

Properties of Matter

5-PS1-3 - Make observations and measurements to identify materials based on their properties. [Clarification Statement: Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property.] [Assessment Boundary: Assessment does not include density or distinguishing mass from weight.]

Objective: Students will make observation and record data to identify properties of different types of matter.

Materials:

For Each Group	For Each Station
Aluminum Foil	Hand Lens [4]
Eraser	Magnetic Wand
Paper Clip	Open Circuit Tester (1 Battery /1 Bulb /3 Wires)
Potato	Flashlight
Rock	Digital Scale or Balance
Rubber Band	Centimeter Ruler
Popsicle Stick	Infrared Thermometer
String/Yarn	

Engage: Materials Engineering - [3 min] Video to introduce students to how material engineers use properties of matter to design or improve objects and technology in our everyday lives. *Prompt at End of the Video: Now it is your turn to become a materials engineer. Your job is to test various materials to identify their properties.*

Explore: In advance gather the eight objects for each group of students. Print and cut out the station cards and pair the card with the appropriate testing materials. Divide students into groups and provide each student an Observing Properties of Matter Recording Sheet. Pass out a station card and testing material to each group. Groups will have 3-5 minutes to test each of the objects and record data on their chart. When time is up, rotate the stations and testing materials, and continue the process until each group has completed each station. After students have collected data discuss how understanding these properties allow material engineers to design and improve technologies.

Evaluate: Use the data from the investigation to fill in a few data points onto the second worksheet for each object tested, changing the order the objects are listed. Then have students use the data they collected to determine the mystery objects.

Properties of Matter

Name: _____

Date: _____

Directions: Use the materials located at each station to identify properties of different types of matter.

Properties of Matter								
Object	#1 Color	#2 Magnetism	#3 Electrical Conductivity	#4 Flexible	#5 Thermal Conductivity	#6 Weight	#7 Length	#8 Reflectivity
Aluminum Foil								
Eraser								
Paper Clip								
Rock								
Potato								
Rubber Band								
Popsicle Stick								
String/Yarn								

Properties of Matter

Name: _____

Date: _____

Directions: Can you solve the mystery? A scientist has spilled her drink on her data table and now most of her data is unlegible. Can you use her remaining data and your data to figure out which object is which? Fill in the object column with the correct object based on the available data.

Properties of Matter								
Object	#1 Color	#2 Magnetism	#3 Electrical Conductivity	#4 Flexible	#5 Thermal Conductivity	#6 Weight	#7 Length	#8 Reflectivity

Which properties were most helpful in determining the mystery material? Why?

Are all properties always helpful? Are there any properties that are more helpful identifying certain objects but less helpful identifying others? Explain.
