flipping physics

Flipping Physics Lecture Notes:
Introduction to Acceleration with Prius Brake Slamming Example Problem

Acceleration: $\boxed{a=\frac{\Delta v}{\Delta t}}$ & $a=\frac{\Delta v}{\Delta t}=\frac{v_f-v_i}{t_f-t_i}$ & $a \Rightarrow \frac{m/s}{s/1}=\frac{m}{s}\times\frac{1}{s}=\frac{m}{s^2}$ (flip the guy and multiply!)

Acceleration, just like Displacement and Velocity, has both Magnitude and Direction.

Example Problem: Mr.p is driving his Prius at 36 km/hr East when a basketball appears bouncing across the street in front of him. His gut reaction is to slam on the brakes. This brings the vehicle to a stop in 1.75 seconds. What was the acceleration of the vehicle?

Knowns: $v_i = 36\frac{km}{hr}East\times\frac{1hr}{3600s}\times\frac{1000m}{1km}=10\frac{m}{s}East;\ v_f=0;\ \Delta t=1.75s;\ a=?$

$$a=\frac{\Delta v}{\Delta t}=\frac{v_f-v_i}{\Delta t}=\frac{0-10}{1.75}=-5.7143\approx\boxed{-5.7\frac{m}{s^2}East}$$

FYI: $v_i = 36\frac{km}{hr}\times\frac{1000m}{1km}\frac{1mi}{1609m}=22.3741\approx 22\frac{mi}{hr}$

(Yes, 23.3741 was a typo in the video, sorry.)