Names: _____

_____

Period: ____

EINSTEIN'S BIG IDEA

CONSERVATION OF MASS

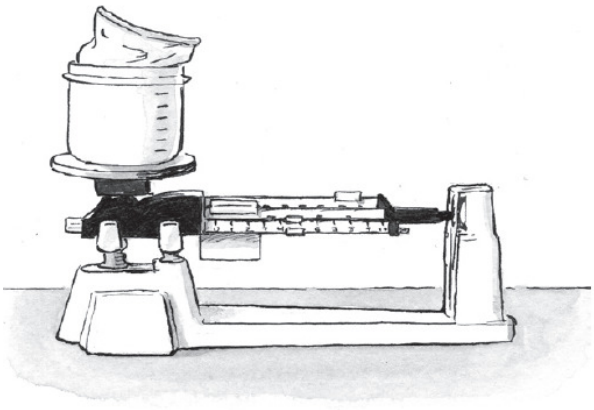
ACTIVITY SUMMARY

What is mass and how can masses react with each other? Is mass gained or lost during a chemical reaction? These are the questions you will consider during this activity.

You will be investigating the reaction of two common chemicals – citric acid and sodium bicarbonate. In a chemical reaction, the substances that are mixed together are called *reactants* and the substances resulting from the reaction are called *products*. You will be asked to describe (to the best of your ability) what is occurring when the chemical reaction takes place. Use all of your senses (**except taste!**) to make your observations.

MATERIALS FOR EACH TEAM

- Copy of the "Conservation of Mass" handout
- 1 gram of citric acid ($C_6H_8O_7$)
- 1 gram of sodium bicarbonate ($NaHCO_3$)
- 1 Film container
- 1 graduated cylinder
- 1 Quart freezer bag
- Plastic bowl
- 20 ml water
- Triple-beam balance accurate to $1/10^{th}$ of a gram



THE LAW OF CONSERVATION OF MASS

The law of conservation of mass states that

_____

_____

PROCEDURE

1. Obtain all needed materials.
2. Fill the film container with 20 ml of water
3. Add 1 gram of citric acid to the freezer bag
4. Add 1 gram of sodium bicarbonate to the freezer bag
5. Place the open container of water into the freezer bag. ***Be careful not to spill the water inside the bag***. Place the bag on the bowl and carefully center the bowl on the balance, all the while, keeping the water in the film container.
6. Record the total mass of the bag and its contents to the nearest tenth of a gram:

   _____grams

7. *Carefully* take the bag out of the bowl (without spilling the water!) and seal it well.
8. Mix the contents of the bag together. Hold the bag in your hands while the contents mix, being careful not to squeeze or manipulate the bag in any way.
9. Below, document as many ***detailed observations*** of the reaction as you can.
10. Place the closed bag in the bowl on the balance and find its mass again after the reaction has occurred. Record the mass to the nearest tenth of a gram:

    _____grams

OBSERVATIONS:

OBSERVED CHANGES:

Physical Changes	Chemical Changes