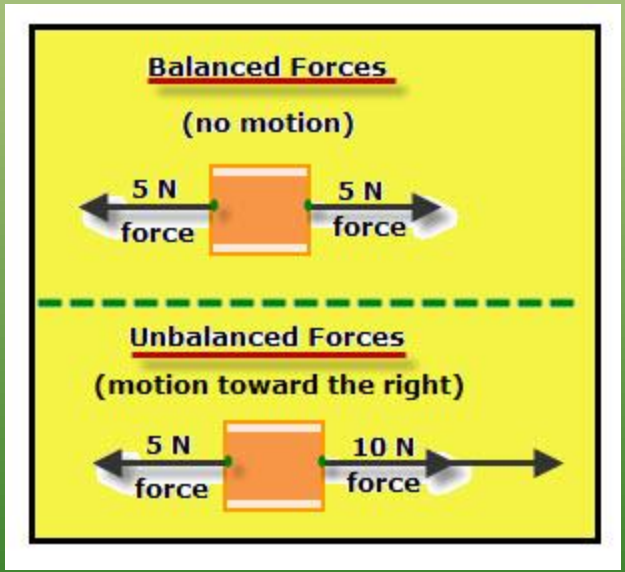
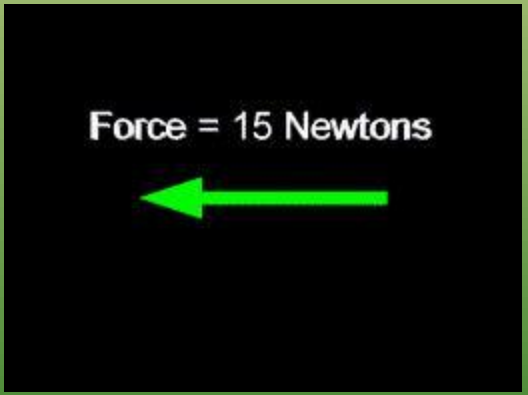
Forces


Forces come in pairs!

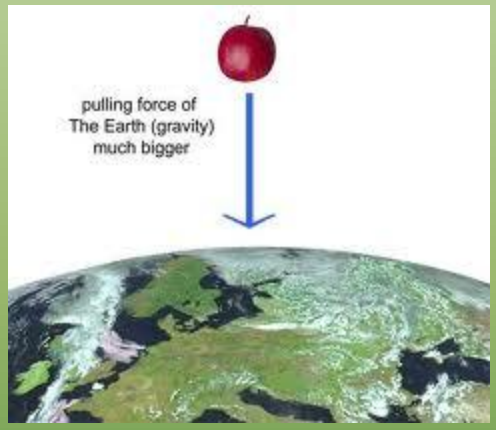

Balanced Forces
(no motion)
5 N force
5 N force
Unbalanced Forces
(motion toward the right)
5 N force
10 N force

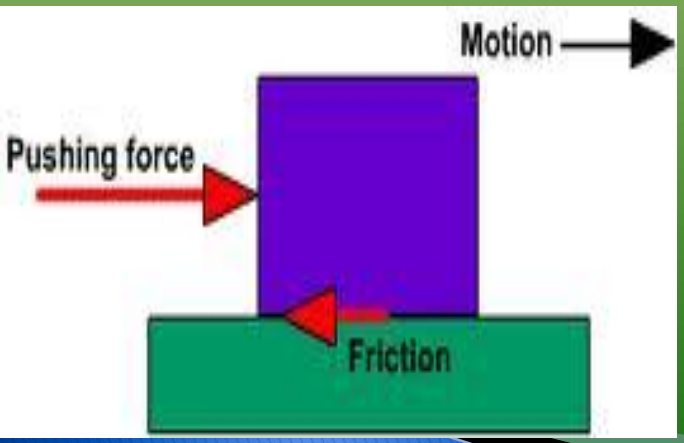

Force = 15 Newtons

What is a force?

1) force is either a push or a pull

2) Example?

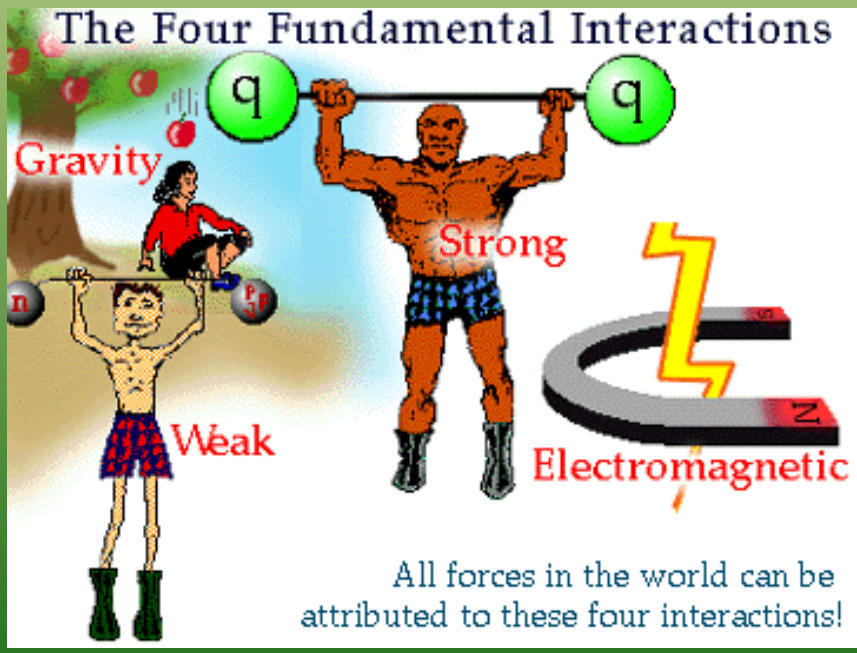




#2) There are four forces that hold all matter together

a) Strong nuclear force
b) Electromagnetic force
c) Weak force
d) Gravity.

EXAMPLE? an atom



Different types of forces

3) Gravitational forces

All objects in the universe are attracted to each other by gravity

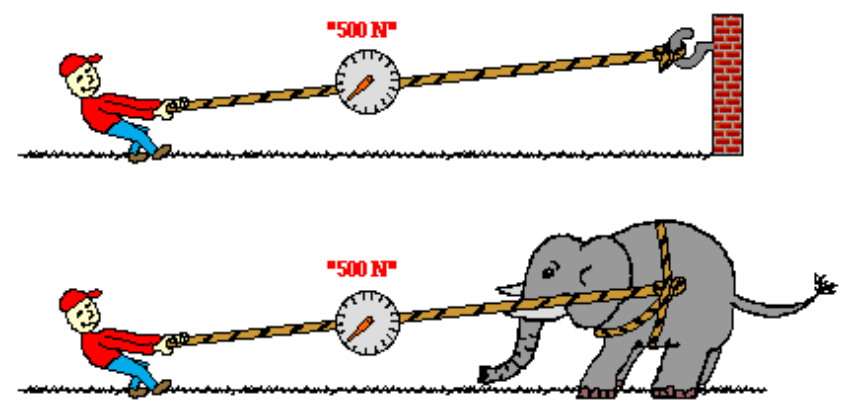
The force of gravity acts between all objects.

If mass increases, the force of gravity increases.

If distance increases, the force of gravity decreases.

4) Tensional elastic force

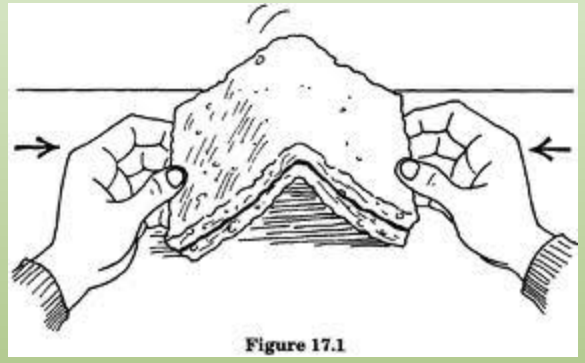
pulling apart

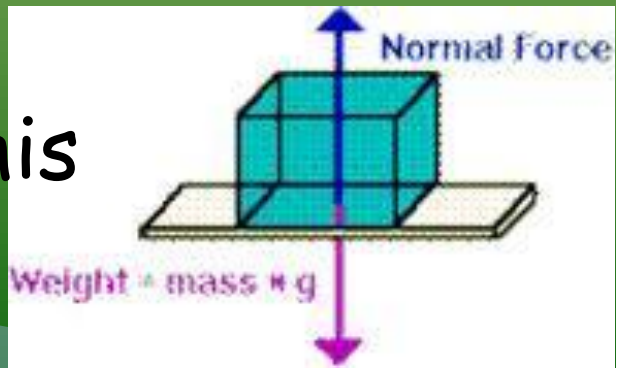


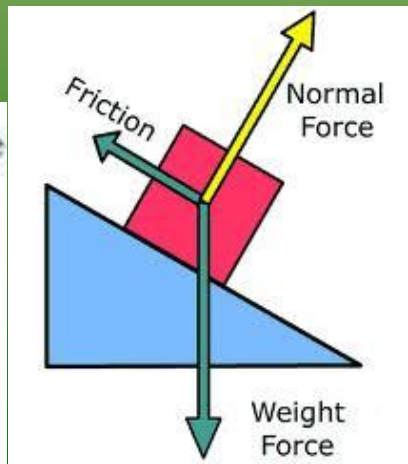
5) **Compressional elastic force** pushing together example: squeezing

6) **Normal force** – perpendicular ⊥ to surface

- Example: rock climbers know this

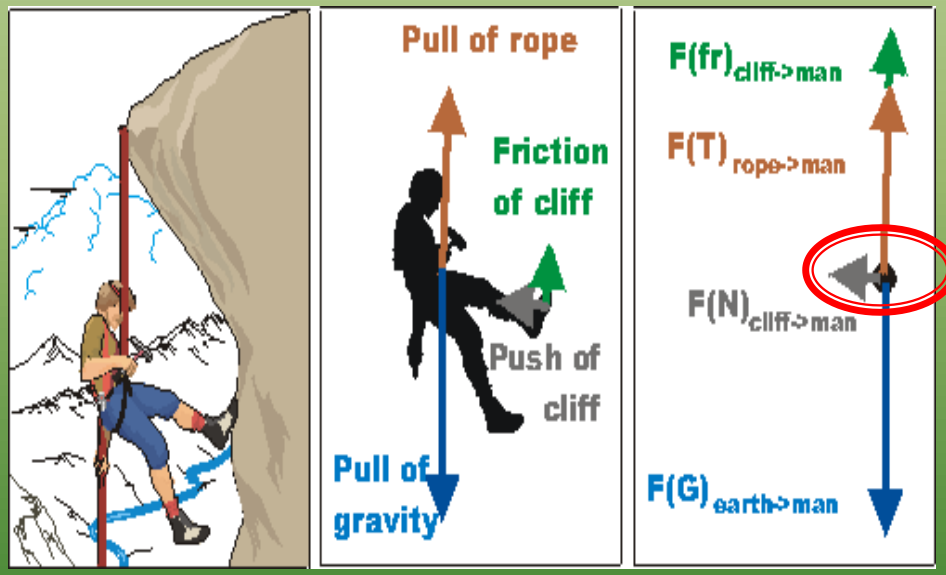






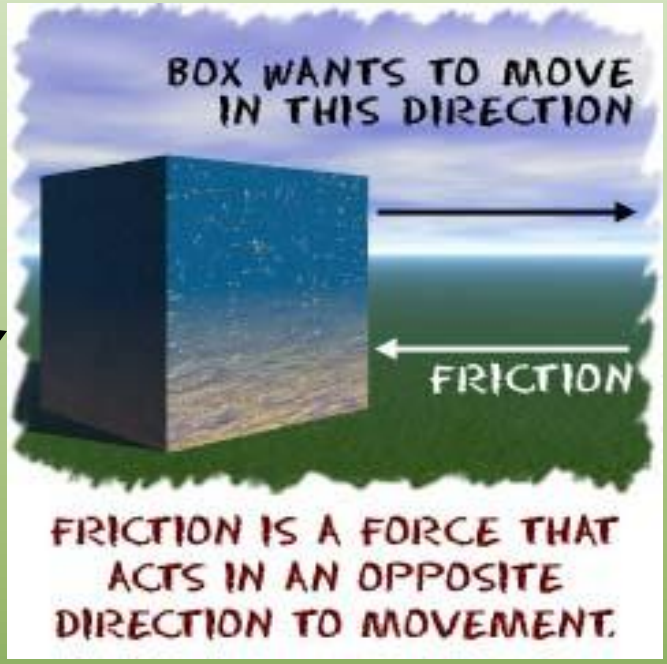
127 hours

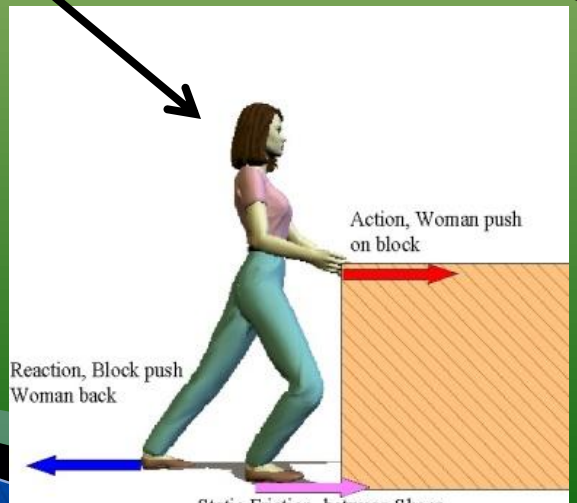

Friction=uN
Normal force
mg

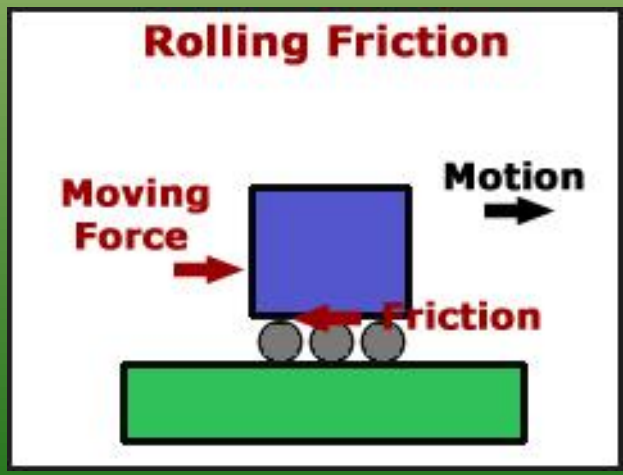

Pull of rope
Friction of cliff
Push of cliff
Pull of gravity
F(fr)cliff->man
F(T)rope->man
F(N)cliff->man
F(G)earth->man

7) Friction – force exerted when two surfaces rub against each other (direction opposite to direction of movement)

ex: a) sliding
b) rolling
c) static
d) fluid







8) Forces used for Flight:

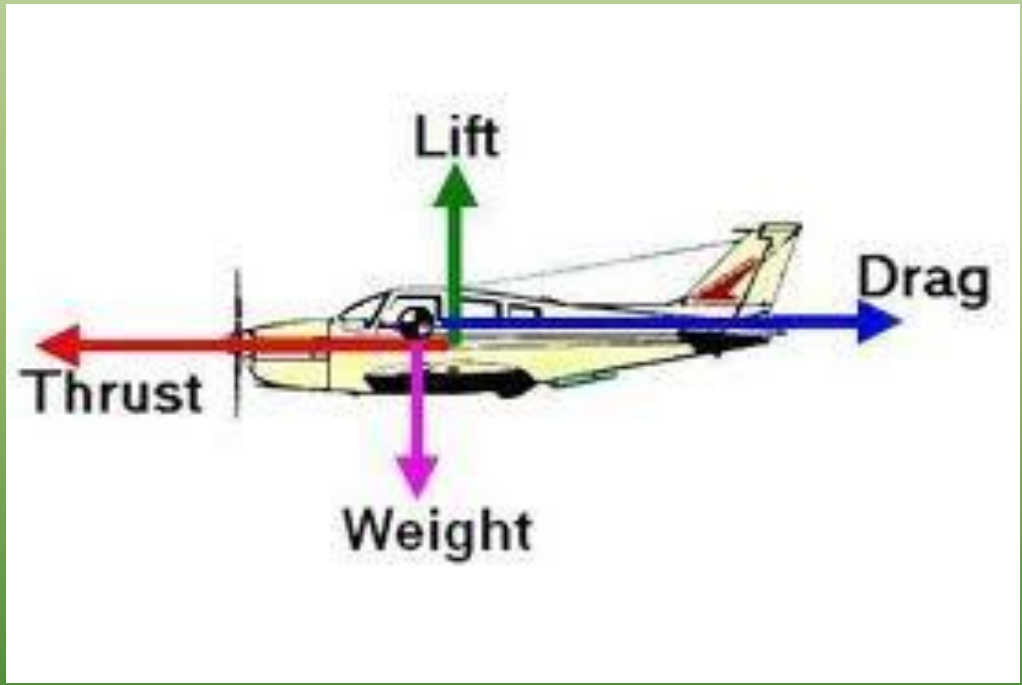
a) Thrust

b) Drag

c) Lift

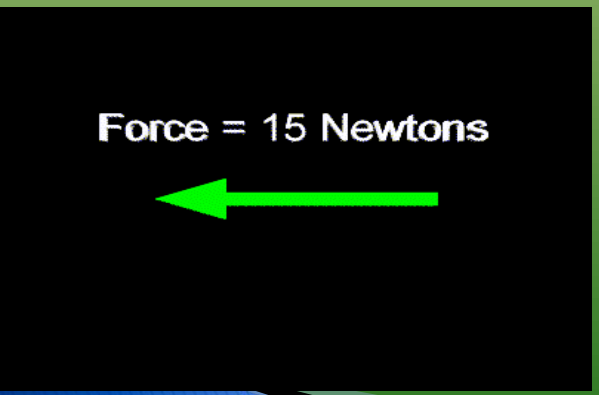
d) Gravity

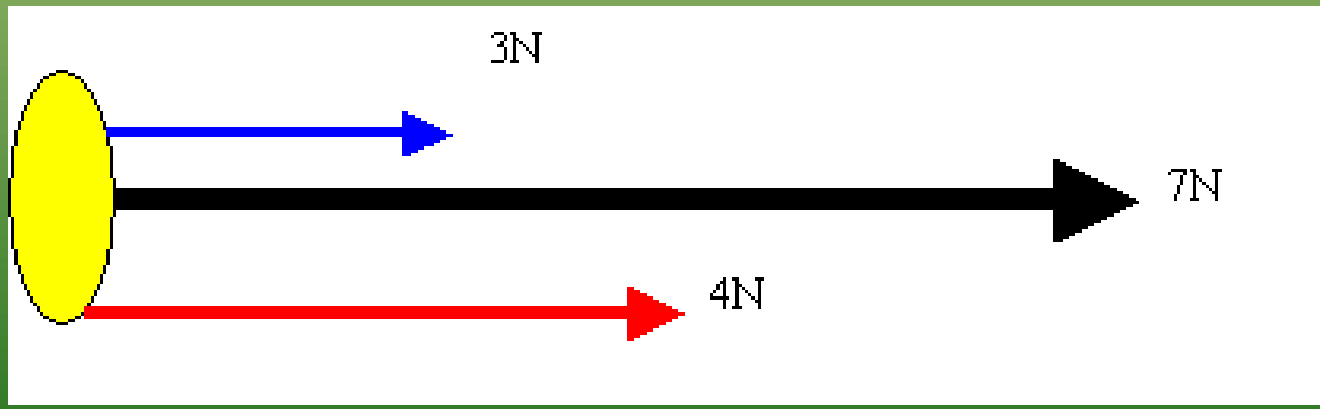
example = airplane flying



9) How are forces measured?

- Forces are measured in newtons (N)
- Forces are drawn as vectors. →
- http://www.youtube.com/watch?v=A05n32Bl0aY&list=PL3E788EDA794CCE7B&index=16&feature=plpp_video

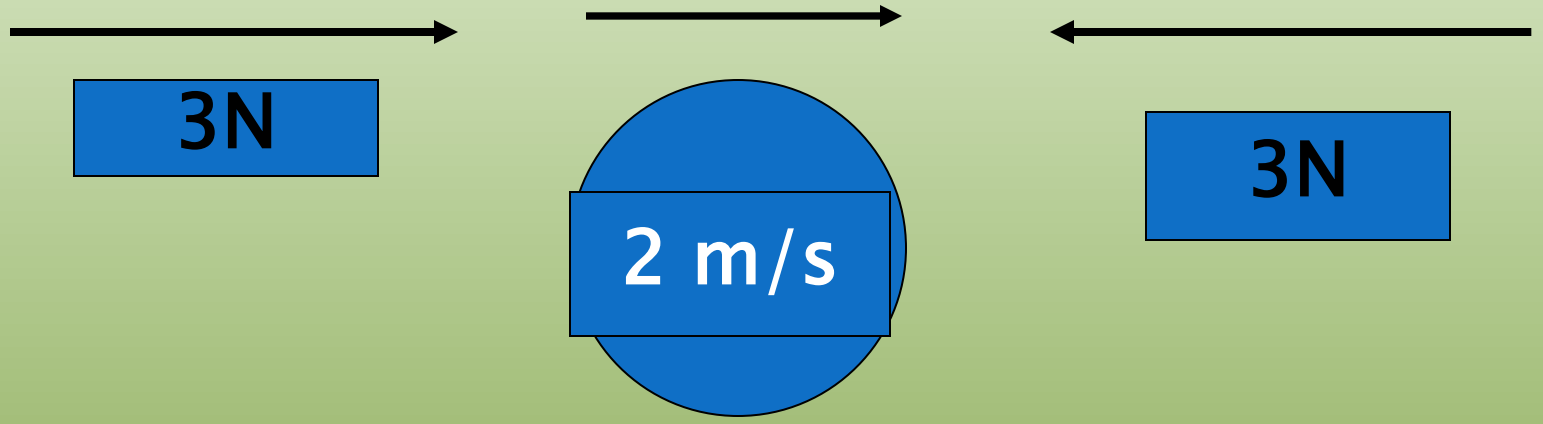




10) Balanced forces

- Balanced forces – when all forces are equal, there is no change in motion.
- Net force = 0
- If it's NOT moving it remains NOT moving.
- If it is moving, then a balanced force won't change the way its moving.

Balanced force while moving



If it is moving, then a balanced force won't change the way its moving.

Ball moving to the right at 2 m/s

2 opposite forces are on the ball

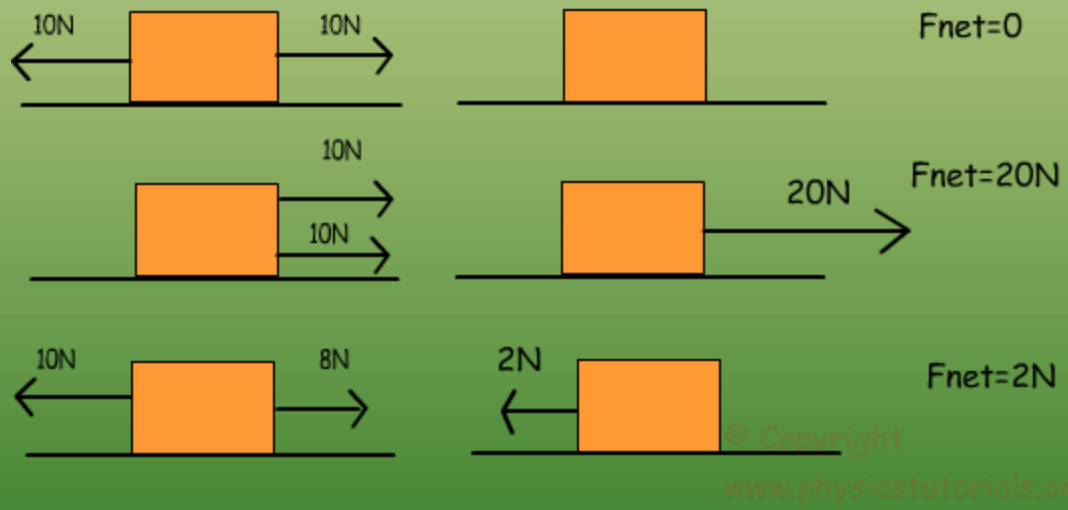
Net force =

So, motion remains unchanged

- 11) Unbalanced forces – when forces are unequal they will cause a change in motion.
- If it is not moving, then an unbalanced force will cause it to move.
- If it is moving, then it will cause the moving object to change is motion.

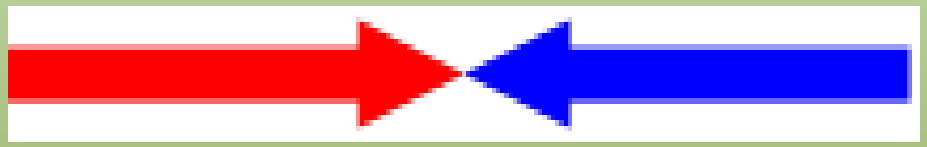
NET Force

- 12).Net force – is the total amount of forces all added up together.



13) Examples #1 - forces

10 N 10 N



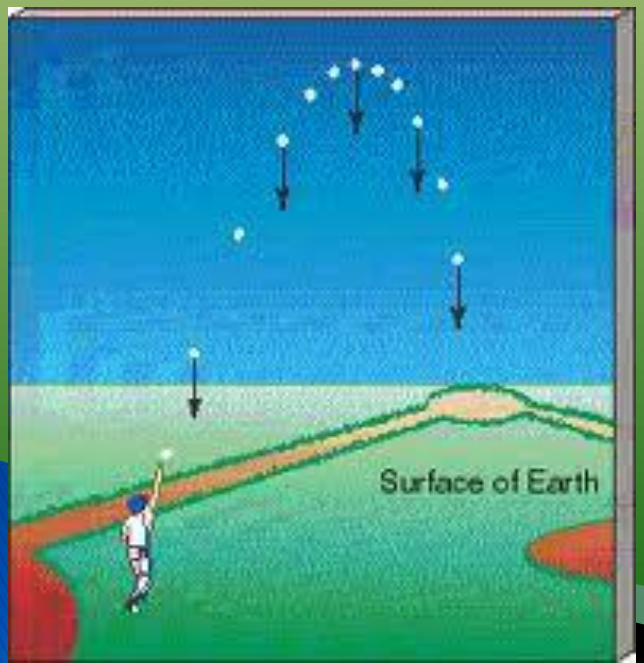
- Balanced or unbalanced?
- Direction of the movement?
- The net force is _____
- Is it compressional or tensional?

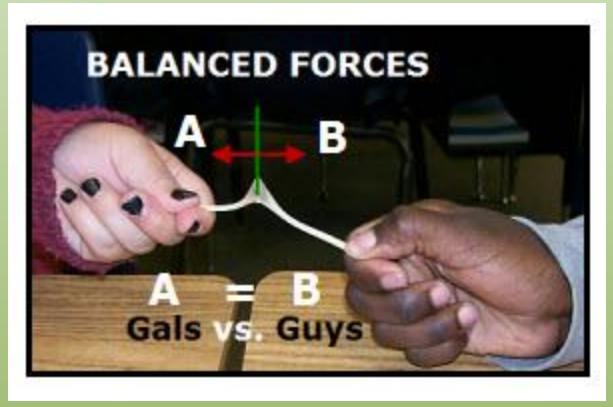
14) Example #2 Answer the following questions according to your worksheet

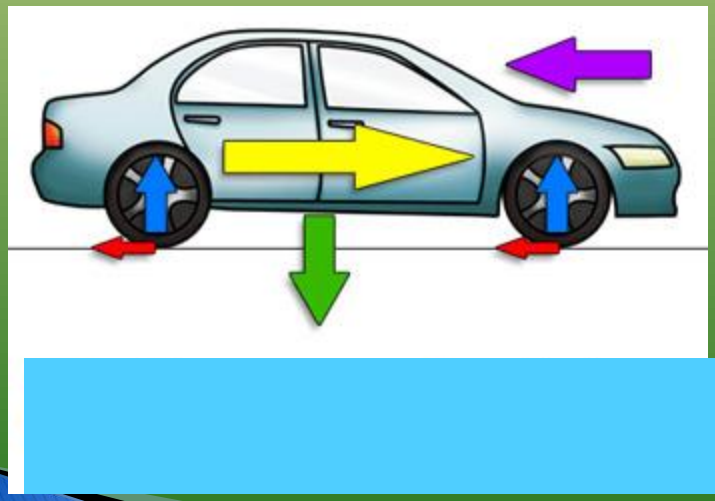
3N 10 N

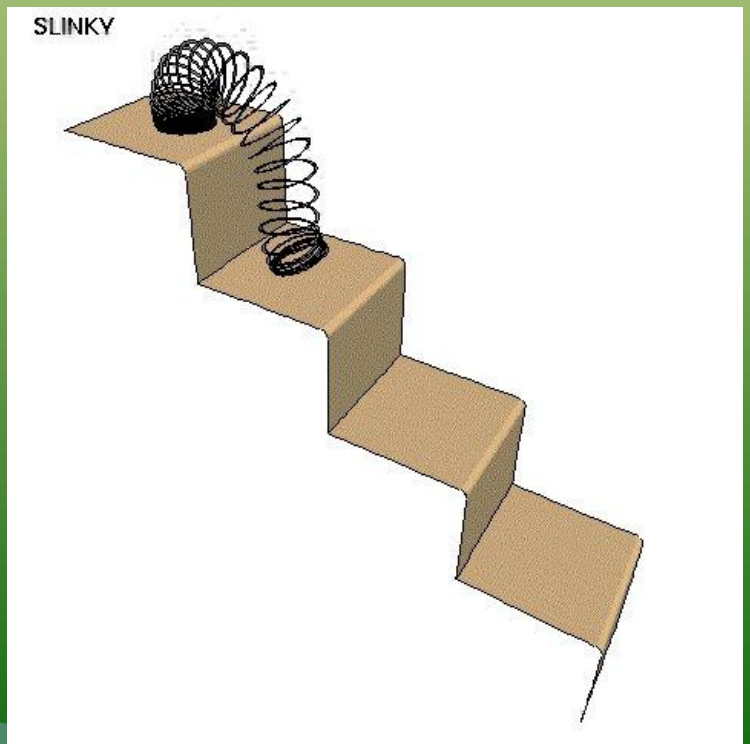
4N + 10 N

Which forces are present in theses pictures?

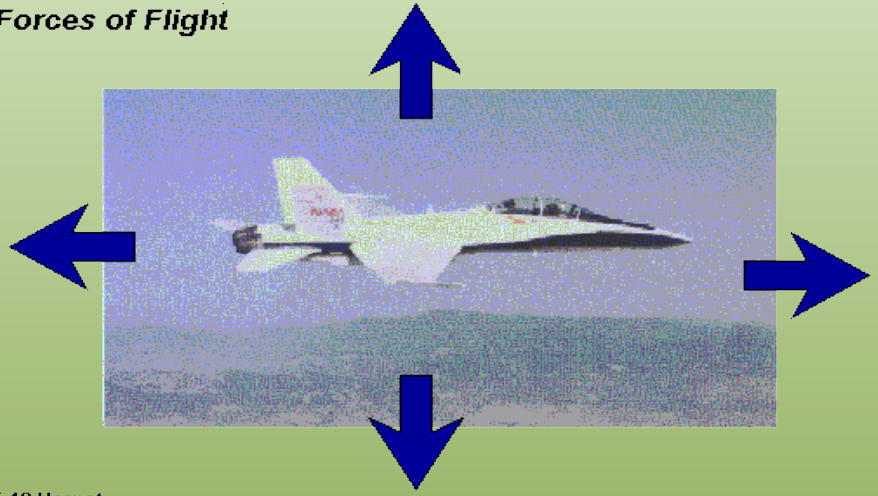



BALANCED FORCES
A
B
A = B
Gals vs. Guys




SLINKY

Can you guess the forces?



F 18 Hornet