

K.MD Longer and Heavier? Shorter and Heavier?

Alignments to Content Standards: K.MD.A

Task

Materials

- Several pairs of objects (see below for how to choose the pairs)
- balance scale

Action

The teacher finds several pairs of objects that are much longer in one dimension than the other two for the class to compare. The class will compare the length and weight of each pair of objects. Some pairs should be set up so that object A is both longer and heavier than object B and some pairs should be set up so that object A is heavier but shorter than object B. In other pairs object A should be lighter but longer than object B, and for at least one pair, objects A and B should appear about the same, but differ in weight. This will show students that weight and length are separate measurements, and not always related.

The teacher will select the first pair and ask the students which is longer. The teacher can hold them side by side for comparison. The students should explain why they know one is longer.

Once students have established which object is longer the teacher will ask them to predict which object will be heavier. Ask students to explain why they predict this. Students can use the sentence frame "I predict ___ will be heavier because ____." Any prediction which is explained with reasoning is an excellent prediction!

The teacher will then place each item in one side of the balance scale and the class will

watch to see which is heavier. Students can discuss if their predictions were correct.

The teacher will then repeat the activity with a new pair of objects. The teacher will take care to vary the sets so that there is a mix of heavier/shorter, lighter/longer, heavier/longer and lighter/shorter.

Prerequisite skill: understanding how a balance scale works.

This activity should be repeated on several occasions throughout the study of measurement. If a class does Boardmath this activity would be a good one for inclusion in the Measurement and Geometry section.

IM Commentary

The purpose of this task is for students to compare two objects according to different measurable attributes. Students should work on comparing objects along a single measurable attribute before tackling this task. *K.MD Which is Longer?* helps students understand the concept of length and decide which of two objects is longer and which is shorter. *K.MD Which is Heavier?* helps students understand the concept of weight and decide which of two objects is heavier and which is lighter.

At first the idea that two objects can be compared in different ways according to different attributes is difficult for kindergartners because many 5 year olds believe simply in big vs. little. For example a five year old is little, a mommy is big. The five year old is smaller than the mommy in every way (shorter, lighter, etc). Because the concept is difficult to the five year old mind, this activity should be a whole group/teacher led activity.

Once students have become familiar with this task the teacher can ask students which object is shorter (instead of which is longer) and ask which object is lighter (instead of heavier).

Once students are fluently comparing weight vs length, another variation of this is to select objects and compare them by two other different measurable attributes such as width vs. length, capacity vs. weight, etc.

Edit this solution

Solution

The activity should be presented so that there are multiple solutions and the pairs do not follow a predictable pattern.

As students practice this task several times their reasoning as to which object is heavier should become more sophisticated. For example the first time the task is presented a student might say "I predict object B will be heavier because it is bigger." However as they continue to practice students might say "I predict object B will be heavier because it is made of wood and wood is heavy. Object A is a stuffed animal and I know stuffed animals are not very heavy."



K.MD Longer and Heavier? Shorter and Heavier?

Typeset May 4, 2016 at 20:40:41. Licensed by Illustrative Mathematics under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License .