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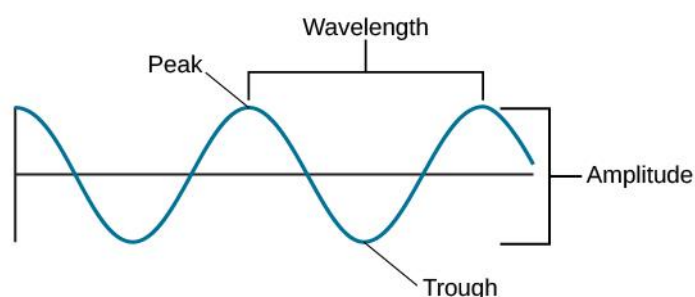
# Extras

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# LAMBDA, MOMENTUM, VELOCITY/SPEED EXPLAINED

What do you think of when we say the word **Lambda**? Sounds like something creepy or what? Hold on! Wear your seat belts now we are going to experience a journey of nothingness, numbness & awesomeness. Let's launch....!

In the world of physics Lambda is something that is used for denoting the wavelength of any wave. Wavelength can be simply defined as the distance between 2 peaks of a wave. You can easily understand it by having look at the picture given below.



**Lambda** is used for defining different things in different fields of physics.

Just like in **nuclear physics and radioactivity**, lambda is used to indicate the radioactivity decay constant.

In **evolutionary algorithms**, lambda or  $\lambda$  specifies the number of children that would be produced in each generation from the current population.

Lambda  $\lambda$  is a term used in the **physics of electric fields** to describe the linear charge density of a homogeneous line of electric charge (measured in coulombs per meter).

In **particle physics** lambda is an uncharged hyperon with a mass of c. 1,115.68 MeV/c, which is c. 2,183 times the mass of an electron: decays very rapidly, usually into a nucleon and a pion.

Maybe some of you didn't understand the above lines... Even I was not able to understand these at first glance. But as you go further in this journey you will be able to understand all the workings of this unending physics and universe.

Let's move on to our next topic which is **Momentum**. Many of you must be familiar with this word if you had paid interest in your physics class. The most basic definition of momentum can be the **product of the mass of a particle and its velocity**. Momentum is a vector quantity; i.e., it has both magnitude and direction. Isaac Newton's second law of motion states that the time rate of change of momentum is equal to the force acting on the

particle. Momentum is the quantity of motion that is made up of the amount of matter moved and the velocity at which it moves. The SI unit of momentum is a **kilogram meter per second (kg m/s)**.

We tend to "see" momentum as a velocity--what's important is *not* the velocity but rather the momentum. Internal transfer of momentum describes such things as molecular particles bouncing off of each other and transferring momentum, internally, which results in no net increase/decrease of momentum. External momentum is something that transfers momentum from one large system to another.

$$\text{Momentum} = \text{Mass} \times \text{Velocity}$$

Momentum can be defined as "mass in motion." All objects have mass; so, if an object is moving, then it has momentum - it has its mass in motion.

I hope you understood momentum well. So, it means now we can continue with our next topic which is **Velocity/Speed**. Let me ask you what comes to your mind first when you thought of speed and velocity. For me, it's a car moving on the road. If you also think the same. Congo:)