AB Shipments Materials Prep - Teacher Instructions

Prep these **before class starts. You want these to be ready to use.*
**Be sure to use granulated spices for this step in the activity. Do not use the Himalayan salt, peppercorn kernels, or sugar crystals.*

Sugar - Heavy Shipments (Shipment A)
You should have about 4 groups of students testing sugar-heavy shipments. To make these, use the following directions:

1. Using a marker, label the outside of 4 Styrofoam cups "Shipment A."
    a. Set your scale to zero. **Tare** the mass of an empty cup by placing it on the scale and pressing the **"0/T"** button.
    b. Weigh **6 g of granulated sugar** directly into the tared cup. Try to be as exact as possible.
    c. While the cup is still on the scale, add 1 g of salt and 3 g of pepper such that the **total mass is 10 g** (6 g sugar + 1 g salt + 3 g pepper).
    Note: You can use the larger peppercorn chunks to make the mixture, but you may not be able to exactly add 3 g. Although the larger particles make the process dramatically easier, this activity was tested in class with 8th graders using granulated pepper and they were able to use much more tedious lab skills while still extracting 3 g of pepper. Choosing the pepper size is your preference.
    d. Repeat Steps a through d for all 4 cups.
2. Teacher notes:
    a. It may be a good idea to make 1-2 extra cups in case students spill or need to start over.
    b. DO NOT put the actual gram amount on the cup. Allow the students to use their math skills to determine the gram amounts.
    c. You will need 4 cups for Days 3, 4 and 5 (if time). This means you will need to make a minimum total of 8 cups, but, as previously stated, it is recommended to make a few extra in case of a spill.

Salt - Heavy Shipments (Shipment B)
You should have about 4 groups of students testing salt-heavy shipments. To make these, use the following directions:

1. Using a marker, label the outside of 4 Styrofoam cups "Shipment B."
    a. Set your scale to zero. **Tare** the mass of an empty cup by placing it on the scale and pressing the **"0/T"** button.
    b. Weigh **6 g of granulated salt** directly into the tared cup. Try to be as exact as possible.
    c. While the cup is still on the scale, add 1 g of salt and 3 g of pepper such that the **total mass is 10 grams** (6 g salt + 1 g sugar + 3 g pepper).
    Note: You can use the larger peppercorn chunks to make the mixture, but you may not be able to exactly add 3 g. Although the larger particles make the process dramatically

easier, this activity was tested in class with 8th graders using granulated pepper and they were able to use much more tedious lab skills while still extracting 3 g of pepper. Choosing the pepper size is your preference.

d. Repeat Steps a through d for all 4 cups.

2. Teacher notes:
    a. It may be a good idea to make 1-2 extra cups in case students spill or need to start over.
    b. DO NOT put the actual gram amount on the cup. Allow the students to use their math skills to determine the gram amounts.
    c. You will need 4 cups for days 3, 4 and 5 (if time). This means you will need to make a minimum total of 8 cups, but, as previously stated, it is recommended to make a few extra in case of a spill.

Be sure to lay out any cups, straws, spoons, hot water (under your supervision), cold water, graduated cylinders, beakers, and coffee filters for students to grab and use!