We thought doing a module solely on balance alone might not be enough stuff to talk about so we combined the idea of mass and weight with balance. This proved to be extremely challenging for the students (2nd graders) noting the distinction between mass and weight. I think combining the idea of weight into balance is definitely value added, but adding the additional distinction between mass and weight is too challenging for most grade levels.

On the next page is the outline that we used to lead our discussion on balance/mass/weight followed by the worksheet we used for our demo.

One thing to note is that the discussion on "whether or not a pound of feathers or a pound of bricks weighs more" was EXTREMELY challenging for the students. Although I think it is a great topic to discuss, I would be very careful in your approach because the students can get very confused very quickly.

The demo is pretty self-explanatory—the students try to balance gumdrop barbells along a popsicle stick fulcrum. The students had a lot of fun trying to get it to balance. Showing them that the barbell balances at different spots when you add differing weights I believe is a key concept here. The materials we used for the demo were: popsicle sticks (called "craft sticks" in the cage), toothpicks, clay (for a base) and gum drops (I accidentally bought spice drops, that got some surprised faces haha, definitely go for the gum drops in the future haha). I'll attach a picture of the demonstration as well.

Overall a very rewarding module. Kind of challenging to teach, but it helps you learn how to lead effective discussions. I wish you luck!

-Jason Johl
Wonderworks Visit 11/1/12 Outline

1. Gravity
   a. Mass vs. weight
   b. Explain difference between mass and weight using concept of gravity
   c. Do we weigh more on Earth or on the moon? Why?
   d. What would fall to the ground faster, a pound of bricks or a pound of feathers?

2. Balance
   a. What do you know about balance?
   b. When are things balanced? (Everyday observations)
   c. Explain concept of center of mass. Things balance at the center of mass of an object.
Balance Worksheet

1. Balance the rod at the center of the rod.

2. Balance the rod at a point off from the center. Does it balance? Why or why not?

3. Stick one gumdrop on each side of the stick.
   a. Balance the rod at the center of the rod. Does it balance?
   b. Balance the rod off from the center. Does it balance?

4. Stick an extra gumdrop to ONE side of the stick.
   a. Balance the rod at the center of the rod. Does it balance?
   b. Find a spot on the rod where the stick balances. Is it closer to the side with one gumdrop or the side with two gumdrops?

Hypothesis

Observations: