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Weight, Mass and Gravity by [Robert](#)

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If you've been to a grocery store then you'll know how uncomfortable it is sometimes to carry those paper bags filled with grocery items. Sometimes it crosses your mind that it probably would be easier to do certain things if they didn't weigh as much; however, there is no escaping this in the real world. Gravity, mass and weight are common in all things (matter) and that's what makes everything beautiful yet sometimes unpleasant – like your grocery bag for instance. You would wish its weight was less than 10 kilograms but sadly it cannot be so, especially if you purchased 8 x 200 grams of canned food, 4 aerosols, 70 ounces of liquid bleach and many other things.

Gravity

It is a natural phenomenon that is present in all objects that have mass (even in light particles called photons). The bigger and more massive an object is, the more gravitational force it influences and this is what causes weight. Because you and I and all other objects are closer to a massive object (our planet Earth) there is attraction between our bodies which is composed of mass. It has been calculated that at terminal velocity, the pull of Earth's gravity is 32 feet per second squared (1g where "g" stands for Earth's gravitational pull) at which point you have your ideal weight. It was Sir Isaac Newton (January 4, 1643 – March 31, 1727) who discovered gravity. Your weight as well as any other object largely depends on how much influence a massive object (planet) has on you. So that if you weigh 150 pounds here on Earth, you could only weigh as much as 25 pounds on the moon, meanwhile you'll weigh at a bone crushing 3,000 pounds on Saturn or Jupiter.

Mass

Mass is determined by how many atoms and molecules an object is made of and how densely packed it is. In everyday use mass is commonly interpreted as weight even though the two terms are not entirely synonymous. Mass is equated as:

Now if we were to take the mass of a wooden cube that is 2 meters on a side and has a density of 3000 kilograms/meter cube? We get mass = density x volume = (3000 kilograms/meter cube) x 8 meter cube = 24000 kilograms.

Weight

Weight is the product of mass multiplied by the gravitational force acting on the object. As stated earlier weight and mass are directly related to gravity and without gravity everything would be nullified. Among the different categories of weight include:

• Stone is equivalent to 14 pounds

• Ounce is equivalent to 28.35 grams

• Tone is equivalent to 1,000 kilograms

• Pound is equivalent to 16 ounces

• Metric ton is equivalent to 2,204.6 pounds

• Kilogram is equivalent to 1,000 grams/2.54 pounds

1 Gram is equivalent to 100 centigram

1 Centigram is equivalent to 10 milligrams

Now if you want to play around with your body weight and you convert it into these metric and BUI units for fun, you easily can. Simply start with what you got on the weighing scale and multiply it to the corresponding unit of measurements. For this experiment I will use my own body weight which is 190 pounds.

So let's try

190 pounds x 1 metric ton = 0.0861825503019067 metric tons

2,204.6226218 pounds

This may seem a funny way to convert weights but it actually works both ways, and yes, the idea is to goof around with what you know yet at the same time you become an expert of it as you learn every time you do it.

So let's try again

190 pounds x 1 stone = 13.57 stones

14 pounds

Now let us try to solve a somewhat complex problem in order to test our weight conversion skills. Suppose a cargo ship's maximum cargo load is 35,000 metric tons; how many container vans weighing 11 tons each can it carry aboard?

We let X represent the number of container vans that the ship can carry:

$X = 35,000 \text{ metric tons} = 3,181 \text{ container vans}$

1 container van (11 tons each)

1 metric ton is exactly 1 ton and that is why our equation came out the way it has. If you want to make super-fast calculations you can just Google some online conversion tool/software or sites and you will get similar results twice as fast.

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