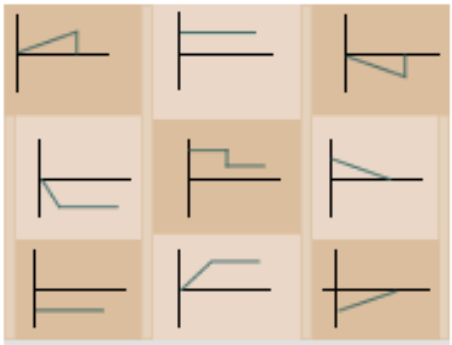
Announcements

Session Three, Announcement Two



What is it?
Move your mouse
over the picture to see!

Accelerating toward an understanding...

We appreciate the way you've tackled this week's work. You are grappling with very slippery concepts: velocity, speed, and acceleration and how to represent them. Keep in mind that questions, conjectures, and stated confusions will lead you toward greater understanding!

The accelerometer is trying to tell you something special. It provides you with a way to observe phenomena that are otherwise often invisible to us.

Sometimes we confuse velocity and acceleration. In fact, much of the time we are moving in the world we are going at a constant speed, without accelerating at all. Any time there is a start or stop acceleration occurs, but in between we are often moving at a constant velocity and there is no acceleration.

In our everyday speech the words speed, velocity, acceleration, momentum, and energy are used interchangeably as synonyms. Keep in mind how this vernacular usage differs from the physicist's definition of acceleration.

From the physicist's perspective, acceleration *only* occurs under special circumstances -- it only happens when the velocity *changes* (speeds up, slows down, or changes direction). Think of this as an operational definition, a guide that you use to determine whether or not acceleration is happening.

Velocity can only change in three ways:

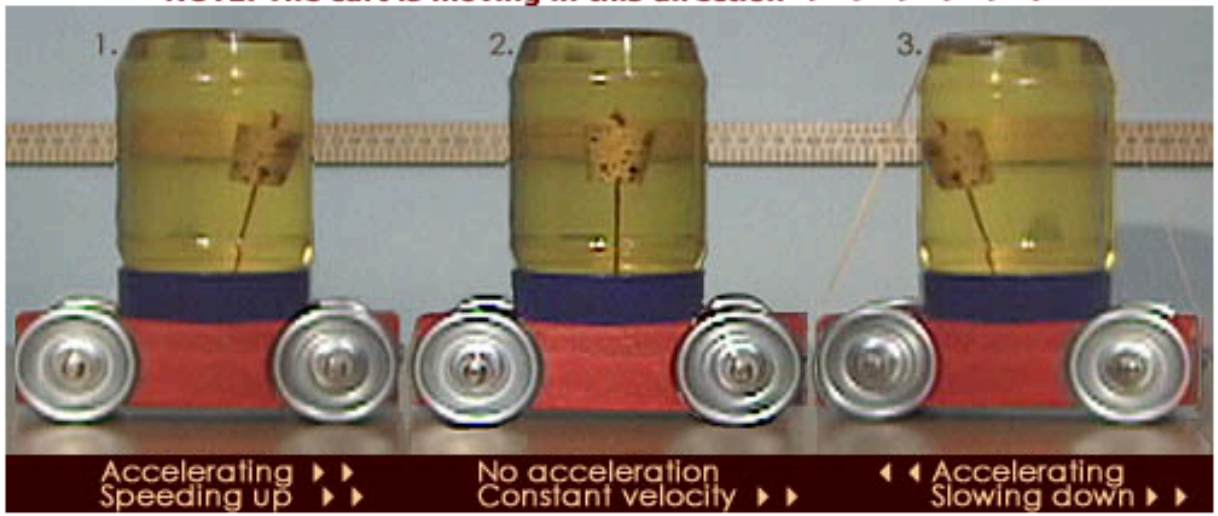
1. The *magnitude* of the velocity changes (for example, moving from 10 to 30 miles per hour and moving from 30 to 10 mph); OR
2. the *direction* of the motion changes (for example, first moving forward and later reversing direction); OR
3. *both magnitude and direction* of the motion change (as many of you discovered when you took your accelerometer for a ride.)

Nature, as Newton realized, works differently than one would ever imagine. The manifestation of the phenomenon of acceleration is special. As you saw from the videos and your own trips into the world with your accelerometer, acceleration usually occurs over a brief time interval.

Use the physicist's strict definition of acceleration to determine where there are changes in velocity. Let the accelerometer be your guide. It is telling you the "truth." Accept what it is trying to tell you. It can help you "see" motions through Newton's eyes.

Look at the photo sequence below. What is the accelerometer trying to tell you?

NOTE: The cart is moving in this direction -> -> -> -> -> ->



The tricky part is understanding image #3 in the picture above. When the accelerometer is moving in one direction and showing acceleration in the *opposite* direction, it is slowing down!

Discussion Quick Find

Orange		Blue	
Forums: - Physics Forum - Learning Forum - Motions in Your Life Forum		**Forums:** - Physics Forum - Learning Forum - Motions in Your Life Forum	
Members: - Jan - Sally - Dale - Kip	- Kyle - Sarah - Reed	**Members:** - - -	- - -
Help! Discussion		**Charlie's Cafe**	

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