Chapter Five: Forces in Two Dimensions
Section 3: Force and Motion in Two Dimensions

Recall that when the net force on an object is zero, the object is in equilibrium.

According to Newton's laws, an object in equilibrium is motionless or moves with constant velocity.

It is important to realize that equilibrium can occur no matter how many forces act on an object.

- As long as the resultant is zero, the net force is zero and the object is in equilibrium.

Resultant Force: the single force that produces the same effect as the two individual forces added together

Equilibrant: a force that puts an object in equilibrium

An object's acceleration is usually parallel to the slope; therefore, the *x*-axis should be in that direction.

The *y*-axis is perpendicular to the *x*-axis and perpendicular to the surface of the slope.

The two forces—normal and frictional forces are in the direction of the coordinate axes. However, the weight is not.

This means that when an object is placed on an inclined plane, the magnitude of the normal force between the

object and the plane will usually not be equal to the object's weight.

Because the weight does not point in either of these directions, you will need to break this vector into its *x*- and *y*-components before you can sum your forces in these two directions.