

# Measuring Mass

Module 1  
Session 5

# Today's Activities

- Learn more about mass and weight by doing some measuring activities together
- Engage in work places, if there is time

# Measuring Mass

- Give each pair of students 20 paper clips, 20 one-gram cubes, and the two lumps of clay.
- Have each student hold 10 paperclips in their hand.
- How can you find the weight of the 10 paper clips?
- Take turns picking up each other's lumps of clay. How can you find out if your pieces are equal?

# The Difference Between Mass and Weight



A lot of people are confused by the difference between mass and weight. Mass tells you how much matter something has. Matter is a fancy way of saying stuff. The more stuff that is packed into something, the more matter it has.

For example, a brick is very solid and dense. It has a lot of mass. A cotton ball is not solid or thick. It has a lot of air in it. It does not have very much mass. Think about a pineapple or a melon. Inside the skin they are full of fruit. Then, think about a balloon that is about the same size as a melon and full of air. The melon has a lot of mass and the balloon does not.

# The Difference Between Mass and Weight Continued

Weight is different. Weight tells you how heavy something is. We don't usually think about weight this way, but weight actually has more to do with gravity. It is a measure of the pull of gravity. Weight tells you how much gravitational pull an object has. Your weight can change depending on where you are because there can be more or less gravitational pull.

For example, your weight is less on the moon than on earth because there is less gravitational pull there. Your mass is the same on earth and on the moon because the amount of matter does not change.

# Tools for Measuring Mass



You'd need a regular scale to weigh the clay, but you can use the pan balance to find the mass of the clay.

When people want to measure mass, they set the item they want to measure on one side of the balance and then place objects of a known mass on the other until the balance is level. This will tell them how much mass (matter) the object has.

# Determining Weight

- Pick up a gram cube in your hand. Each cube has a mass of 1 gram.
- Pick up 10 cubes in one hand and 10 paper clips in the other hand to compare their mass.
  - A volunteer needs to put the cubes on one side of the pan balance and the 10 paper clips on the other side
- What is the mass of 10 paper clips?
- If I added 25 paper clips to this pan, how many gram cubes would I add to the other pan to find the mass?
- Now, pick up 10 gram cubes in one hand and their lump of clay in the other hand to compare their mass

# Determining Weight Continued

- The bag has 50 cubes, what is the bag's mass?
- The box of paperclips has a mass of 100 grams.
  - How many paper clips are in a box?
- Who can estimate the mass of the lump of clay?
  - Bring your lump of clay in one hand and pick up the bag of gram cubes or the box of paperclips in your other hand to help make your estimate



# Divide the class into 5 groups

- Each group will get 2 boxes of 100 regular paper clips
- Each group needs to select 2 or 3 of their lumps of clay to be measured
- You will need to take turns using the pan balance scale
  - One group needs to test the the scale to make sure that the pans balance when empty
  - If pans do not balance, use the clips to balance the scales

## In your groups...

- Take turns adding gram cubes or paper clips to one side of the scale and your clay to the other until the pans balance.
- After measuring the lumps of clay, discuss... How could you make each of the lumps of clay your group measured have the same mass?
- Go back to your groups and work together to make the mass of the lumps of clay equal.
- Were any groups successful? How?

# Closing

- Which has more mass, a book or a feather?
- Which has more mass, a bag of cotton balls or a bag of rocks?
- Which has more mass, whipped cream or ice cream?
  - Which one has more air?

# Work Places

- 2D - Doubles Help
- 3A - Round Ball Tens
- 3B - Round & Add Tens
- 3C - Round Ball Hundreds
- 3D - Round & Add Hundreds
- 4A - Tic-Tac-Tock

# Optional

Complete Mass of Clay on page 111 in your student book.