

Measuring Weight/Mass

Reporting Category	Measurement
Topic	Measuring weight, using U.S. Customary and metric units
Primary SOL	3.9 The student will c) estimate and use U.S. Customary and metric units to measure weight/mass in ounces, pounds, grams, and kilograms.

Materials

- How Heavy Is It? Recording Sheet (attached)
- Scoop
- Rice, raisins, sand, and jelly beans
- Zip-top bags
- Balance scales for measuring grams and kilograms
- Gram weights of various units (1 gram, 5 grams, 10 grams, 20 grams)
- Scale for measuring ounces and pounds
- Seesaw Balances (attached; optional)

Vocabulary

grams, kilograms, mass, ounces, pounds, weight, balance scale

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Distribute copies of the How Heavy Is It? Recording Sheet. Explain to students that they will be determining whether single scoops of five different materials weigh the same. Demonstrate placing one measured scoop of each of the five materials (rice, raisins, sand, and jelly beans) in a zip-top bag. Ask students to estimate the weight of each bag in grams and record the estimates in the upper chart on their recording sheets. Then, direct them to estimate the same weights in ounces and record these estimates in the lower chart.
2. Review how to use a balance scale, using one scoop of dried beans in a zip-top bag and gram weights of various units. (Most students will be familiar with a bathroom scale or a scale in a grocery store, which indicates weight with digital readout or a dial, but many may not have had experience with a balance scale.) Demonstrate how to place the gram weights in the pan, starting with the largest weight, to balance the bag of beans. Continue to add weights, using the same size or the next smaller size, until the pans balance. Then, count the total value of the weights in the pan, starting with the largest weight and counting on, to find the weight of the beans.
3. Place students in groups, and distribute five zip-top bags to each group, each bag containing one measured scoop of one of the five materials. Explain that students will work in groups to weigh the bags of materials and record the weights in grams on their recording sheets. After the weights have been recorded, have students order the materials from heaviest to lightest and record.

4. Circulate as students are weighing materials, and note students who are having difficulty using the balance scale, counting the value of the weights, or recording the total value. Assist as needed.
5. Repeat step 3 as a whole class activity, using a scale for measuring ounces and pounds (dial or digital). Have students record the weights in ounces on their recording sheets and again order the materials from heaviest to lightest and record.

Assessment

- **Questions**
 - Why are gram weights used when measuring with a balance scale?
 - What are the benefits of using a balance scale? What are the drawbacks?
- **Journal/Writing Prompts**
 - Explain the process of weighing items on a balance scale to someone who has never used such a scale before.
 - Explain how using a balance scale is different from using a bathroom scale or a scale for weighing fruits and vegetables in a grocery store.
- **Other**
 - Have students choose classroom objects to weigh, estimate their weights before actually weighing them, and then weigh them on a balance scale.
 - Use the completed recording sheet for assessment purposes.

Extensions and Connections (for all students)

- Have students complete the “Seesaw Balance” activity. Distribute copies of the attached Seesaw Balances sheets, and display the first sheet. Explain that each kind of gobot has a particular weight that is more than zero. Gobots that are different have different weights. In order to balance the seesaw, the combined weights of the gobots on the left side of the seesaw must equal the combined weights of those on the right. Work through the first example with the students, guiding them to discover as many solutions as possible. Have students discuss strategies they can use to determine solutions, e.g., working backward, guess-and-test, looking for patterns. Then, have students complete the remaining problems individually. Circulate and assist as needed.

Strategies for Differentiation

- Use appropriate graphic organizers helpful to particular groups of learners.

How Heavy Is It?

Name: _____ Date: _____

Estimate the weight in *grams* of one scoop of each item listed below, and record each estimate. Weigh one scoop of each item listed below, and record the actual weights.

Item	Estimated weight of one scoop in grams	Actual weight of one scoop in grams
Rice		
Raisins		
Sand		
Jelly beans		

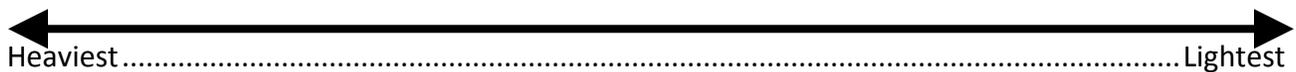
On the line below, order the items from heaviest to lightest.



Estimate the weight in *ounces* of one scoop of each item listed below, and record each estimate. Weigh one scoop of each item listed below, and record the actual weights.

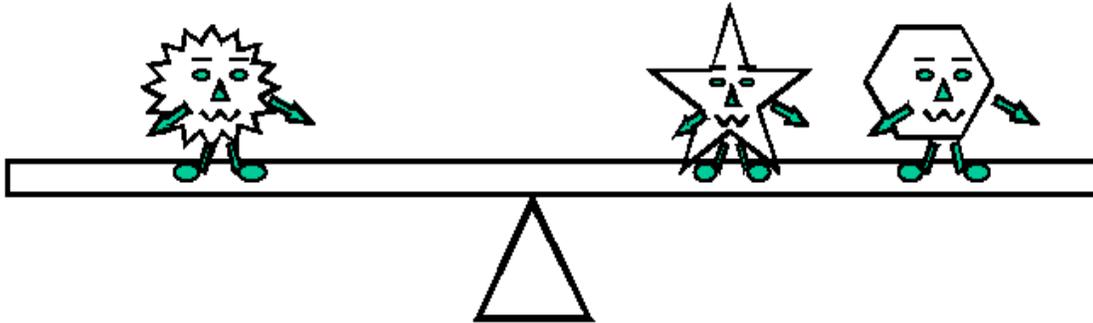
Item	Estimated weight of one scoop in ounces	Actual weight of one scoop in ounces
Rice		
Raisins		
Sand		
Jelly beans		

On the line below, order the items from heaviest to lightest.



Seesaw Balances

Name: _____ Date: _____

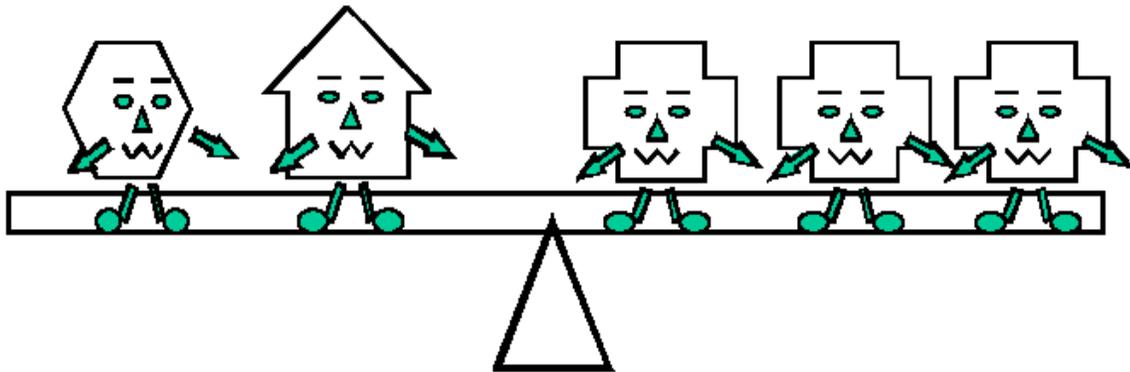


If  on the seesaw weighs four pounds, what could the other gobots weigh?

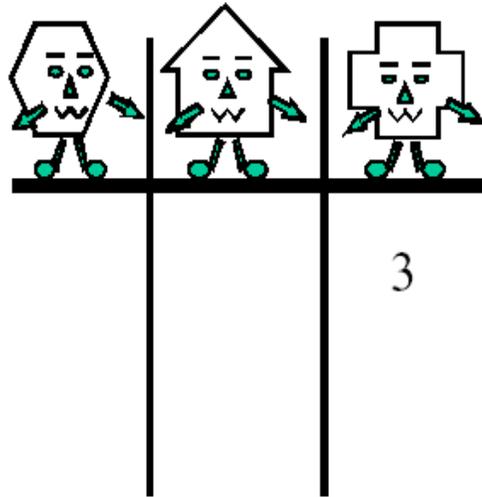
		
4	1	3
4	3	

If  on the seesaw weighs seven pounds, what could the other gobots weigh?

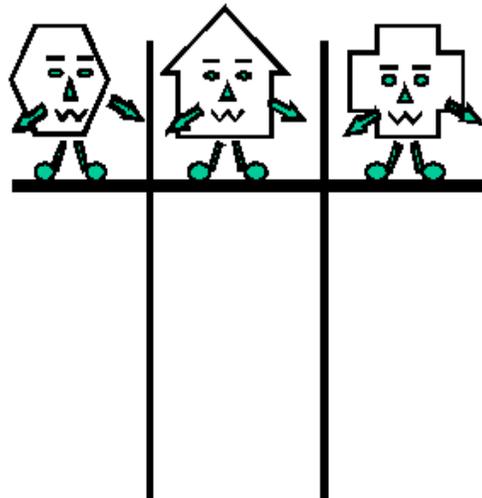
		

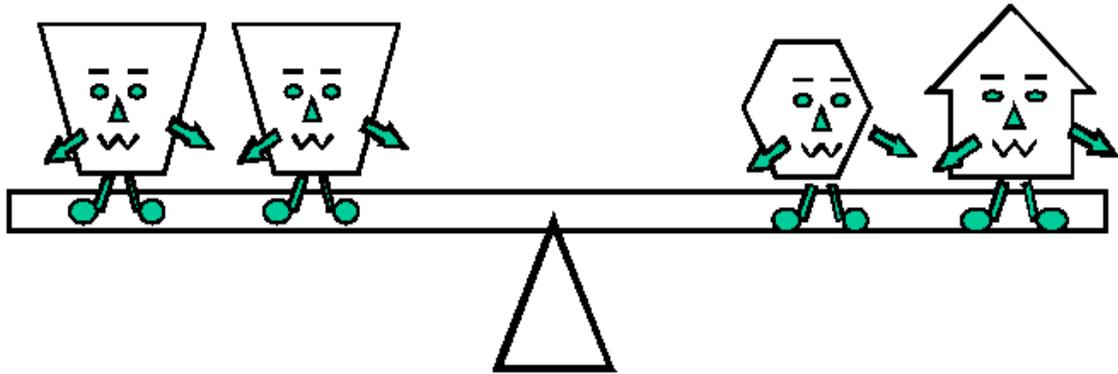


If  on the seesaw weighs three pounds, what could the other robots weigh?

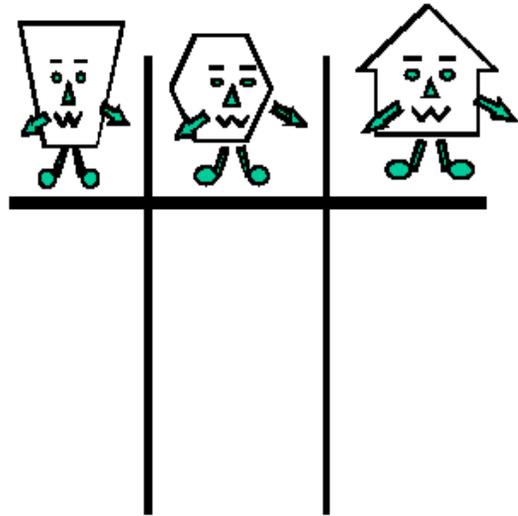


If  on the seesaw weighs four pounds, what could the other robots weigh?

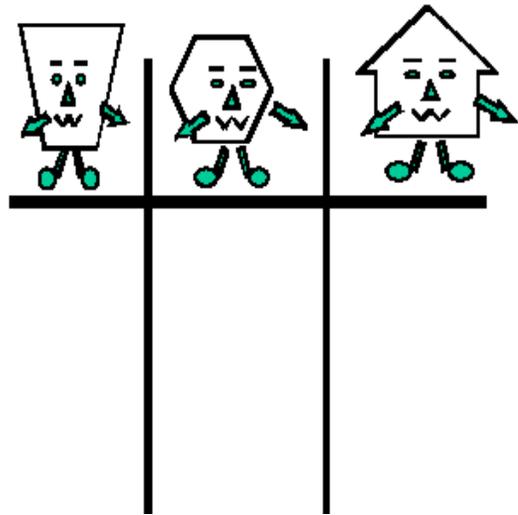


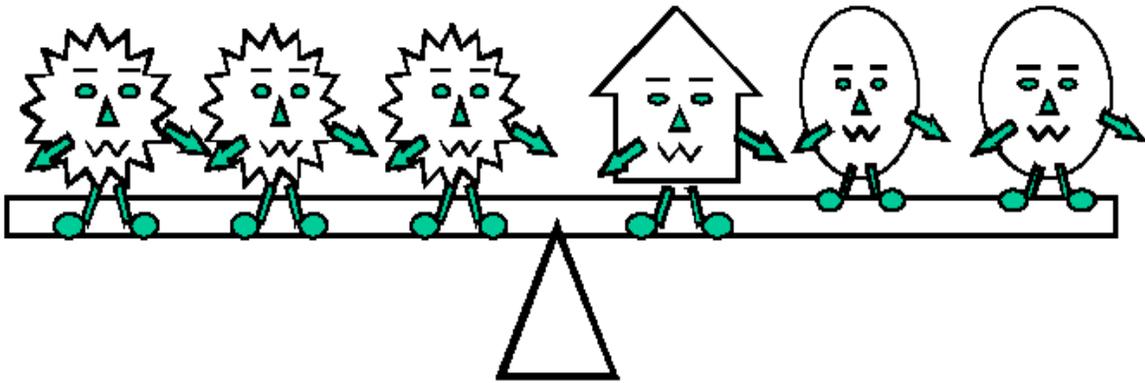


If  on the seesaw weighs three pounds, what could the other gobots weigh?

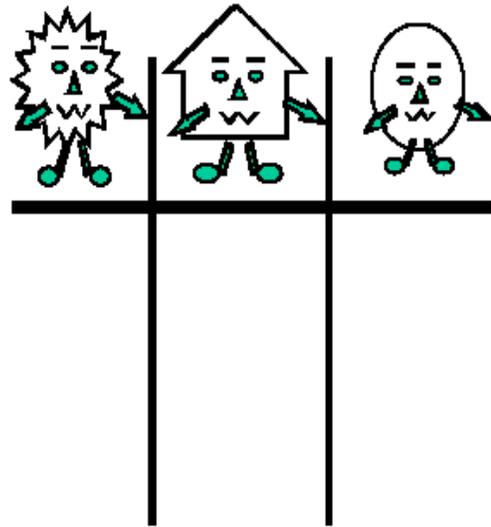


If  on the seesaw weighs five pounds, what could the other gobots weigh?





If  on the seesaw weighs five pounds, what could the other gobots weigh?



If  on the seesaw weighs six pounds, what could the other gobots weigh?

