

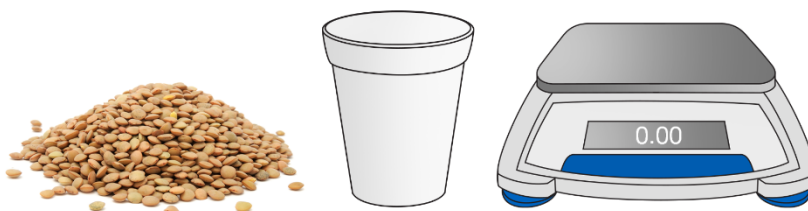
6A – COUNTING BY WEIGHING

INQUIRY

How can we determine numbers of items in a very large sample?

MATERIALS

- "Particles"
- Balance (readability: 0.01 g)
- Cup, 8-oz



BACKGROUND

It would be impossible to individually count the number of atoms in any sample that is big enough to see. We use a word like 'dozen' to represent a certain number of items (12 items). We use another term, the mole, to represent a certain number of the particles that make up all matter.

- One dozen of anything = 12
- One mole of anything = 6.02×10^{23}

SAFETY

Follow regular lab safety procedures. Never eat or drink in the lab even when working with food.

PROCEDURE

1. Find the mass of one particle. Record the mass in Table 1 on your answer sheet.
2. Find the mass of 10 particles. Record the mass in Table 1.
3. Use the mass of 10 particles to calculate and record the average mass of one particle.
4. Find the mass of an 8-oz. cup. Record the mass in Table 1.
5. Fill the cup to the top with particles. Record the mass in Table 1.
6. Use the mass of the cup to calculate and record the mass of particles.

ANALYSIS

Complete the analysis on your answer sheet.

QUESTIONS

Answer the questions on your answer sheet.