

Lesson plan for *Collision Lab*: Introduction to One Dimension collisions

<http://phet.colorado.edu>

I used this for a home work.

Learning Goals:

- Draw "before-and-after" pictures of collisions.
- Construct appropriate vector representations of "before-and-after" collisions.
- Identify what variables are conserved and under what conditions.
- What does "elasticity" mean?
- Identify vector and scalar quantities.

Background:

The students will be doing a lab in class using physics carts (low friction and allow fairly elastic collisions) and photogates to determine the momentum of a single cart from the velocities and then some "before and after" momenta for carts of varying mass. I am using the sim to help them understand which measurements are vectors and which are scalars, and also to enable them to distinguish between conserved quantities and those that are not. This is the first conservation law that we are encountering in the semester sequence.

***Collision Lab* Introduction:**

Restart is helpful for the students to replay an experiment. **Reset All**, will set the sim back to 2D. The [Tips for Teachers](#) for this sim may be helpful.

Lesson:

This is a home work assignment; my students can do PhET activities in pairs if they want and many use the school computers to do online homework. I expect to write some clicker questions to use as a post-lab. This lesson was used when the sim was still in development. I expect to do some revisions.