

Corona Week 7 Conservation of Momentum 2

1. Explosion Question

Momentum Thought Question. (Monday)

Last week we learned what MOMENTUM is:

- Momentum = mass • velocity
- $p = m \cdot v$

So, if an object with mass is moving with a velocity, it has momentum. If it so not moving, it does not have momentum. Simple.

Then we learned about CONSERVATION OF MOMENTUM. Which says:

$$\begin{array}{l} \text{Total Momentum} \\ \text{BEFORE a Collision} \end{array} = \begin{array}{l} \text{Total Momentum} \\ \text{AFTER a Collision} \end{array}$$

Ok, so conservation of momentum says that before an after a colision you will HAVE THE SAME MOMENTUM.

So, here is the question. DOES AN EXPLOSION BREAK THE LAW OF CONSERVATION OF MOMENTUM?

Take a look at the Mythbusters Explosion video.

I mean, the bomb is sitting there before it goes off....so it has no momentum, right?

Then, it explodes and pieces are flying very fast. So, the pieces have alot of momentum, right?

But, shouldn't the momentum before be equal the momentum after according to the law of conservation of momentum?

Let me know what you think. Do bombs violate the LAW OF CONSERVATION of momentum? If so, explain how or why. If you think it doesn't violate the law, explain why not.

Hint: If something has a momentum of 5 kgm/s to the right, and something else has 5 kgm/s to the left, what is the total momentum?