

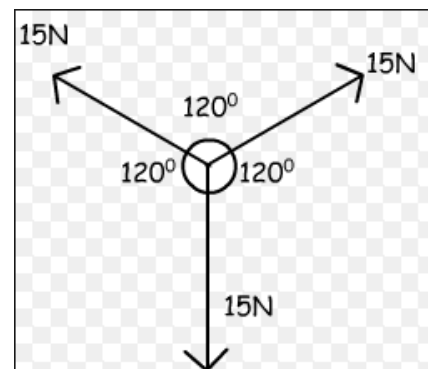
Applications of Vectors

Forces and accelerations are vector quantities. Using these methods we can analyze objects:

- That are in equilibrium
- That are involved with inclined planes

Equilibrium

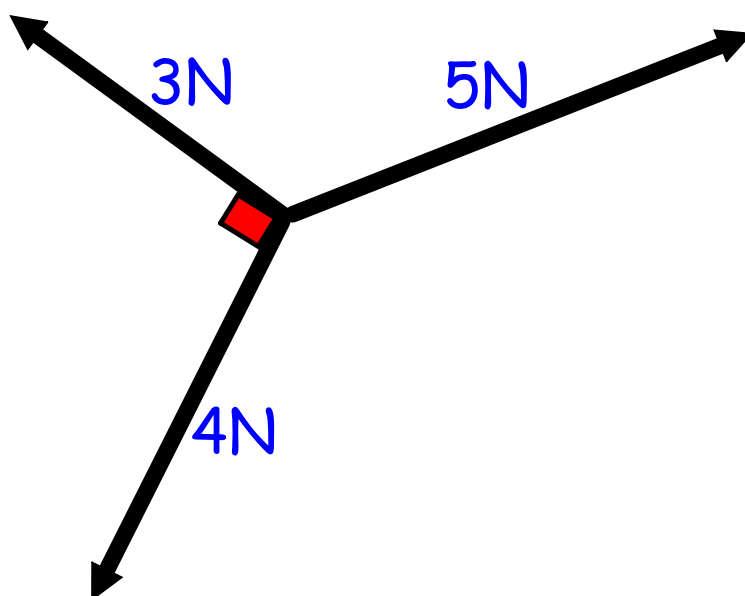
When the net force - the sum of all the forces involved - is zero, the object is in **equilibrium**.



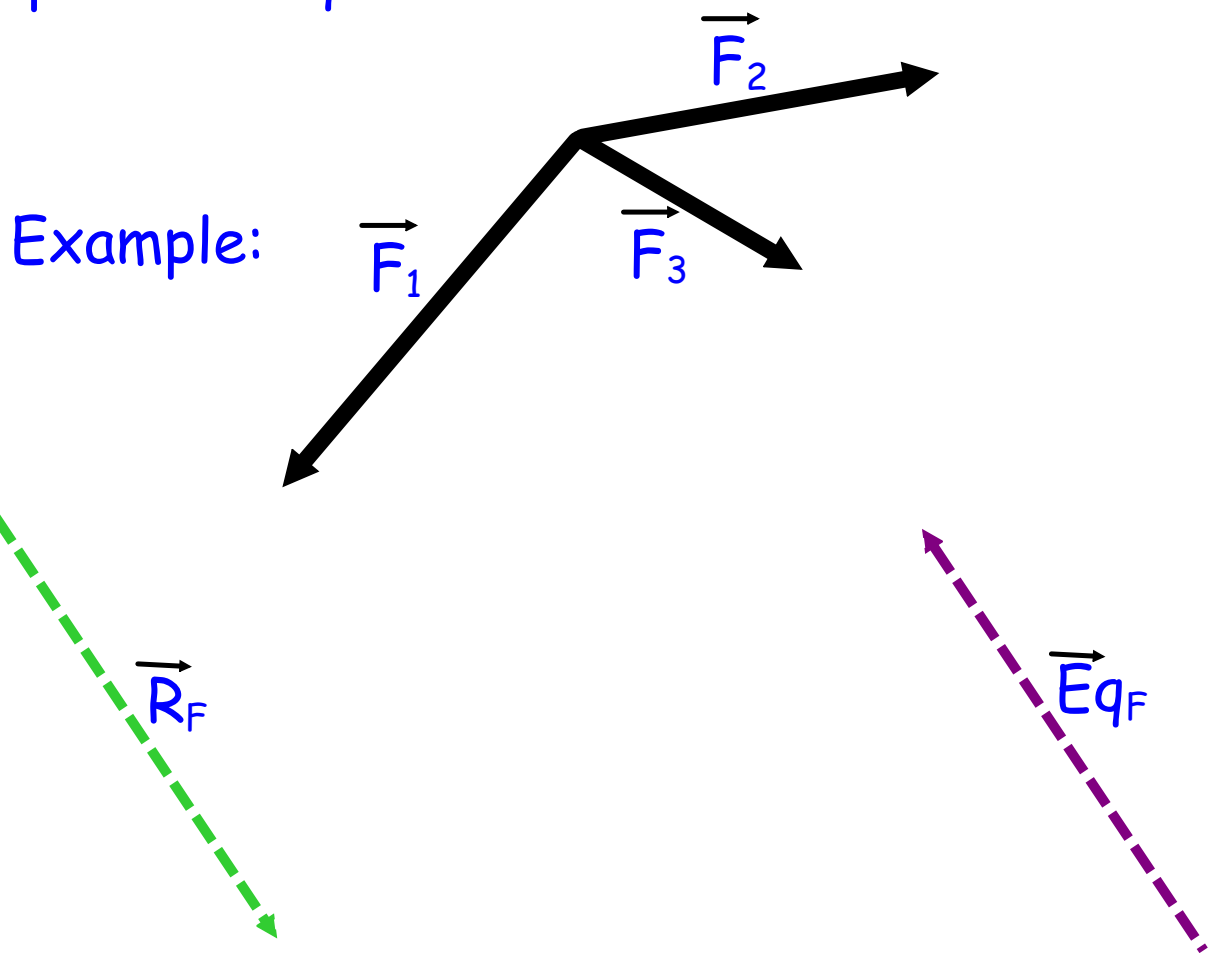
According to Newton's laws, the object will not move (be accelerated) because there is no net force acting on it.

Example:

Three people pull on an object centered in the middle of the picture below. What is the resultant force acting upon the object?



When a vector sum of forces on a point is not zero, a force can be applied that will produce equilibrium.



So.... if the resultant force was

a) 10 N, @ 143° the resultant force would
be 10 N @ 323°

b) 5 N, 30° [N of E] the resultant force
would be 5 N, 30° [S of W]
, 60° [W of S]

Example:

A sign that weighs 168 N is supported by ropes "a" and "b" that make 22.5° angles with the horizontal. The sign is not moving. What forces do the ropes exert on the sign?



Try Questions 17 - 22 on Page 123 of the red physics book.