Forces in Action

What force is pulling the hang glider toward Earth?
GRAVITY is pulling the hang glider down to Earth.

Gravity is the pulling force between two objects.
What force causes this bicycle to slow down?
FRICTION causes the bicycle to slow down.

Friction is a force that resists the motion of one surface across another.
Gravity

- leaves falling from a tree
- a ball rolling slowly across grass
- rubbing your hands together

Friction

- putting on bicycle brakes
- a book falling off a table
Why does a soccer ball remain at rest unless someone kicks it?

Inertia is the tendency of an object at rest to remain at rest AND the tendency of an object in motion to remain in motion.
If something isn't moving, it won't move unless a force makes it move.

If something is moving, it will move in a straight line without stopping until a force makes it stop or change direction.
What about motion?

When something is moving, it is said to be in motion. If it is not moving, it is stationary.

Motion is a change in an object's position.
Sometimes we measure motion by speed.

Speed is the measure of the distance an object moves in a set amount of time.

What animals have great speed?
When you add the concept of direction to speed, you get velocity.

Velocity is a measure of both an object's speed and its direction.

Acceleration is a change in an object's velocity.
Balanced and Unbalanced Forces

In a tug-of-war, if both sides are pulling equally, the forces are balanced. When one side pulls harder, the forces are unbalanced.