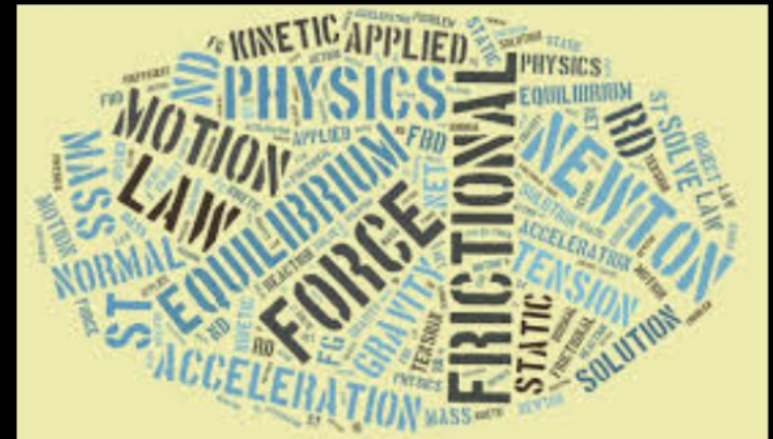


5.1 and 5.2.20

Newton's Laws: Types of Forces

Today's Objectives:

- Learn about Isaac Newton's life
- Identify the types of forces acting on objects
- Draw free body diagrams
- ~~Calculate the metric weight of objects in the room~~



The laws and equations of motion (and gravity) that we use today were determined during which prominent American (or Colonial)'s lifetime?



William Penn (1644-1718)

1650



George Washington (1732-1799)



Abraham Lincoln (1809-1865)



FDR (1882-1945)



Donald Trump (1946-Present)

Newton's Laws : Background Info

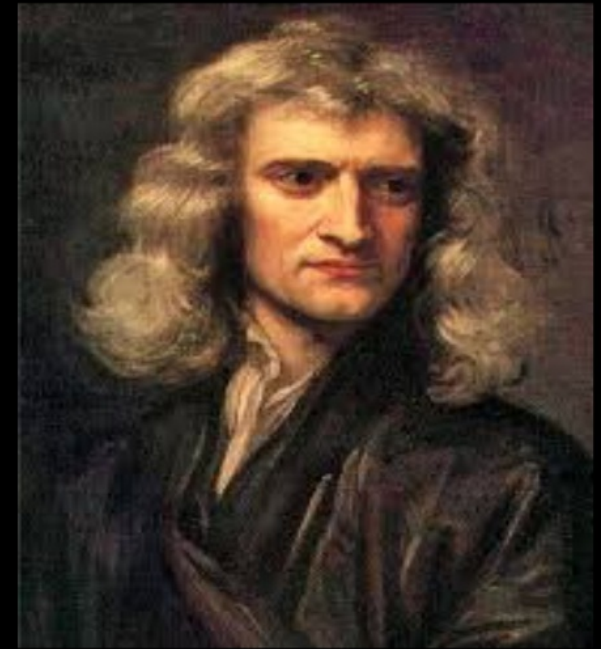
Force - a push or pull

Metric Unit - Newton

For Reference:

1 pound = 4.44 N

1 N = $\frac{1}{4}$ lb



Non-Metric:
Pound

Types of Forces

Contact

- * 1. Applied: someone is pushing or pulling on it.
- * 2. Normal: (Surface) holds objects up, prevents freefall.
- * 3. Friction: Resists the applied force.
- 4. Tension: Force from a string or rope

At A Distance

- * 1. Gravity - objects get pulled to center of Earth.
- 2. ~~Electric~~
- 3. ~~Magnetic~~

- Balanced forces causes Still or C.V.

Equal Strength



- Unbalanced forces cause Acceleration

② Speed
Up

② Slow
Down

③ Change
Direction (Turn)

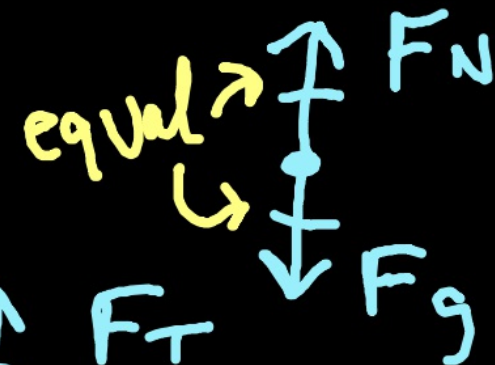


Free Body Diagrams -

- show all of the forces acting on an object with arrows
- bigger arrows show more force.

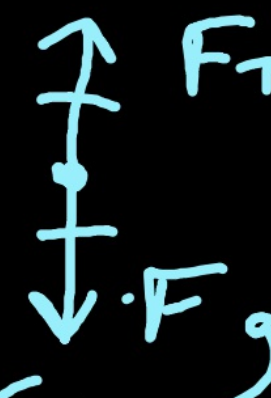
1. A teacher is standing still on a classroom floor.

F_N = Normal F_g = Gravity



2. A plane is hanging from a string.

F_T = Tension



3. A desk is being pushed on but friction is holding it still. F_f = friction



F_A = applied



4. A desk is being pushed on, and it is speeding up.

$F_A > F_f$

