

Matter

Matter Observations

Matter: Anything that has mass & volume (takes up space)

Carefully examine each object and record all of the properties that you can

Object	Properties
1.	
2.	
3....	

Graded Standards: Cross-Cutting Concepts: Observing patterns, structure, and function

Object	Properties
Paperclip	
Twist tie	
Balloon	
Magnet	
Paper	
Clay	
Card	
Magnifying Glass	
Packing Peanut	
Straw	

Physical Properties

Physical Property: A property of matter that can be observed without changing the identity of that matter.

-Examples: state, texture, volume (size), color, density, mass, weight, height, shape, luster, hardness, magnetism, solubility,

Measuring Physical Properties

Mass: The amount of matter in a substance. (g, mg)

Volume: The amount of space matter takes up (mL, cm³, L)

Density: The ratio of how much matter there is (mass) to how much space it takes up (volume)

-How close together the molecules/atoms of matter are
(g/mL)

Measuring Mass

-Use a triple beam balance!

Measuring Liquid Volume

Liquids: graduated cylinder (best), beaker, Erlenmeyer flask

-Meniscus: The curve in the top of a liquid, always measure the MIDDLE!

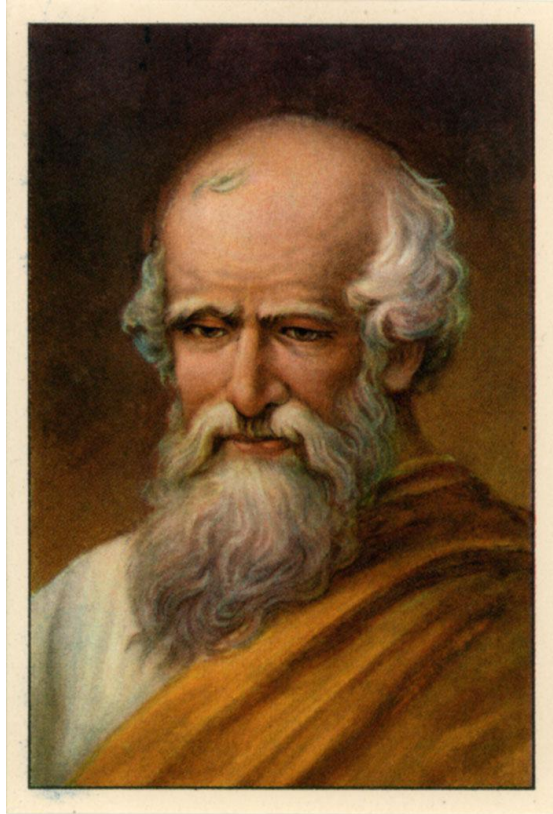
Measuring Solid Volume

Regular Solids:

Length (cm) x Width (cm) x Height (cm) = Volume (cm³)



ARCHIMEDES!



Measuring Irregular Solid Volume

Irregular Solids:

1. Fill a graduated cylinder or beaker with just enough water to cover the object.(start volume)
2. Carefully put the irregular solid into the water, and record the new volume (end volume)
3. Subtract (end volume (mL) - start volume (mL)) = Irregular solid volume (mL)

DENSITY!

Density: The ratio of how much matter there is (mass) to how much space it takes up (volume)

- How close together the molecules/atoms of matter are (g/mL)
- Measure the mass, and divide it by the volume
- Each element on the periodic table has a unique density at every temperature



Measuring Density

1. Measure mass (g)
2. Measure volume (mL/cm³)
3. Calculate density (mass/volume)

Measuring Mass, Volume, & Density

Object	Mass (g)	Volume (mL)	Density Eq. (g/mL)	Density (g/mL)

Physical Change

Physical Change: A change to matter that does not change its identity (chemical make-up)

Examples: color, paint, wet it, break/tear, fold, dissolving, crumple, melt, boiling/evaporation, freeze

Chemical Property

Chemical Property: A property of matter that can only be observed by changing the identity (chemical make-up) of that matter:

Examples: Reactivity, flammability, combustibility, ability to rust

Chemical Changes

How can you tell if a chemical change has happened?

Chemical Changes Lab

Materials:

- 5 powders
- 3 liquids
- toothpicks

Preparation:

- Bring tray of materials to table
- Place beakers (water & vinegar) and toothpicks on the table
- Spread plastic on tray
- Wait to be invited to materials station

Chemical Changes Lab

Procedure:

1. When called, send ONE group member back to collect samples.
2. Using the straw, collect THREE samples of the same powder on your plastic, be sure to remember which powder!
3. Return to the table & record powder name in data table.
4. Using the straw, mix 3-4 drops of water with the powder, and mix with a toothpick for 5 seconds. Record observations.
5. Using the dropper, mix 304 drops of vinegar with the powder, and mix with a toothpick for 5 seconds. Record observations.
6. Raise your hand to that Ms. Stewart will bring you Iodine. When given your sample, mix for with a toothpick for 5 seconds. Record observations.

Chemical Changes Lab

7. Using a clean spot or a new piece of plastic, send a different person to collect THREE samples of your next powder.
8. Repeat steps 2-6
9. When you finish all 5 powders, clean your stations, return your materials, and glue your data table into your notebook.
10. After your data table, record 5 things that you observed during this lab.
11. Turn in your notebook and read quietly!

Chemical Changes

Chemical Change: A change to matter that changes the identity (chemical make-up,) or the way that the atoms are bonded to each other.

Examples: baking soda & vinegar reaction, burning, baking powder & water, oxidation (rust), digestion, cooking/baking

Evidence: releases a gas (bubbles), changes color, change of temperature,

Chemical Changes

Law of Conservation of Mass: Matter cannot be created or destroyed, it can only change form. The mass (amount of matter) before a chemical or physical change will be the same as the mass after a chemical or physical change.