

Change It 4th Grade

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References:

- “Matter, Physical and Chemical Changes” lesson plan from 4th grade curriculum guide

Benchmarks:

PS-1 (Benchmark A): Identify characteristics of a simple physical change. SI-1 (Benchmark A): Select the appropriate tools and use relevant safety procedures to measure and record length, weight, volume, temperature, and area in metric and English units. SI-3, 4, 5, 6 (Benchmark C): Develop, design, and safely conduct scientific investigations and communicate the results. SWK-3 (Benchmark B): Explain discrepancies in an investigation using evidence to support findings.

Objectives:

This lesson allows the students to expand their knowledge about how the physical properties of a substance can be changed. Students are given multiple opportunities, using first-hand experiences and familiar objects in different contexts, to identify characteristics of a physical change.

Materials:

Stations: You will need enough materials at each station for each student in the class.

- Balloons (Remind the students not to share the balloons)
- Ice cubes in a large bowl
- White paper and a bowl of colored water
- Construction paper, a bowl of water, several paint brushes
- Small sheets of white paper
- Pieces of aluminum foil
- Ruler
- Lab sheet per student (**Found in student journal**)

Initial Demonstration:

First, ask the students to write a list of words in their science journals that give a clear description of a piece of paper. Lead a discussion soliciting responses that students used to describe their paper and create a class list on chart paper. Ask a student “*What can you do to change the paper?*” Give students time to think about what they could do to change the paper. Have students discuss the question in their small groups in which they will perform the experiment. After discussion, solicit responses a create a second list on chart paper.

Target Observations:

- Describing a piece of paper is the same as giving its physical properties.
- Physical properties of matter can be best determined using the five senses.
- Paper can be torn, cut, or wrinkled, but it is still paper in the end.

Target Model:

- A physical change requires a change in the size of the object, shape of the object, or the state of matter. All kinds of changes can be performed on matter that allow it to still remain the same type of matter in the end. Also, physical changes should ultimately be reversible.

Procedure:

Set up five six stations around the room with the materials from the materials list. Define “physical change” and develop a working definition with the students. Then divide students into small groups of 3-6, where each group will go to a station. Tell students *“Each group will go to a station. You will use the materials at the station to make physical change to the material. Use your concept map and write it from the correct box if it is a change in color, size, state of matter, texture or shape. We will rotate centers after 5 minutes so each group will get a chance at each station.”*

Station 1 – Students can inflate or deflate the balloons to change the shape.
(Students will use their own balloon and throw away when finished)

Station 2 – Students can hold the ice cubes in their hand to add heat and change the state of matter.

Station 3 – Students can dip the white paper into the colored water to change the color.

Station 4 – Students can paint a wet paintbrush onto the construction paper to change the texture.

Station 5 – Students can tear the paper into small pieces to change the size.

Station 6 – Students can crumple a piece of foil to change the size and texture.

Have students go back to their seats. In their journals, ask students to write what they have learned about physical change. They should include examples of physical changes and what property of the object was changed. They should discuss why such a change is considered to be a physical change.

Target Observations:

- Students can inflate or deflate the balloons to change the shape and size
- Students can hold the ice cubes in their hand to add heat and change the state of matter, as well as the size and shape
- Students can dip the white paper into the colored water to change the color and the texture

- Students can paint a wet paintbrush onto the construction paper to change the texture and color
- Students can tear the paper into small pieces to change the size and shape
- Students can crumple a piece of foil to change the size and texture

Summary:

Physical properties of a substance are those that can be determined using the five senses. Changing any of these properties results in a physical change. Matter can change states or phases by such things as tearing, folding, cutting, stretching, breaking, coloring, melting, evaporating, shrinking, freezing, and crumpling.