F = ma

This important equation is a mathematical form of Newton's second law of motion. It states that a force, *F*, produces an acceleration, *a*, proportional to the force. The product of the object's mass and its acceleration is equal to the force.

For example, if a mass of 2.0 kg accelerates at 3.0 m/s², then we can calculate the force that must be acting to produce this acceleration:

F = ma

= 2.0 x 3.0

= 6.0 N

You can rearrange the equation to calculate either the mass or the acceleration, provided that you know the other two quantities:

m = $\underline{F}$
    a

a = $\underline{F}$
    m