Forces and Motion

How Do you describe motion?

Motion The action of something being moved.

It can be described as:
- position
- direction
- speed

① **Position** An object's location relative to another object (the reference point).

Examples:
"above, below, beside, behind, ahead of" plus the distance from the other object.

① Position — The distance (length) from the reference point changes when the object moves.

② Direction — The course or path that an object is moving

It can be determined by reading a compass using the terms "north", "south", "east", or "west."

② Direction — Can also be described using the terms right, left, forward, or towards

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Direction — relative to another object, or "up/down" relative to Earth.

Example: Take a right at the stop sign.

Speed — A measure of how fast an object is moving.

Types of Forces

Force — A push or pull!

Forces can make things move faster, slower, stop, or change direction.

Force

Forces can be affected by:
- Magnetism
- Gravity
- Friction

Magnetism A non-contact force.

A force that acts at a distance and cannot be seen.

Materials that create this force are said to be magnetic and are called magnets.

The needle of a compass moves because of Earth's

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Magnetism magnetism.

When like poles (S-S or N-N) are near each other the magnetic force causes the poles to repel, or push away from each other.

When opposite poles (N-S or S-N) of magnets are near each other, the magnetic force causes the poles to attract, or pull toward each other.

Magnetism The closer the objects, the greater the magnetic force.

The magnetic force is greatest at the poles of magnets.

Gravity A non-contact force.

A pull that attracts objects to each other.

The force of gravity between Earth and anything on it is extremely noticeable because the mass of →

Gravity Earth is so large.

The pull of Earth's gravity makes any object fall to the ground.

As the Moon goes around Earth, its gravity pulls on Earth causing water in the oceans to move toward the Moon.

Earth's gravity pulls on the Moon and keeps the Moon moving around Earth.

Friction — A contact force.

The force that opposes motion between two surfaces that are touching.

The rougher the surface area, and the harder the surfaces press together, the more friction there will be.

Friction can be reduced by using lubricants, for example: motor oil, wax, or grease.

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Friction

Friction occurs in liquids and gases, as well as between solids.

Without friction, it would be very hard to slow or stop the motion of objects.