

SORTING OUT THE FORCES. . . .

Although pushes and pulls on objects can be applied in many different ways, those pushes and pulls are _____. The effect of forces on objects is to produce either _____ or _____ or both.

Whether forces produce changes in the shape of an object or cause the object to change its motion, those forces can be applied through physical contact (_____ forces) or through space (_____ forces).

Object interaction	Identify the Field force.
A steel dressmaker's pin and a magnet.	
A cliff diver after jumping toward the water.	
A stray sock clinging to your shirt.	
Friction between a box dragged along the floor.	
The moon's orbit around the Earth	
A satellite's orbit around the Earth	
The Earth's orbit around the Sun	

Four Fundamental Forces

Examples of the pushes and pulls that we identify as forces include: the stretchy elastic that holds up your pants; the magnetic locks on bank vaults; the engine that propels your car. These examples are the observable results, or _____ phenomena, that arise from four _____ forces in nature.

Fill in the Fundamental Force in the blanks above their descriptions			
The attraction or repulsion between electrically charged objects. Opposites attract. + - -+ +- Like charges repel. ++ - - + + - - -	The attraction between objects due to their mass and distance apart. * Moon & their planets * Sun & the planets * You and the person next you.	The attraction of neutrons and protons in the nucleus of an atom . . . This force is stronger than the electromagnetic force since it holds (+) Protons together.	The attraction of spare neutrons in isotopes of certain elements; produces instability in those nuclei.

The fundamental forces vary in **the strength of the bonds** that they produce and **the range**, or distance that those bonds can act across.

Strength of the bonds: Rank the forces from strong to weak.

The range: Sort the forces by the distance the bonds can act across,

Within the nucleus of an atom _____
 Long range _____