

Forces Notes

A force is:

– if there is no interaction between objects = no force!



Glue this side into your notebook



KINDS OF FORCES *(*motion is not a force and inertia is not a force!)*

- **Contact forces** – push or pull between objects that are touching

Applied force – a force when two objects are pushing or pulling each other	example:
Friction – a force between two objects being dragged, rubbed, rolled, etc. along each other	example:
Drag – a type of friction force between air or water and an object; can also be known as air resistance	example:

- **Force-From-a-Distance** – forces that result even if the objects are NOT in contact (we'll learn about these later)

Gravitational	Electric	Magnetic
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FORCES INFO

Vectors describe forces – they are arrows that show the _____ (strength) and the _____ of a force

- the length shows _____
- the arrow point is the _____



Draw a picture of you pushing a chair. Use vectors to show the force.

Multiple forces can act on a single object at the same time.



Draw a picture of two people on a big rock from opposite sides. With vectors, show all the forces acting on the rock!

Free body diagram (force diagram) –

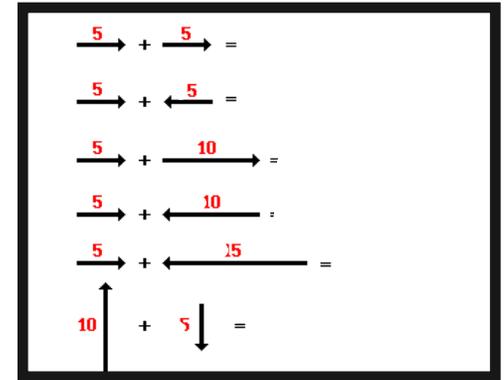
Draw the rock again with just vectors, no people. You've just drawn a free body diagram!



Net Force – the total amount of force acting on an object

- if the arrows go the **SAME** direction **ADD** the arrows!
- if the arrows go in **OPPOSITE** directions, **SUBTRACT** the smaller one from the larger one. The direction will be the direction of the larger arrow and the magnitude (strength) will be their difference.

Draw the vectors for and the amount of force in Newtons that represents the **net force**.



Balanced Forces

- Forces are “equal and opposite” when they are balanced

Draw a free body diagram of a rubber band with balanced forces (equal forces in both directions)



- If an object is **stationary** (not moving) and has balanced forces acting on it, what happens to its motion?
- If an object is **moving** and has balanced forces acting on it, what happens to its motion?

Unbalanced Forces

- Forces are not equal
- Cause a **CHANGE IN MOTION** (to the direction of the stronger force with a magnitude that is the difference between the forces)

Draw a free body diagram of a string being pulled with double the force on one side

