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True or False: Magnets Activity

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Write the word "true" or "false" next to each statement below.

Magnets can be made in almost any shape or size.

Magnetic fields cannot work through other materials, such as paper.

The magnetic field around a magnet is invisible to the human eye.

Magnets can be found in many household items such as fridges and electric toothbrushes.

Magnets can attract or repel magnetic materials.

Metals, such as iron and nickel, are attracted to magnets.

We can see the magnetic field around a magnet.

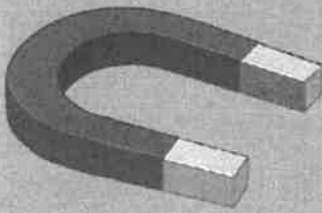
The south-pole of one magnet will attract the south-pole of another magnet.

The north-pole of one magnet will repel the north-pole of another magnet.

Forces and Magnets

Everything around us is affected by forces. Think about trees blowing in the wind or cars on a race track. These objects are all being influenced by a force.

What Is a Force?



A force is a push or pull on an object. Forces can move an object, change its speed or direction and even make it stop.

If two forces act on an object and one is stronger than the other, the stronger force will affect it.

However, if two forces are the same strength, an object would not be affected.

Types of Force

There are two types of forces called contact and non-contact. Friction, air resistance, water resistance and buoyancy are contact forces. Buoyancy is often called upthrust. Contact forces occur when objects are touching. Gravity and magnetism are non-contact forces and occur when objects are not touching.

Force	Type	Example
Friction	contact	ice skating
Air resistance	contact	using a parachute
Water resistance	contact	swimming
Gravity	non-contact	dropping your pencil
Magnetism	non-contact	a fridge magnet



Gravity

Gravity is a force which pulls everything to the ground. This happens on Earth and on other planets. Although not as strong as on Earth, the moon has the force of gravity.

Did You Know...?

It is widely thought that Sir Isaac Newton discovered gravity while sitting under a tree and an apple fell on his head. Although not true, he did observe apples falling from trees. This got him thinking about why the apples fall straight down to the ground rather than sideways or upwards.

Magnetism

Magnetism occurs when a magnet pulls a metal object or another magnet towards itself. Magnetic materials are always made of metal. However, not all metals are magnetic.

Iron, nickel and cobalt are all magnetic metals. Steel is also magnetic as it is made up of several metals including iron.

Magnets push and pull against each other. They have two poles - a north pole and a south pole. Opposite poles attract which means they pull together but two poles which are the same will repel away from each other.



Measuring Force

So, how do we measure forces? Forces are measured in newtons, using a newton meter. Newtons are named after Sir Isaac Newton who discovered gravity. He was curious to find out what keeps the moon travelling around the Earth. This is called being in **orbit**.

Glossary

orbit: This is the path an object takes as it goes round something in space.

repel: This means to ward something off or force back.

Questions

1. How can we **best** explain where forces happen? Tick one.
- They happen on the ground.
 - They happen in the air.
 - They happen all around us.
 - They happen near trees.
2. Which of these forces are contact forces? Tick **two**
- gravity
 - friction
 - magnetism
 - air resistance
3. Draw **four** lines and match each force to an everyday example of where you would see it in action.

friction

air resistance

magnetism

gravity

using a parachute

a fridge magnet

dropping your pencil

ice skating

4. What measurement is used to measure force? Tick one.
- litres
 - metres
 - newtons
 - degrees
5. Look in the 'Did You Know...?' section. Find and copy one word which means the same as 'to see'.
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6. Gravity is a _____ which pulls things to the ground. This can happen on Earth and on other _____.

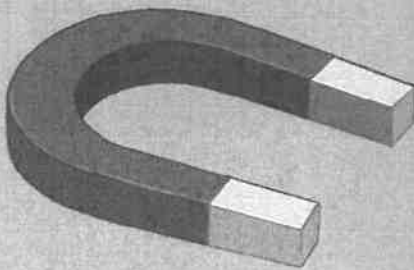
7. Explain what you have learned about magnets in 25 words or fewer.

8. What questions do you think Sir Isaac Newton asked when he observed apples falling straight to the ground when they fell off a tree? Write **two**.

Forces and Magnets

Forces are all around us. Everything is affected by them. Think about trees blowing in the wind or cars driving down the street or on a race track. These objects are all being moved by a force.

What Is a Force?



Forces push and pull objects or change how they move. If one force is stronger than the other, the object will be affected by the stronger force.

However, if two forces are the same strength, an object would not be affected.

Types of Force

There are two types of force called contact and non-contact. Contact forces happen when objects touch and non-contact forces happen when objects are not touching.

Force	Type	Example
friction	contact	ice skating
gravity	non-contact	dropping your pencil
magnetism	non-contact	a fridge magnet



Gravity

Gravity is a force which pulls things to the ground. This can happen on Earth and on other planets. The moon also has a force of gravity but is not as strong as it is on Earth.

Did You Know...?

Some people think that Sir Issac Newton discovered gravity when an apple fell on his head. This did not happen but he did see apples fall from trees. This made him think about why they fell straight down to the ground.

Forces and Magnets

Magnetism

Magnetism happens when a magnet pulls a metal object or another magnet towards itself. Magnets push and pull against each other. They have a north pole and a south pole. Opposite poles **attract** which means they pull together but two poles which are the same will **repel** away from each other.

Magnetic materials are always made of metal but not all metals are magnetic.

Magnetic metals:

- Iron
- Nickel
- Cobalt
- Steel

**Measuring Force**

How do we measure forces? Forces are measured in newtons. The measurement is named after Sir Issac Newton who discovered gravity. He wanted to find out what force was keeping the moon travelling around the Earth.

Glossary

attract: This means to pull towards something.

repel: This means to ward something off or force back.

Questions

1. Where are forces found ? Tick one.

- Only on the ground
- Only in the air
- All around us
- Only near a tree

2. What happens to an object if one force is stronger than the other? Tick one.

- Nothing will happen
- The object will be affected
- The object will disappear
- The object will grow larger

3. Draw **three** lines and match each force to an example of it.

magnetism

gravity

friction

a fridge magnet

ice skating

dropping your pencil

4. What measurement is named after Sir Isaac Newton? Tick one.

- litres
- metres
- newtons
- degrees

5. Look at the paragraph about measuring force. Find and copy **one** word which means the same as 'moving'.

Forces and Magnets

6. Fill in the missing word.

Gravity is a force which pulls everything to the _____.

7. Explain why you think a fridge magnet stays on the fridge and does not fall off.

Forces and Magnets

Everyday we are surrounded by forces and can see the influences they have. Think about the trees in the park blowing in the wind or the cars driving down the street; they are all being influenced by a force.

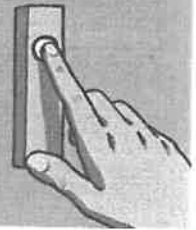
What Is a Force?



A force is described as a push or pull on an object. Forces move an object, change its speed or direction and even make it stop.

If two forces are both acting on an object and one is stronger than the other, the object will be affected by the stronger force.

However, if two forces are of equal strength, an object would not be affected.



Types of Force

There are two types of force: contact and non-contact. Friction, air resistance, water resistance and buoyancy (upthrust) are all considered to be contact forces. They occur when objects are touching each other. Gravity, magnetism and electrical forces are non-contact forces; they occur when objects are not touching each other.

Forces in Action

An example of friction would be someone skating on ice. A parachute guiding a person safely down to the ground would be air resistance. Imagine you keep dropping your pencil, gravity would be causing this. The lovely magnet you bought on holiday is staying on the fridge because of magnetism.

Gravity

Gravity is an invisible force which pulls things to the ground. This can happen on Earth and on other planets. The moon, which is much smaller than our planet, also has a force of gravity but is not as strong as it is on Earth.

Sir Isaac Newton observed apples falling from trees. He was interested in the force which caused the apples to fall straight to the ground instead of sideways or upwards.

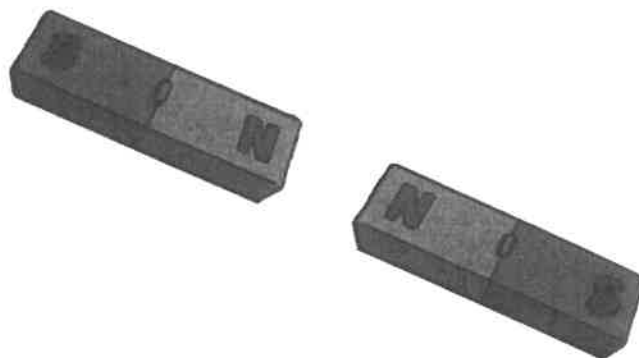


Magnetism

Magnets have been used in many inventions such as in computers and compasses. Magnetism happens when a magnet pulls a metal object or another magnet towards itself. Magnets push and pull against each other. They have two poles: a north pole and a south pole. Opposite poles attract which means they pull together but two poles which are the same will **repel** away from each other.

Materials which are magnetic are always made of metal but not all metals are magnetic.

Metal	Magnetic
iron	yes
nickel	yes
cobalt	yes
aluminium	no
copper	no



Steel is magnetic; it is an **alloy** which means it is made up of several different metals including iron.

An object which is magnetic, such as a paper clip, will not repel another magnetic object like magnets do.

Measuring Force

Forces are measured in newtons using a newton meter. Newtons are named after Sir Isaac Newton who discovered gravity. He was curious to find out what keeps the moon travelling around the Earth. This is called being in orbit. He thought that only a force (or pull) could explain it.

Glossary

alloy: This is a material which is made of a mixture of metals.

repel: This means to ward something off or force back.

resistance: This is the ability to prevent something having an effect.

Questions

1. What is the **best** description of what a force is? Tick one.

- A force is how big something grows.
- A force is when something happens to just magnetic objects.
- A force is a push or pull on an object.
- A force is how old something is.

2. Which of these forces are contact forces? Tick two

- gravity
- friction
- magnetism
- buoyancy

3. Ice skating is an example of a contact force in action. Find and copy **two** more examples of a contact force in action.

- _____
- _____

4. What was Sir Isaac Newton curious to find out about the moon?

5. Fill in the missing words.

Gravity _____ things to the ground. It is an _____ force.

6. Explain what you have learned about how magnets work in 25 words or fewer.

7. In your own words, explain the difference between contact and non-contact forces.

Forces and Magnets Questions

8. Compare a steel pen and a plastic pen. What would happen if a magnet was placed near them both? Why would this happen?
