



# *Phis's World*

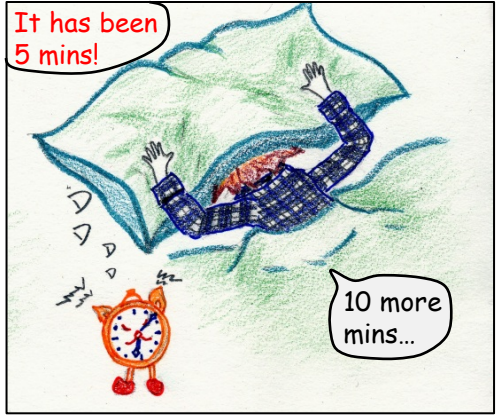
## *Episode 2: Newton's 1st Law - Habit is a Routine that is Hard to Break*



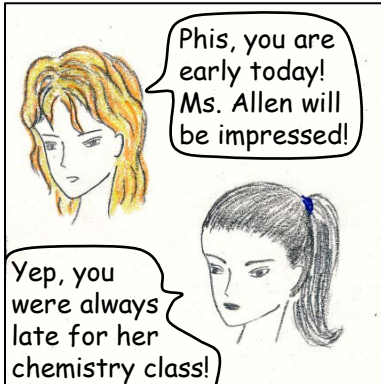
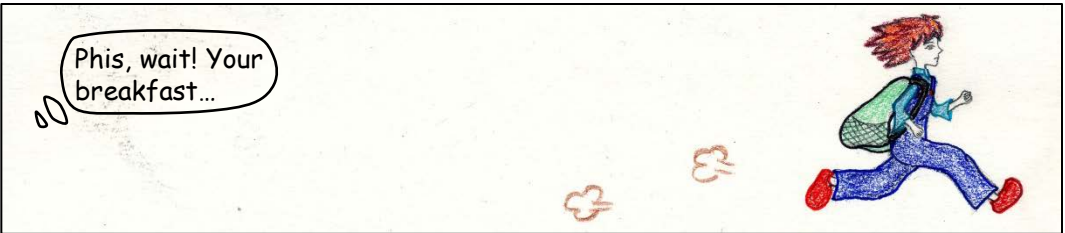
Illustration: Xia Hong

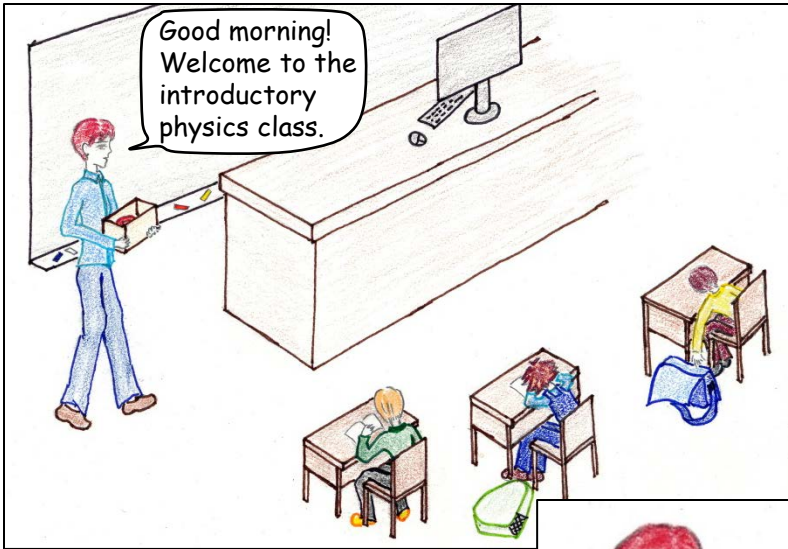
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08/2013



You are right, Chemi. Let me try something different.  
Phis, today is your **FIRST** physics class. Ms. Allen is **WAITing**...

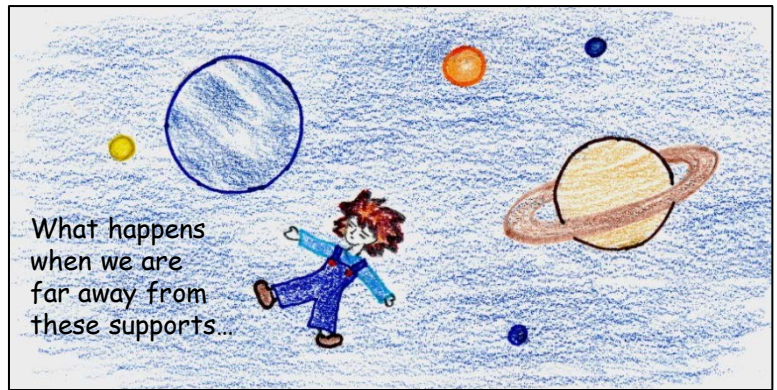
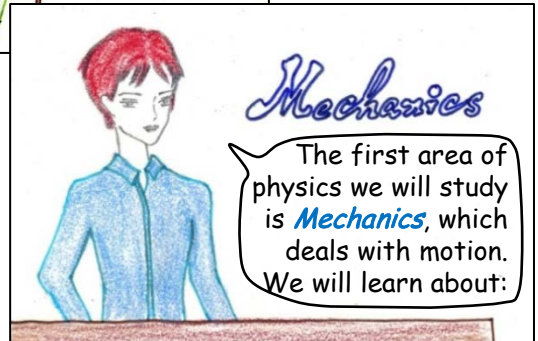




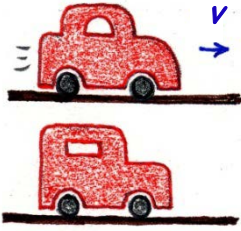
Great, let's get started.

Since the ancient time, people have asked questions like why sun rises every morning, why the sky is blue...

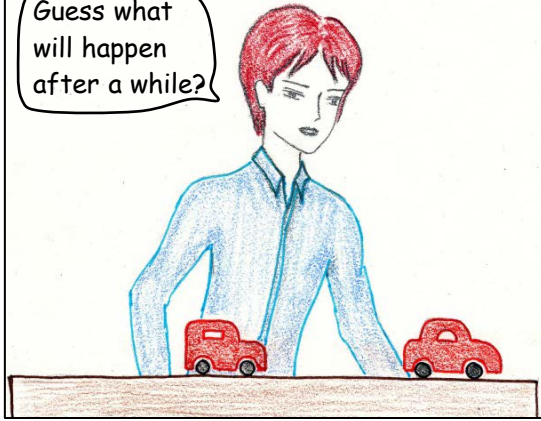
In physics, we study the mechanisms behind these phenomena in the world around us.



First, let us do a demo. There are two cars on the table. Initially, they are both at rest. Now I give one car a quick push.



Guess what will happen after a while?



That car will fall off the table...



A good guess. Will it really fall?



Eh, if you didn't stop it - yes!

There is another possibility—

If the table is long and there is nothing to stop the car...



Yes?  
What if there is nothing to stop the car?

Aha, I know!



Then the car will come back!



Slow down, Phis. Let's assume the curvature of earth can be neglected.

That leads to what we will learn today:



There is a natural tendency for all objects to keep on doing what they're doing.

All objects resist changes in their state of motion unless being disturbed by external, unbalanced forces.

An object at rest will remain at rest...

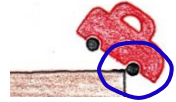


An object in motion will continue in the motion with the same direction and speed...



...acted on by an unbalanced force.

**UNLESS**



This is

*Newton's 1st Law,*  
or the *Law of Inertia.*

Hmm...  
Inertia...

Undisturbed...

Disturbed...

I have an assignment for you. Can you collect some examples in your everyday life where Newton's 1<sup>st</sup> Law can be applied?

For the rest of the day, Phis was pondering what inertia means...

I'm home!



Yes, it solved one of my long time puzzles!

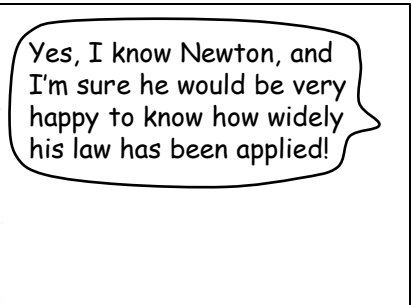
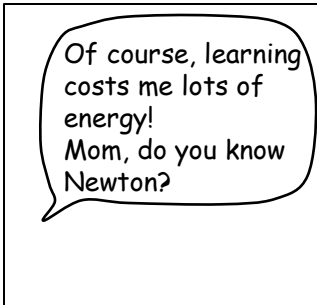
Phis, was the physics class fun?





It is because of inertia!

It is the human nature governed by *Newton's law* that prevents me from changing MY way without some new incentive!



To read more about the stories of Phis, please visit us at [www.physics.unl.edu/~xhong/hong/Phis/PhisHome.html](http://www.physics.unl.edu/~xhong/hong/Phis/PhisHome.html).



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