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Challenges

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Slime Is Matter

Objectives

Students will sort items by their observable properties, placing them along continuous scales. Then, they will make “slime” and write about its properties before and after mixing. Finally, students will leave a small bit of slime out overnight to observe and record how its properties change.

STEM Focus

Physical Science: Matter can be described and classified by its observable properties.

Scientific Inquiry: Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

Science and Engineering Practices: Construct explanations and design solutions; engage in argument from evidence.

Crosscutting Concepts: cause and effect; energy and matter; stability and change

Setup

For Mini Challenge

- ▶ Prepare copies of *Property Scales* for each student.
- ▶ Prepare a bag or box of small items for each group. Each bag should contain the same small items with different properties.

Examples: paper clip, pencil, eraser, penny, block, marshmallow, cracker

For Main Challenge

- ▶ Prepare copies of *Slime Is Matter* as needed.
- ▶ Choose a slime recipe, and gather ingredients.
- ▶ Prepare a resealable bag for each student with $\frac{1}{4}$ cup white glue. During the lesson, students will add the other ingredients to this bag and seal it to mix their own slime.
- ▶ You may want to protect tables or desks with paper if using food coloring to make slime.



While this seems like a messy project, if you use resealable bags, it's quite manageable!

Materials

Introduction and Mini Challenge

- *Property Scales* (page 98)
- tape
- container of 5 small items (See Setup.)
- a marshmallow and a marble

Main Challenge

- *Slime Recipes* (page 97)
- *Slime Is Matter* (page 99)
- *Reflections—Slime Is Matter* (page 100)
- baking soda
- Borax
- corn starch
- contact lens solution
- white glue
- powdered drink mix or food coloring
- measuring spoons and cups
- coverings for tables
- resealable sandwich bags
- wipes and paper towels

Time Frame

The Introduction and Mini Challenge can be done in about 30 minutes.

In the Main Challenge, making slime and observing and recording its properties should take 30 minutes. Students need to leave a little bit of their slime out overnight. Observing and recording the following day should take about 10 minutes.

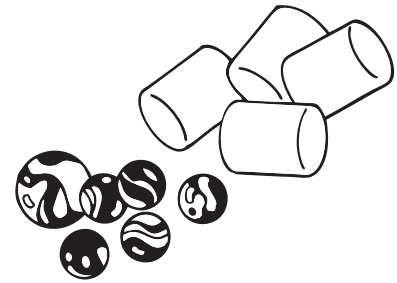
Follow up with the Writing Reflection.

Vocabulary

analyze	observe
classify	polymer
compare	properties
justify	record
liquid	scale
materials	solid

Slime Is Matter

Introduction



1. Hold up a marshmallow and ask students to describe its **properties**.
—How does it look? How does it feel? (*white, soft, squishy, sweet, round, etc.*)
2. Now, hold up a marble and have students describe its properties. Discuss the differences between the marble and the marshmallow. (*hard/soft, colors, shapes, edible/non-edible, etc.*)
3. With students, brainstorm different properties of matter that can be **observed**, such as weight, length, or texture. For each property, have students think of opposite examples of the property and create a **scale** between the two examples. For example,
 - For the property of weight, the scale might be *light to heavy*.
 - For texture, the scale might be *smooth to rough*.
 - For traits like color that have multiple attributes, you might use a related scale such as *dark to light*.
4. Record the different property scales on the board or chart paper. This is a great opportunity to expand students' vocabularies!

Examples

•	Properties of Matter Scale	•
hard	-----	soft
shiny	-----	dull
long	-----	short
see-through; clear (transparent)	-----	not see-through (opaque)
rigid	-----	flexible
absorbent	-----	waterproof
malleable (squishy)	-----	firm

5. Tell students that they will use property scales like these to **compare** and **classify** objects.
6. Together, decide where the marshmallow and the marble would be placed along each scale.
For example, on the *hard to soft* property scale, the marshmallow would go almost all the way towards *soft*, while the marble would be near *hard*. On the *shiny to dull* scale, the marshmallow would be closer to *dull* and the marble would be closer to *shiny*.

Name _____ Date _____

Property Scales

rough

smooth

heavy

light

Create your own scale:

Name _____

Date _____

Slime Is Matter

1. **Observe** the properties of your fresh slime as you play with it.
2. **Record** the properties of your fresh slime in the first column.

Fresh Slime	Slime Left Out
liquid ----- solid	liquid ----- solid

3. Mark where you would place the fresh slime on a scale from *liquid* to *solid*.
4. Pull off a small bit of slime, about the size of a marble, and put the rest of your slime back in the bag and seal it carefully.
5. Place the small bit of slime in the square, and leave it out overnight.
6. **Predict** what you think will happen to this bit of slime.



7. In the morning, **observe** the bit of slime that you left out. Think about how its properties have changed and how they are the same.
8. **Record** this bit of slime’s properties in the second column of the chart above.
9. Mark where you would place the “left-out” slime on a scale from liquid to solid.
10. **Analyze:** Answer the questions below.

What do you think changed?

What is your evidence?
