Year 3: Forces and Magnets – Science Knowledge Organiser (Physics)

Enquiry Journey:

1) How do things move and stop?

1.) A **force** is a push or a pull.

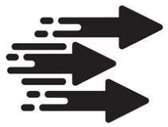
2.) A push can make an object move **away from you**.

3.) A pull can make an object move **towards you**.

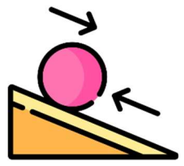
4.) A twist can make an object **turn or rotate**.

5.) A force can make an object **start or stop moving**.

6.) A force can also change the **speed or direction** of an object.



7.) **Friction** is a force that slows things down when surfaces rub together.



8.) Different surfaces can make objects move **faster or slower**.

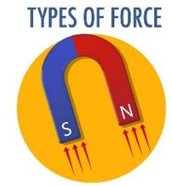
2) What is a magnet?

1.) A **magnet** can pull some materials towards it.

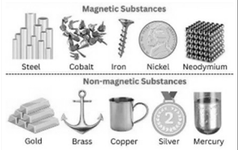
2.) This pulling force is called **magnetism**.

3.) Magnetism is a **non-contact force**.

4.) This means a magnet does not need to **touch** an object to pull it.



5.) Materials that are pulled towards a magnet are called **magnetic materials**.



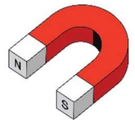
6.) Materials that are not pulled towards a magnet are **non-magnetic**.

7.) Some metals are magnetic, but **not all metals are magnetic**.

8.) **Iron and steel** are examples of magnetic materials.

3) Where are magnets used?

1.) Magnets are used in many **everyday objects**.



2.) Magnets can be used to **hold things together**.

3.) A magnet in a **fridge door** helps keep the door closed.

4.) Magnets can be used to **separate magnetic materials** from other materials.

5.) Magnets are useful in **recycling**.

6.) Recycling centres can use magnets to help separate **steel cans** from other materials.

7.) Magnets are also used in **compasses** to help people find directions.

8.) Magnets are used in many different types of **technology**.

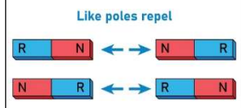
4) How can we observe magnetism?

1.) Magnets have **two poles**.

2.) One pole is called the **north pole**.

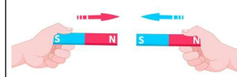
3.) The other pole is called the **south pole**.

4.) The strongest parts of a magnet are its **poles**.



5.) Two **like poles** push away from each other.

6.) This is called **repulsion**.



7.) Two **unlike poles** pull towards each other.

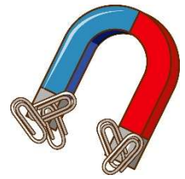
8.) This is called **attraction**.

5) Are all magnets as powerful as each other?

1.) Magnets can have **different strengths**.

2.) A stronger magnet can attract more magnetic objects.

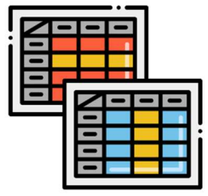
3.) We can test a magnet's strength by seeing **how many paperclips it can hold**.



4.) We can make a **prediction** before we test.

5.) We need to make our test **fair**.

6.) We should keep some things the same, such as the **type of paperclip**.



7.) We can record our results in a **table**.

8.) We can use our results to decide which magnet is **strongest**.

Scientific Lense:

Comparative and Fair Testing

Key Vocabulary:

- **Force** – A push or a pull.
- **Push** – A force that moves something away.
- **Pull** – A force that moves something towards you.
- **Twist** – A force that turns something around.
- **Friction** – A force that slows things down when surfaces rub together.
- **Contact force** – A force that needs objects to touch.
- **Non-contact force** – A force that can act without objects touching.

Scientific Lense:

Identifying, Classifying and Grouping

Key Vocabulary:

- **Magnet** – An object that can pull some materials towards it.
- **Magnetism** – The force produced by a magnet.
- **Magnetic** – A material that is attracted to a magnet.
- **Non-magnetic** – A material that is not attracted to a magnet.
- **Attract** – To pull towards something.
- **Metal** – A material such as iron, steel or aluminium.
- **Non-contact force** – A force that acts without touching.

Scientific Lense:

Identifying, Classifying and Grouping

Key Vocabulary:

- **Magnet** – An object that can attract some materials.
- **Attract** – To pull towards something.
- **Compass** – A tool used to help find directions.
- **Direction** – The way something is going.
- **Recycling** – Turning used materials into new things.
- **Separate** – To split things apart.
- **Technology** – Things made to help us solve problems.

Scientific Lense:

Pattern Seeking

Key Vocabulary:

- **Pole** – One of the two ends of a magnet.
- **North pole** – One end of a magnet.
- **South pole** – The other end of a magnet.
- **Attract** – To pull towards something.
- **Repel** – To push away from something.
- **Like poles** – Two north poles or two south poles.
- **Unlike poles** – A north pole and a south pole.

Scientific Lense:

Comparative and Fair Testing

Key Vocabulary:

- **Strength** – How powerful something is.
- **Strong** – Able to produce a large force.
- **Weak** – Producing a smaller force.
- **Prediction** – What we think will happen.
- **Fair test** – A test where we make a fair comparison.
- **Result** – What happens in a test.
- **Compare** – To look at how things are similar or different.