

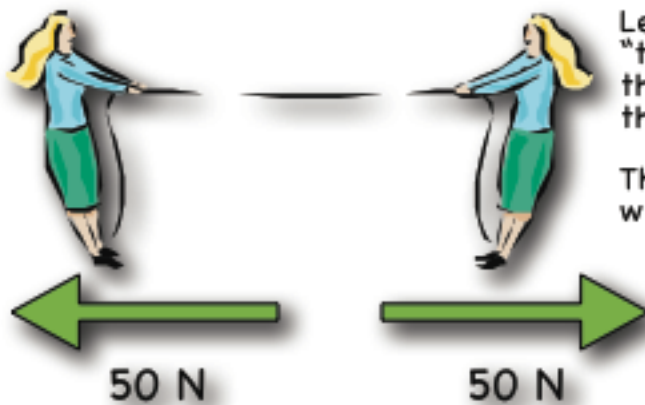
Introduction to Forces



A force is defined as a push or a pull, and is measured in units called Newton's.

One Newton of force is the amount needed to accelerate a mass of 1 kilogram, by 1.0 m/s^2 .

According to Newton's first law of motion, in order to change the motion of something, an unbalanced force must be applied to it. But what is an "unbalanced" force, or for that matter, a "balanced" force?



Let's consider our two girls engaged in a game of "tug of war". When the girls pull on the rope with the same amount of force, there's no movement of the rope in either direction.

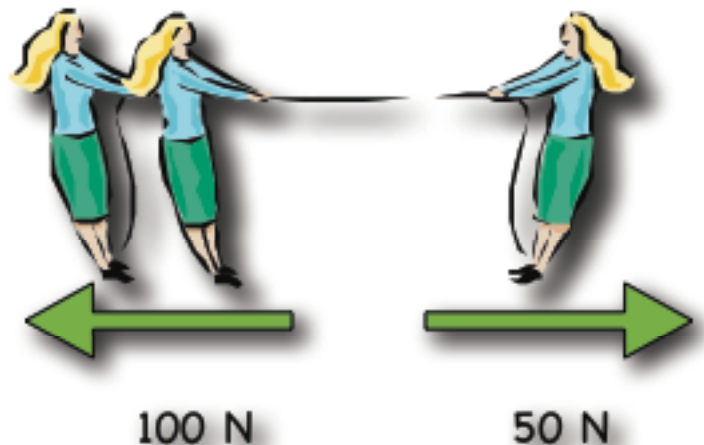
The 50 N force that each girl pulls on the rope with, is exactly equal in amount, but opposite in direction to the other girl's force.

The resulting "Net" force is zero. (50 N minus 50 N equals zero !)

The forces are said to be balanced when the resulting "Net" force is zero, and forces that are balanced produce no change in the motion of something.

In our second example of forces at work, we again see some girls engaged in a game of "tug of war". The girls again, each pull on the rope with 50 N of force. This time however, the forces are opposite in direction but are not equal in amount.

The resulting "Net" force is now 50 N to the left. (100 N minus 50 N equals 50 N !)



These unequal forces are said to be unbalanced, since the resulting "Net" force is greater than zero. A change in motion occurs in the same direction as the greater force. In the example above, there is a change in motion to the left.