

NAME:

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FORCES NOTES**DEFINITION OF FORCE & EXAMPLES**

Force – any push or pull on an object

Ex. **Pushing** - When you push someone on a swing, you are providing a force (push) to make the person move.

Ex. **Pulling** - When you pull a sled up a hill, you are providing a force (pull) to make the sled move.

Ex. **Gravity** – is a force of attraction (pull) between all objects. The Earth is pulling you down when you try to jump up.

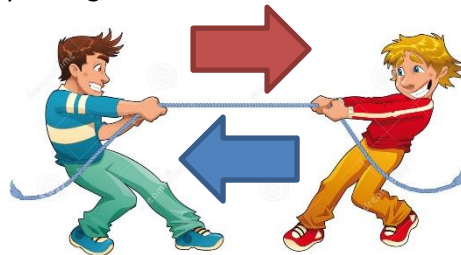
Ex. **Friction** – is a force that resists motion when two surfaces are in contact with each other. When you step on the brakes of your bicycle, the tire and the road are in contact, and friction reduces your motion.

Ex. **Air Resistance** – is friction where air is one of the surfaces that are in contact. A parachute slows your movement from the air resistance between the air and the parachute.

FORCE SITUATIONS

Balanced forces – when all the forces on an object are equal in strength and opposite in direction.

Ex. In a tug of war, if the blue and red team are equally strong, then the forces balance out to zero. This means the rope they are pulling on will not move.



Unbalanced forces – when all the forces on an object result in an overall force in a specific direction.

Ex. In a tug of war, if the blue team is stronger than the red team, the forces are unbalanced. The rope (and both teams) will move in the direction the blue team is pulling.



Newton's 1st Law – says that an object at rest will stay at rest, and an object in motion will stay in motion unless an outside force acts upon it.

Inertia – an object's natural resistance to having its motion changed

- to make an object move faster or slower, you must have enough force to overcome the inertia
- to change an object's direction, there must be enough force to overcome the inertia

Newton's 2nd Law – says that the strength of a force is equal to the mass of the object multiplied by the acceleration the object has.

The formula is: **Force = Mass x Acceleration**

The units for force are (kilogram x meters)/second/second.

1 Newton (of force) – is 1 (kg x m)/sec/sec