Moles of Anything- Project

Purpose: to realize how big one mole of something actually is.

Background: When you think of a dozen eggs, you think of 12 eggs, and maybe even picture the carton sitting on the shelf at the store; but exactly how big is 1 mole of eggs? Well, one mole of eggs is 6.022×10^{23} eggs! This is more eggs than most of us can imagine because we don't often work with numbers that large (unless you are Bill Gates and you're looking at your bank account).

Your task will involve you using everyday objects and trying to figure out how big 1 mole of that object would be.

EXAMPLE 1:
The average egg is about 2.25 inches long. I I had one mole of eggs I would have 6.022×10^{23} eggs. If I took all of those eggs and laid them out end-to-end it would be 3.44×10^{22} meters long!
Still, this is a number that isn't imaginable either because it's so large. So, lets figure out how long that would be in something more familiar. Most people can visualize how large a football field is. One mole of eggs would be as long as 7.53×10^{19} football fields! That is equal to 75,300,000,000,000,000,000 (more than a quintillion) football fields!

EXAMPLE 2:
If one marble has a volume of 1.5mL, and you had 1 mole of marbles (602,200,000,000,000,000,000,000 marbles), you could fill the entire Pacific ocean 1.45 times!

<u>YOUR TASK:</u> You are to create a poster with your group that shows how big 1 mole of different objects would be; and compare that length or volume to something relatable (like football fields), or distance across the US, or the volume of the ocean. NOTE: These are just examples, you can relate the lengths/volumes to anything you find interesting!

Your poster should include:

1) **Explanation of what a mole is.**
    a) **Compare the mole to other (more common) grouping terms**
    b) **One mole of something contains how many parts?**
2) **What do chemists use a mole for? Why is the mole important for chemistry?**
3) **The objects that you choose (choose at least 2, more will earn EXTRA CREDIT!)**
    a) **You can choose any object you want, as long as its length or volume is easily measurable.**
        1) **Measure the length or volume of the object.**
    b) **Figure out how long 1 mole of that object would be (or the amount of space taken up by one mole of that object- its volume).**
    c) **Then relate the length or volume of 1 mole of those objects to something more relevant to us.**

- You will present these to the rest of the class, and I will hang the posters up for everyone to see!

- Make sure they are colorful and creative!

- You have access to the internet to look up any information you need such as the volume of the Atlantic ocean, or the length of the Grand Canyon.

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