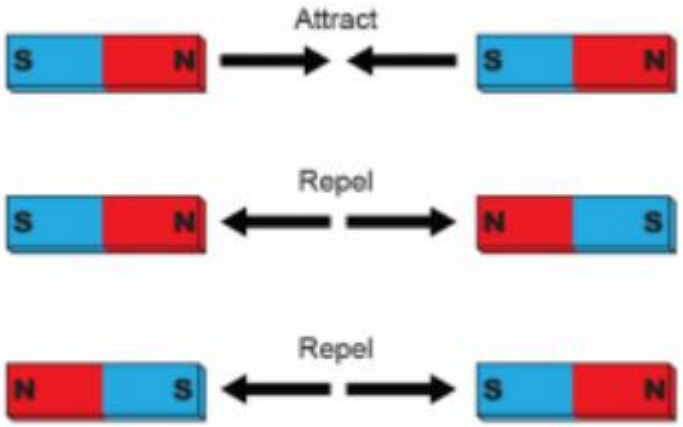
Year 3/4 Science – Forces and Magnets

Key Vocabulary	
Force	A push or pull on an object which can cause it to move, change speed, direction or shape. Measured in Newtons (N).
Magnet	A material or object that produces a magnetic field. It attracts or repels magnetic objects, including iron.
Contact force	A force that requires physical contact to occur e.g. kicking a ball.
Attract.	To pull towards. Opposite of repel.
Repel	To push away. Opposite of attract.
Propel	The act of driving or pushing forward.
Friction	The resistance of motion when one object rubs against another. Friction causes objects to slow down and the energy becomes heat.
Weight	The force due to gravity on objects. This force pulls on all objects near the earth. Measured in Newtons (N).
Mass	The amount of matter contained in an object. Measured in units such as g, kg.
Gravity	The area around a large object when a weight can be felt. The sun's gravity keeps the planets orbiting around it.
Air resistance	The frictional force of air against a moving object. The faster an object moves, the greater the air resistance.
Water resistance	The frictional force of water against a moving object. The faster an object moves, the greater the water resistance.
Acceleration	Increase in the rate or speed of something.
Balanced force	Two forces of equal size acting in opposite directions on an object so that it will stay still or continue to move in the same way.
Unbalanced force	Two forces of unequal size acting in opposite directions causing an object to move, change speed, direction or shape.

Bar Magnet **Horseshoe Magnet** **Disc Magnet**

Magnets have north and south poles. These attract each other but two north or two south poles repel each other.



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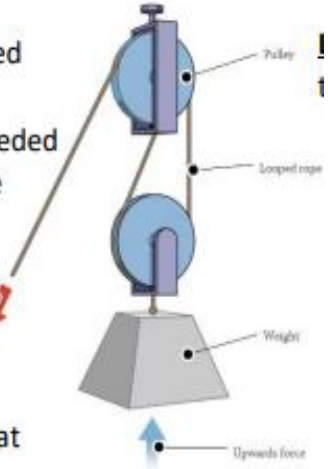
Assessment:

- Compare how some things move on different surfaces.
- Notice that some forces need contact between two objects but magnetic forces can act at a distance.
- Observe how magnets attract or repel each other and attract some materials and not others.
- Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.
- Describe magnets as having two poles (like and unlike poles).
- Predict whether two magnets will attract or repel each other, depending on which poles are facing.

Pulleys: A wheel with a grooved rim that a rope can be looped around so that less force is needed to lift heavy objects. The more wheels that are used, the less force is needed (but the more rope!).



Gears: A wheel with teeth that works with other gears transmit power from one part of a machine to another. Bigger gears have more teeth so smaller gears have to go faster to keep up.

How do different surfaces affect the motion of an object?

Forces act in opposite directions to each other.

When an object moves across a surface, friction acts as an opposite force.

Friction is a force that holds back the motion of an object.

Some surfaces create more friction than others which means that objects move across them slower.

On a ramp, the force that causes the object to move downwards is gravity.

Objects move differently depending on the surface of the object itself and the surface of the ramp.


grass


gravel


carpet


sand

Levers: A rigid bar resting on a pivot that is used to move a heavy or firmly fixed load.