

Physical Changes

Lesson Concept Physical properties may change, yet the substance remains the same.

Link Students know that matter has physical properties and that the physical properties can change.

Time 60 minutes

Materials

Whole class

Piece of paper
Chocolate to melt
Hot plate or microwave
Bowl to safely melt chocolate
Pencil and sharpener
3 marshmallows or Peeps
Technology to show video

Individual

Science notebooks
Textbooks

Advance

Preparation 1. Gather materials

Procedure:

Engage *(10 minutes) Physical Properties can change, but it is still the same substance.*

1. Explain to students that they are going to see some changes in matter.
2. As you demonstrate each change ask: "What do you see? What changed? Was anything new created?" "Is it the same substance?" "How do you know?"
3. Tear a piece of paper in half and crumple one half. Ask the questions listed above.
4. Sharpen a pencil and hold up pencil and shavings. Ask the questions listed above.
5. Show chocolate bar. Melt bar and show results. Ask the questions listed above.
6. Ask students what generalizations can be made about the changes that took place? Expected student response: No new matter was created during the demonstrations. The matter simply changed shape or size.

Explore **(10 minutes) Physical properties of matter can change, but the matter is still the same substance.**

7. Explain to students that they have witnessed physical changes.
8. Ask students to title a page in their science notebooks, "Physical Changes."
9. Ask students to make a list of physical changes that happen in their kitchen. For example, freezing water to make ice cubes, breaking glasses, blending fruit to make a smoothie, boiling water to make cocoa, and crushing cans for recycling.
10. When the students complete the brainstorm list, ask them to come up with a working definition of physical change.
11. Ask students to share out their definitions and ideas as you record them on the board. Have students add new ideas to their lists.

Explain **(10 minutes) Physical Properties can change, but it is still the same "stuff".**

12. Have students record the following scientific definition in their notebooks: "A physical change is a change in size, shape or state of matter with no new matter begin formed."

Extend **(20 minutes) Physical Properties can change, but it is still the same substance.**

13. Another form of physical change occurs when heat is applied to a substance, which causes the substance to expand.
14. To demonstrate what happens when heat is applied to a substance, put Peeps or regular marshmallows in the microwave for 10 seconds (until they start to expand).
15. Ask for student observations and record on the board.
16. Have students offer explanations for their observations (As the marshmallows or Peeps heated, the water inside expanded.) Remind students that the particles in a solid are constantly vibrating in place. When the temperature rises the particles vibrate more quickly and move farther apart, thus expansion occurs.

Evaluate **(10 minutes) Physical Properties can change, but it is still the same substance.**

17. Distribute exit cards.
18. List one thing I know for sure is a physical change, one thing I am not sure is a physical change and one thing I am still wondering about.
19. Ask students to share the one thing they are sure is a physical change and explain their rationale.