Newton's 2nd Law in 2-D

*When a force is applied to an object and it accelerates <u>in the direction of one of the components of the applied force</u> (not in the direction of the applied force), the force in that component must be used to find acceleration.

<u>ex</u>.
Sally pulls a 35 kg wagon with a force along the handle of 26 N at 15 degrees above the horizontal. The frictional force between the wagon and the ground is 2 N to the left. Find the acceleration of the wagon assuming that it accelerates to the right.

*When there are two or more applied forces on an object, you must find the <u>resultant of the applied forces</u> to find the acceleration of the object.

<u>ex</u>.
Forces of 30 N [W] and 45 N [S] act on a 25 kg object. Find the object's acceleration.

<u>ex</u>.
Repeat the previous question with a 15 N frictional force on the object (all other things being the same).

*Friction always acts <u>opposite</u> the direction of motion.