

# Magnets and Forces

## Activity

8A

## Make the Toy Car Move



### Skills:

Use knowledge and understanding to make predictions, sort objects by observation, reach a scientific conclusion from my results

### Materials:

Rubber band

Big bar magnet

Small toy car

Iron nail

Key

Refrigerator magnet

Small bar magnet

Steel coin



### Method

- 1 Use the rubber band to attach the big bar magnet on top of the toy car, with its North pole facing the front of the toy car.
  - 2 Place the toy car on the table, facing you.
  - 3 Predict which objects will cause the toy car to move when you place them one by one in front of the toy car.
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- 4 Bring each object close to the front of the toy car. Then bring the object close to the back of the toy car. Complete the table below.

Objects that only pull the toy car	Objects that pull and push the toy car
Iron nail, steel coin, key	Refrigerator magnet, small bar magnet;

- 5 Why do you think some objects only pull the toy car, while other objects pull and push it?

Magnetic objects are attracted to magnets. **This pulls the toy car towards them.** When the magnets are placed close to the big bar magnet, the toy car **moves forward** when **unlike** poles meet. When **like** poles meet, the car is **pushed away**.

- 6 Remove the big bar magnet from the toy car. Take one of the objects that only pull the toy car and attach it to the toy car using the rubber band.
- 7 Take another object that only pulls the toy car and bring it close to the front of the toy car. Then bring it close to the back of the toy car.
- a What do you observe?

**The toy car does not move.**

- b Is the object on the toy car a magnet or made of a magnetic material? Why do you think so?

**The object on the toy car is a magnetic material.**

**Magnetic materials do not attract other magnetic materials.**

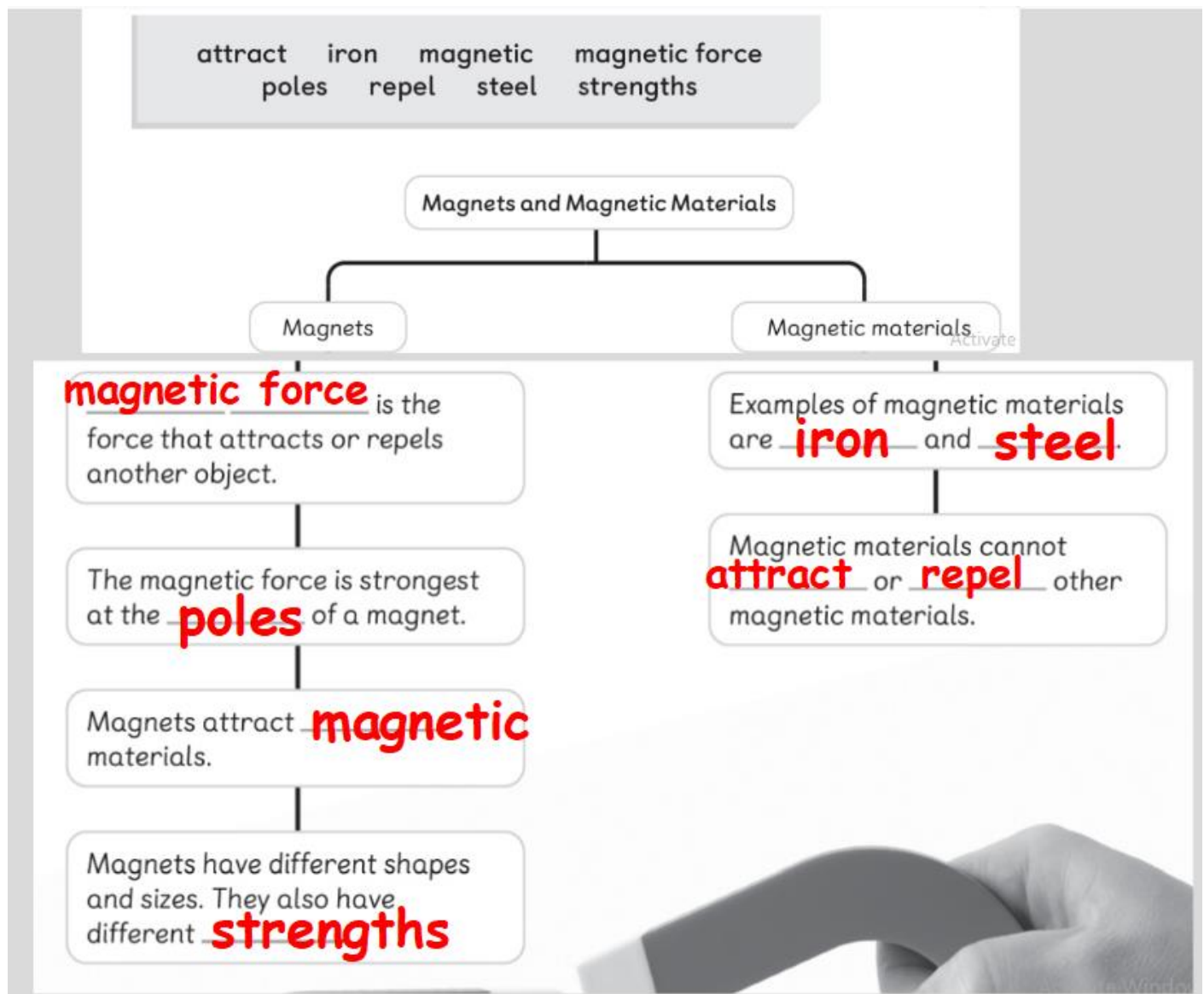
8 Based on this experiment, how can you identify a magnet from an object made of a magnetic material?

A magnet can attract and repel other magnets and attract magnetic materials.

A magnetic material will only be attracted to magnets. It does not attract other magnetic materials

### Clues

- 1 **Magnetic force** is the force that attracts or repels objects.
- 2 The magnetic force is strongest at the **Poles**.
- 3 **Iron** is a metal with magnetic properties.
- 4 Unlike poles of magnets **attract**.
- 5 Like poles of magnets **repel**.
- 6 Strong magnets have stronger magnetic force and can act over a greater **distance**.



## Let's Review

- I Nadia wants to investigate which items in her house will be attracted to a magnet.

Tick (✓) the objects that will be attracted to a magnet.

iron pan

☒

ceramic mug

☐

gold ring

☐

plastic spoon

☐

iron nail

☒

stainless steel bowl

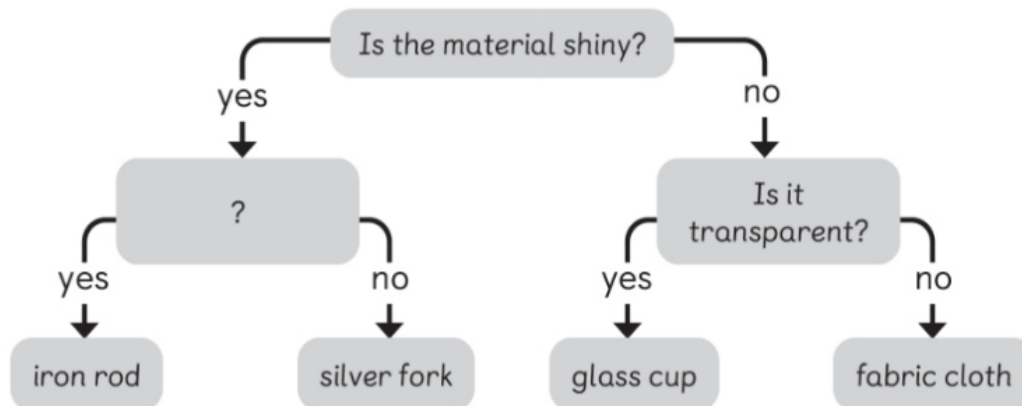
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wooden chopsticks

☐

Activate W

2 Look at the key below.



Write a question to complete the key.

**Is it a magnetic material?**

- 3 At a recycling plant, magnets are used to separate waste. Explain magnets can be used to separate different types of waste.

Magnets can be used to separate waste that are magnetic from waste that are non-magnetic.