

Where's Newton?

Materials: Student Handout, goggles, vinegar, baking soda, round pencils, 64 oz. vinegar bottle, stopper that fits the bottle, paper funnel (piece of paper rolled), tarp, towel and mop to contain mess, tennis ball

Procedure:

1. Review Newton's 3 Laws, filling in blanks on the Handout. Apply laws to the tennis ball as you go through them.
2. Demonstration-
 - a. Put on goggles. Explain to students what you're about to do- pour 200 mL vinegar into the empty bottle, pour in 50 mL of baking soda, stopper the bottle shut, lay on a bed of round pencils.
 - b. Have a helper pour the baking soda through the paper funnel, then you stopper the bottle shut, lay it on the pencils, and step back! *Caution-make sure the stopper is safely pointed AWAY from any students, and has NO chance of hitting anyone!*
3. Have students make a drawing showing the moment the stopper popped.
4. Now apply each of Newton's 3 Laws of Motion to the demo.
5. Show a video of the space shuttle launching. The reason it goes up is similar to why our vinegar bottle went the direction it did- all the CO₂ built up inside encountered and resisted the air, which is the force it pushed off of.