

? EDUCATED PREDICTION ?

Activity 1:

- Label the bowls A-E
- Cut an apple into five-ten slices
- Put one or two slices in each bowl
- Sprinkle baking soda on the first bowl
- Squirt vinegar on the second bowl
- Squirt milk on the third bowl
- Squirt lemon juice on the fourth bowl
- Do nothing to the last bowl this will be your control
- Observe over the next few days
- How quickly do apples turn brown?
- Does anything affect how quickly the apples turn brown?

Activity 2:

- Fill a plastic cup to the top with water.
- In a moment, you are going to add paper clips, one at a time, to the full cup.
- Make a hypothesis to answer the following question:
How many paperclips can I add before the cup overflows?
If I add paperclips to the full cup, then I will be able to add _____ clips before it overflows.
- Add paperclips, one at a time, until the cup overflows. Count the clips as you add them.
- *How many paperclips did you add before the cup overflowed? _____*

Activity 3:

- Hold up an empty glass beaker and ask the students how many packing peanuts you could fit into that container.
- **If I add packing peanuts into the container, it will hold _____ packing peanuts.**
- Fill up the container with as many as possible and set that amount off to the side.
- Then ask the students if there is any way they could add more peanuts to the container without smashing them.
- Add some nail polish remover with acetone to the bottom of the beaker.
- Make a new Hypothesis. **If I add packing peanuts into the container with the liquid in it, then it will hold _____ packing peanuts.**

- Now slowly start to add all the packing peanuts to the container again. Discuss what happened this time.

WARNING: Please follow all of the manufacturer's safety precautions listed on the container of acetone. This solvent is very flammable. Keep away from all flames.

- Have acetone in clear glass container
- Use a solvent like acetone to show that polystyrene packaging material is mostly air. The acetone easily dissolves the polystyrene, leaving very little residue. The packaging material is actually dissolving (not melting) in the acetone (melting requires heat). Engage students in a peanut race by seeing which team can fill a bowl first with polystyrene peanuts. Of course, one bowl will secretly contain acetone! Use extreme care when handling acetone — follow the manufacturer's directions for proper use and disposal.
- *Starch peanuts can be dissolved in water. Many manufacturers have started using Eco-Foam which is made almost entirely from an annually renewable resource... corn! The remaining ingredient is a water-soluble organic polymer called "polyvinyl alcohol." This organic polymer is made from carbon, hydrogen, and oxygen... the building blocks of life. When polyvinyl alcohol is exposed to water, naturally occurring bacteria feed on this organic polymer. Under wet conditions, the bacteria will use the starch (which is also composed of carbon, hydrogen, and oxygen) and polyvinyl alcohol as food to begin the cycle of life again.*