

Worth the Weight

Summary

Students will first estimate the weight of items in grams / kilograms and then weight and record the actual weight of each item.

Materials

- Large Paperclip
- [Gram Hunt](#)
- Gram weight
- Balance
- Book that weighs 1 kg (2.2 lbs.)
- [Kilogram Hunt](#)
- 1 kg weight
- Spring Scales

Background for Teachers

In fourth grade, students need to be familiar with the terms gram and kilogram. Grams and kilograms are metric units used to measure the mass of an object. One kilogram is equal to 1000 grams. One gram weighs about as much as a large paperclip and one kilogram is equal to about 2.2 pounds.

Intended Learning Outcomes

4. Communicate mathematically.

Instructional Procedures

Invitation to Learn

Have students make a list of items they think weigh one gram. Discuss the lists as a class. Does everyone agree? Why or why not? Have students make a list of items they think weigh one kilogram. Discuss as a class.

Instructional Procedures

Hold up a large paperclip and explain that it weighs about one gram. In their journals, have students write a list of things they could weigh using grams. Ask the class for a few suggestions. Hand out the worksheet, [Gram Hunt](#), and divide the class into groups.

Have groups go on a hunt to find six items they want to weigh using grams. Have them estimate the weight first, and then write down the actual weight of each item using a balance and one gram weights. Have students write down how they made their estimates. Discuss the worksheet as a class

Talk about kilograms, and how $1 \text{ kg} = 1000 \text{ g}$. Explain that one kilogram is a little over two pounds. As a reference, find a book or something in your room that weighs about 2.2 lbs., one kilogram. Pass the item around so students can get an idea of what a kilogram weighs. In their journals, have the students write what items they would measure using a kilogram. Ask the class for a few suggestions.

Use a spring scale to measure a few objects around the room to see if they are heavier or lighter than a kilogram. Before measuring each item, have students predict if it will weigh more or less than a kilogram.

Hand out the worksheet, [Kilogram Hunt](#).

Have groups go on a kilogram hunt and find items around the room that weigh less than, about, and more than one kilogram. After items are found, have students weigh each item with a spring

scale to see if their predictions were correct. Discuss the worksheet as a class.

Extensions

Curriculum Extensions/Adaptations/Integration

During unit on rocks, have students estimate the weight of rock samples. Have them decide if it would be more appropriate to weigh each rock using grams or kilograms. Have them weigh the rock and compare the weight with their estimates.

Each week, have a ten minute discussion about units of weights. Have students pick an item from the classroom, and then discuss the appropriate unit to use to measure the weight, and then estimate the weight of the object.

In math journals, have students make a reference list of how much eight different items weigh using grams and kilograms. This can be used throughout the year.

Family Connections

Have students find ten items around their house that they would measure the weight using grams or kilograms. Five items for grams, and five items for kilograms. Have them estimate how much each item weighs.

Have students estimate how many kilograms five different people weigh. (Family members, neighbors, friends, babysitters, etc.)

Assessment Plan

Use class discussions and journal entries as informal assessments.

Formal assessment is the worksheet, *Gram Hunt*, and the worksheet, *Kilogram Hunt*.

Bibliography

Lo, J.J. (1991). Learning To Talk Mathematics. ERIC # ED334073. Retrieved December 14, 2005, from <http://www.eric.ed.gov>

This study focused on mathematical discourse, with the main goal being both the characterization of the potential learning opportunities and the inference of students' construction of mathematical meanings. Results indicate that classroom mathematical discourse is a rich environment for both student growth and mathematical learning, which was confirmed by more elaborate schema for mathematical reasoning and problem solving.

Ball, D. (1991). What's all this talk about discourse? *Professional Standards for Teaching Mathematics*. National Council of Teachers of Mathematics, 1991.

Deborah Ball defines "discourse" as described by the NCTM Standards. A discussion taken from her classroom, along with entries from her teaching journal, illustrate how thoughtful discourse can be used to help students learn to discuss and understand mathematics concepts.

Authors

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