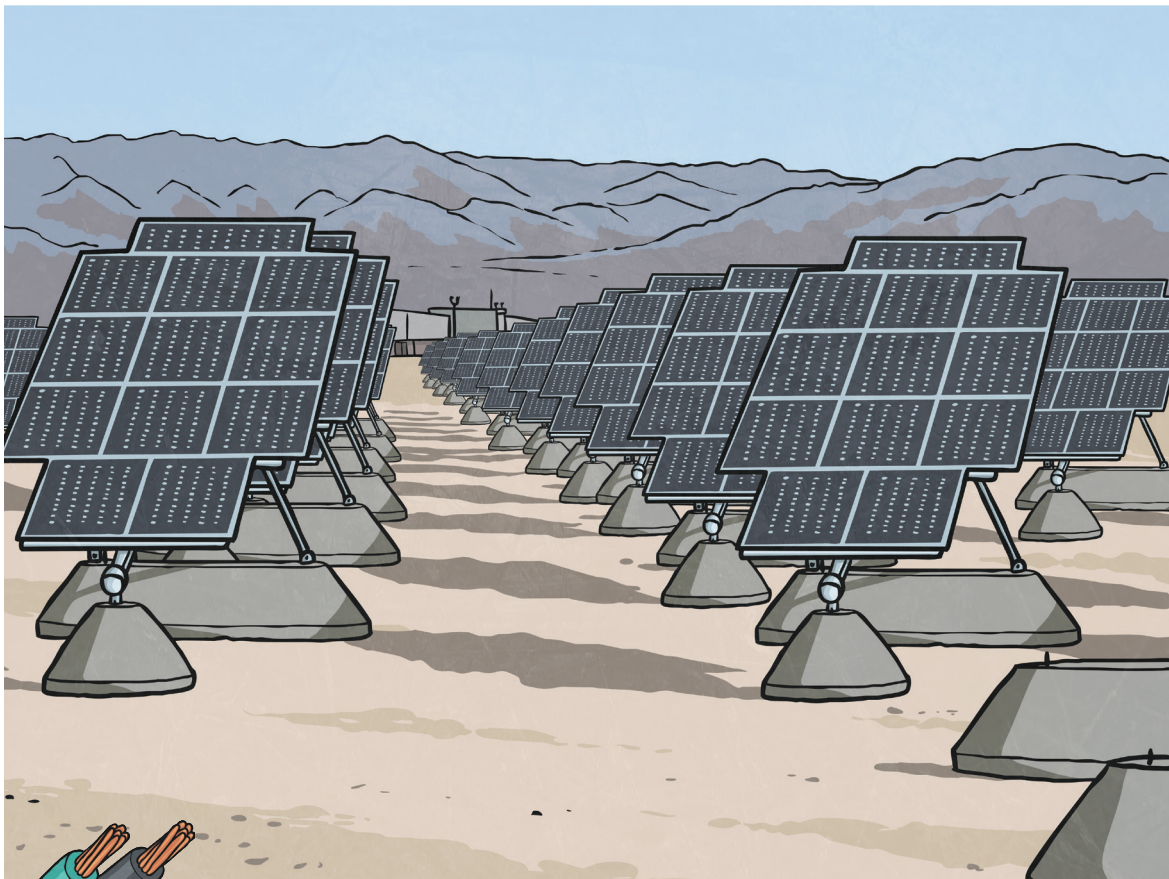
Electricity is generated in power stations, through wind turbines and solar panels. Electrical charge flows through a complicated grid of wires called the National Grid, to get to where it needs to be used, like in homes, hospitals and factories.

### Did You Know...?

The first electric motor was invented in around 1821 by Michael Faraday.

Electricity can be very dangerous as you can get an electric shock from it. You need to be sensible around electrical devices.

Electrical current is measured in amps.



# Questions

1. What is electricity?

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2. Fill in the missing words.

Most power stations burn the \_\_\_\_\_ fuel natural gas, but some also use \_\_\_\_\_.

3. 'Hydro' is an example of what type of energy?

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4. Draw **four** lines to match each sentence with the missing words.

The \_\_\_\_\_ used in this method of generating electricity will eventually run out.

fossil fuels

Burning \_\_\_\_\_ releases pollution into the air.

nuclear power stations

20% of the total electricity in the UK is made in \_\_\_\_\_.

renewable

The energy from \_\_\_\_\_ sources is harvested through different technologies, for example, wind turbines.

uranium

5. How many nuclear reactors are there in the UK? Tick one.

- 15
- 25
- 20
- 10

6. What are the positives and negatives of Nuclear energy?

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7. Which type of energy do you think is most sustainable and why?

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8. Electricity is less than 100 years old.

Is this true or false? Explain how you know using evidence from the text.

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# Answers

1. What is electricity?

**Electricity is the movement of charged particles through a wire.**

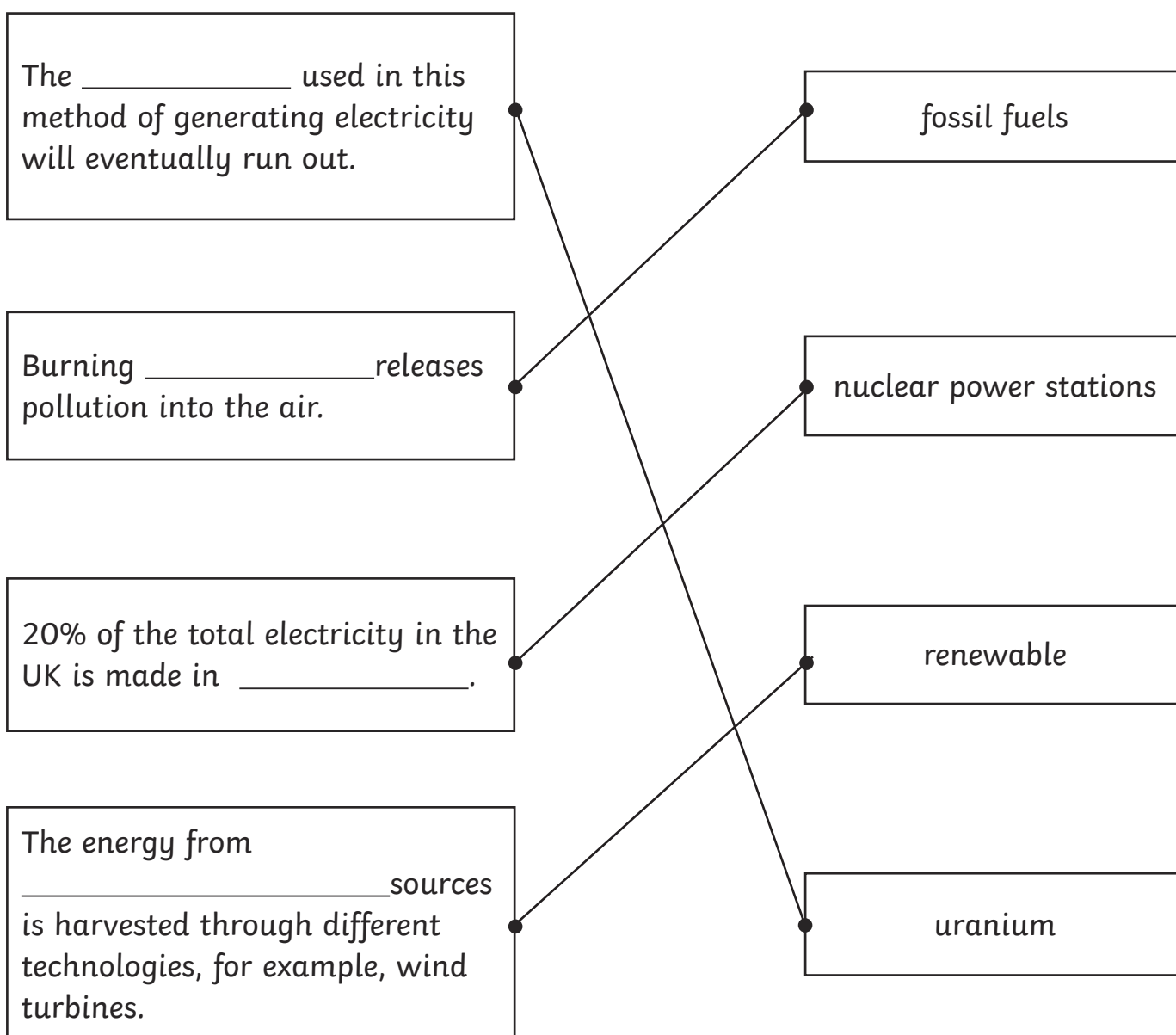
2. Fill in the missing words.

Most power stations burn the **fossil** fuel natural gas, but some also use **coal**.

3. 'Hydro' is an example of what type of energy?

**Renewable energy**

4. Draw **four** lines to match each sentence with the missing words.





5. How many nuclear reactors are there in the UK? Tick one.

- 15
- 25
- 20
- 10

6. What are the positives and negatives of Nuclear energy?

**Pupils' own responses, such as: The positive for nuclear energy is that it is a cleaner source of energy as generating electricity in this way doesn't involve burning fuels so it doesn't cause air pollution. The negative for using nuclear energy is that it causes nuclear waste and uses uranium, this is non-renewable and will eventually run out.**

7. Which type of energy do you think is most sustainable and why?

**Pupils' own responses, such as: I believe the most sustainable form of energy is renewable energy. This is because both fossil fuels and uranium, used in nuclear energy, will run out.**

8. Electricity is less than 100 years old.

Is this true or false? Explain how you know using evidence from the text.

**Pupils' own responses, such as: This fact is false because the text says that Michael Faraday invented the first electric motor in around 1821, which is almost 200 years ago. Electricity must have been invented before this.**