

Purpose:

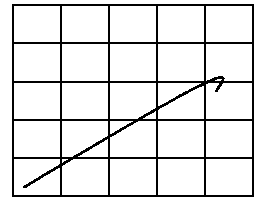
To create a working model of MASS

Sinking Straws

Materials: (per Group)

1. Deep clear container half-filled with water (500 ml beaker)
2. Metric ruler
3. Clear plastic straw with one end glued shut with hot glue
4. 1 small rubber band (like the ones used in braces)
5. Handful of bird seed
6. 1 piece graph paper for each student
7. 1 scale and set of weights

What you know



What you know

Procedure:

1. Before student arrive put rubber band around straw
2. Have students position the rubber band so that it is 4 cm from the bottom of the straw
3. Have student predict how many pieces of birdseed it will take to sink the rubber band so that it is even with the surface of the water in the beaker
4. Repeat step #3 sinking the straw to 5cm, 6cm, 7cm, and 8cm
5. Have students graph and share their results
6. Question: If everyone did the same experiment, why did we all come up with different answers to graph? (Note the different shapes and sizes of the birdseed)
7. Introduce the concept of MASS measurement
8. Have students do the same experiment, this time massing the bird seed and using gram measurements
9. Have students share data. The answers should be much closer and more consistent.
10. If time permits, this is a good place to have your students extrapolate answers for how much mass it would take to sink their straws to 2cm, 3cm, 9cm, 19cm, etc.

Results:

Measures recorded when we used birdseed for our measure, were inconsistent because the birdseeds were of different shapes, sizes and weights. When we used a standard measure our answers become much more consistent with other answers in the class.

Conclusion:

The birdseeds are of varying sizes, which makes the counts of the first experiment appear to be inaccurate. When we measure the amount of “stuff” (mass) in each birdseed and add up the total weight, we begin to see that there is a pattern which suggests that we can predict how much “stuff” will be needed to sink the rubber band to desired depths, even if we can’t determine the number of seeds. Using mass as opposed to counting things proves to be more accurate for our purposes because it allows other scientists to replicate and verify or dispute our work.