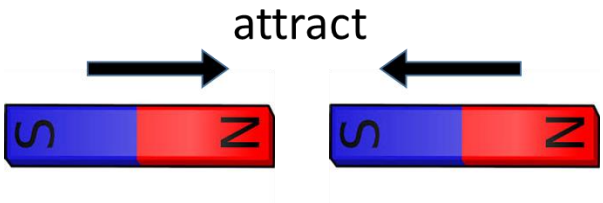
Magnet exploration set

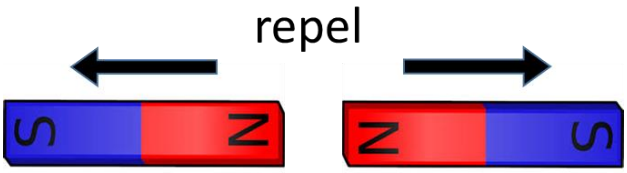
Activity 1 : Unlike poles attract, like poles repel

Examine the bar magnet. The bar magnet has two poles, the North pole (N) and the South pole (S).

When the unlike poles (N and S) of two bar magnets are facing each other, the two magnets will attract (pull) each other.



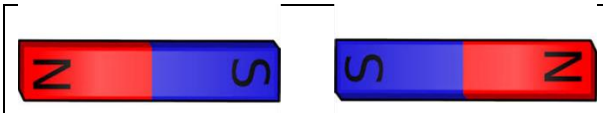
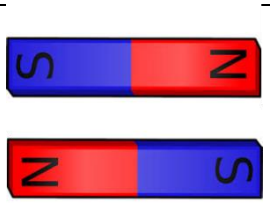
When like poles (N and N or S and S) of two bar magnets are facing each other, the two magnets will repel (push away from) each other.



Question 1 :

Arrange the bar magnets in the positions shown below.

What will happen to the magnets for each position?

	
The magnets will _____.	The magnets will _____.

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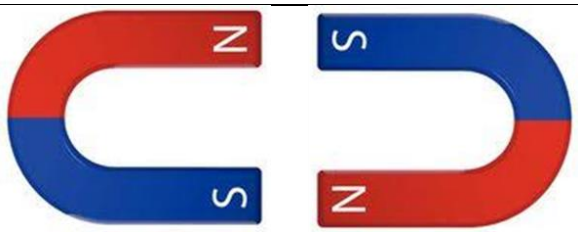
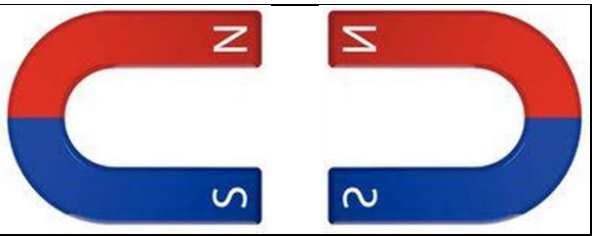
Question 2 :

Arrange the U-shaped magnets in the positions shown below.

What will happen to the U-shaped magnets for each position?

	
The magnets will _____.	The magnets will _____.

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Activity 2 : When a magnet is free to move by itself, it will point to the North and South directions

Place one bar magnet on the small plastic plate provided.

Place the small plastic plate with the bar magnet into a basin of water.

The plastic plate should float and rotate to point to the same direction.

Question 3 :

You have a plate floating on water with a magnet on it. What will happen to the plate when you change the direction of the magnet on the plate?

_____

_____

Place a compass on a flat surface. Make sure there is no other magnet around.

Question 4 :

The direction which the red compass points to is North. Is it the same direction as the N-pole of the magnet in the plate? (Yes / No)

The N-pole of the magnet will always point to the North direction and the S-pole of the magnet will always point to the South direction.

Question 5 :

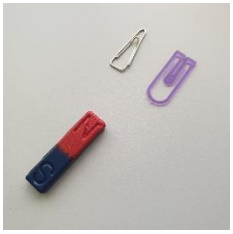
Why doesn't a magnet placed on the floor/table turn to face the North and South direction?

_____

_____

Activity 3 : Magnet attracts magnetic material

Place a bar magnet near the plastic paper clip and the steel paper clip provided.



Only the steel paper clip is attracted to the magnet. Steel is a magnetic material because it can be attracted by a magnet.

Plastic paper clip is not attracted by the magnet. Plastic is a non-magnetic material.

Question 6 :

At home, find out what other materials are magnetic materials and non-magnetic materials using the magnets you have.

List them in the table below.

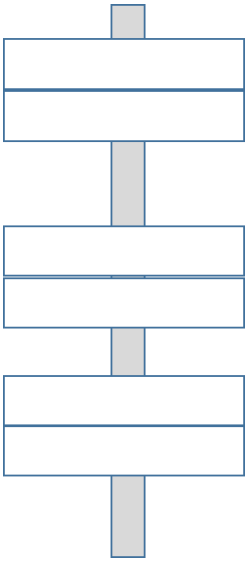
Magnetic materials	Non-magnetic materials

Activity 4 : Unlike poles attract; like poles repel

Question 7 :

Are you able to slot the three ring magnets on the straw such that the three ring magnets do not touch each other?

Indicate "N" as N-pole and "S" as S-pole in the diagram below to make sure the three ring magnets are not touching each other.



Activity 5 : The compass pointer is a magnet.

Place a bar magnet near a magnet.

When the N-pole of the bar magnet approaches the compass, the white end of the pointer will be attracted and the red end repelled.

When the S-pole of the bar magnet approaches the compass, the white end of the pointer will be repelled and the red end attracted.

Question 8 :

Based on what you have learnt about how unlike poles attract and like poles repel, what can you conclude about the compass pointer?

Conclusion : The compass pointer is a _____.

The red pointer is the _____ and the white pointer is the _____.

Activity 6 : Magnetic field around a magnet

There is an invisible region around the magnet which can attract magnetic material.

Place different types of magnets around the bottle of iron filings (iron powder) to "see" the magnetic field (magnetic pattern) formed by the filings.

Question 9 :

Is the iron filing (magnetic powder) attracted by the magnet?

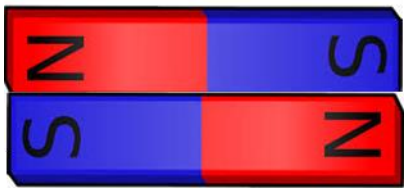
What can you conclude about iron?

Conclusion : Iron is a _____material.

Activity 7 : Magnetic force is strongest at the poles

Place one pair of bar magnets close together.

The bar magnets are always attracted at their ends.

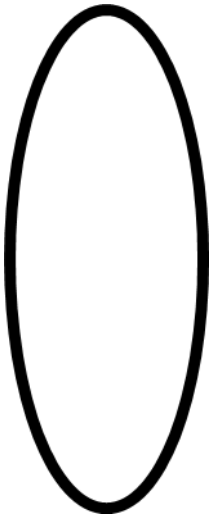


The poles of a bar magnet are at the two ends because the magnetic force is strongest at the two poles.

Question 10 :

Place one pair of rattle snake magnets close together.

Do you know where are the poles of each magnet? Indicate "N" as N-pole and "S" as S-pole in the diagram below.



Activity 8 : Unlike poles attract; like poles repel

Are you able to identify where is the N-pole and S-pole on each rattle snake magnet?

Hint : Use a compass or another bar magnet which has N and S on it.

Question 11 :

Use a marker and indicate S and N on both of your rattle snake magnets. Show your teacher to check if you have gotten it correct.

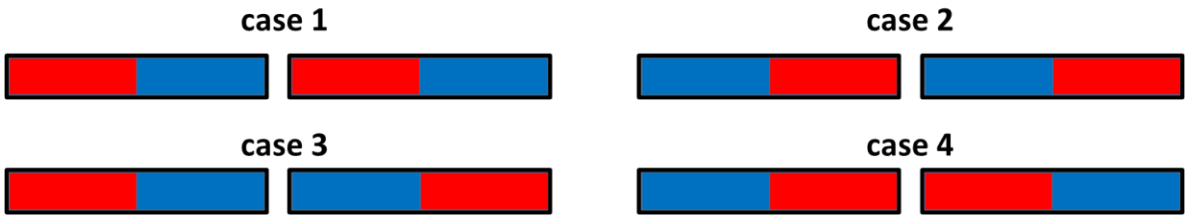
Activity 9 : Repulsion is the true test for magnets

Step 1 : Place two magnets facing each other as shown below.

Magnet 1	Magnet 2

Step 2 : Flip the magnets to have different sides facing each other.

There will be some situations (such as in Case 3 and Case 4) whereby the poles repel each other because they are like poles.



Take out the two black bars from the zip lock bag.

Repeat step 1 and step 2 with these two black bars.

Question 12 :

Are both magnets? (Yes / No)

Question 13 :

What can you conclude about the magnetic properties of these 2 bars?

_____

_____