

Physical and Chemical Change

Grade: 8

GPS: S8P1. Students will examine the scientific view of the nature of matter. Distinguish between changes in matter as physical (i.e., physical change) or chemical (development of a gas, formation of precipitate, and change in color).

Essential Question: What are physical and chemical changes?

Teacher Note: Students will learn about physical and chemical change by creating a fresh and a cooked salsa with garden produce.

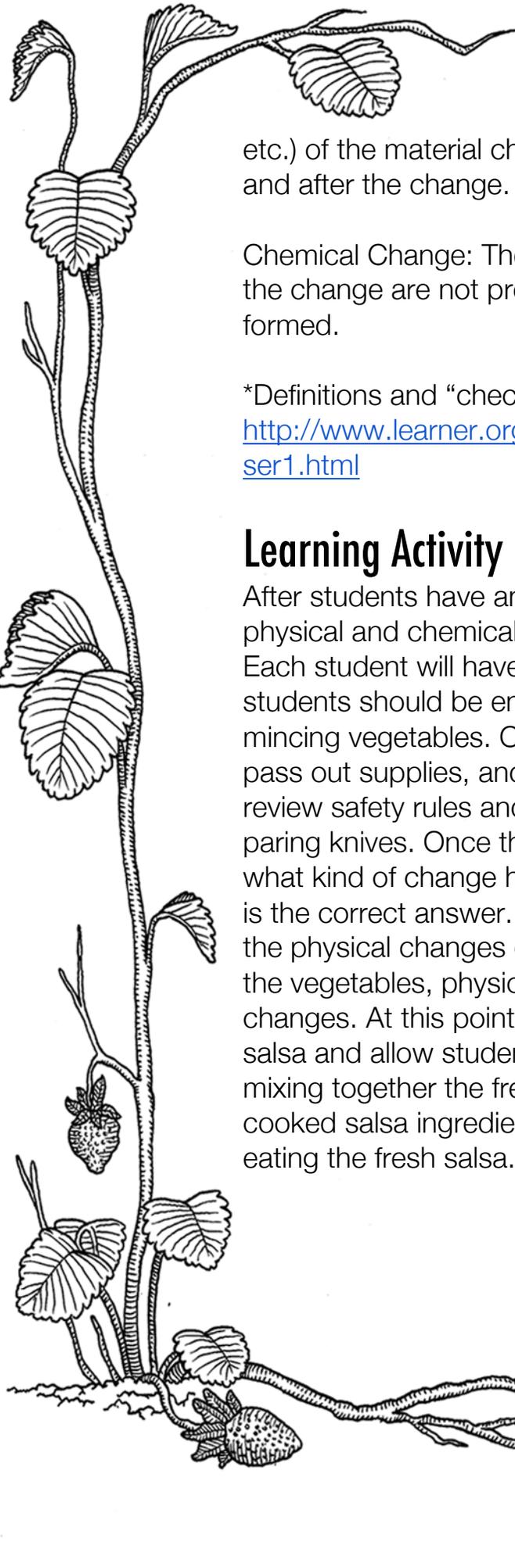
Interest Approach

Ask students if they like salsa. Let them discuss their favorite flavors, ingredients, restaurant salsas, dishes with salsa, chips to eat salsa with - whatever gets them talking and excited! Explain that today in class you will create (and EAT!) salsa to demonstrate physical and chemical change in matter. Go outside to harvest ingredients you will need for each salsa.

Lesson

Teach the differences in physical and chemical change, making sure students have definitions of both in their notes, as well as examples they might encounter in daily life or the science lab.

Physical Change: Although some properties (like shape, phase,



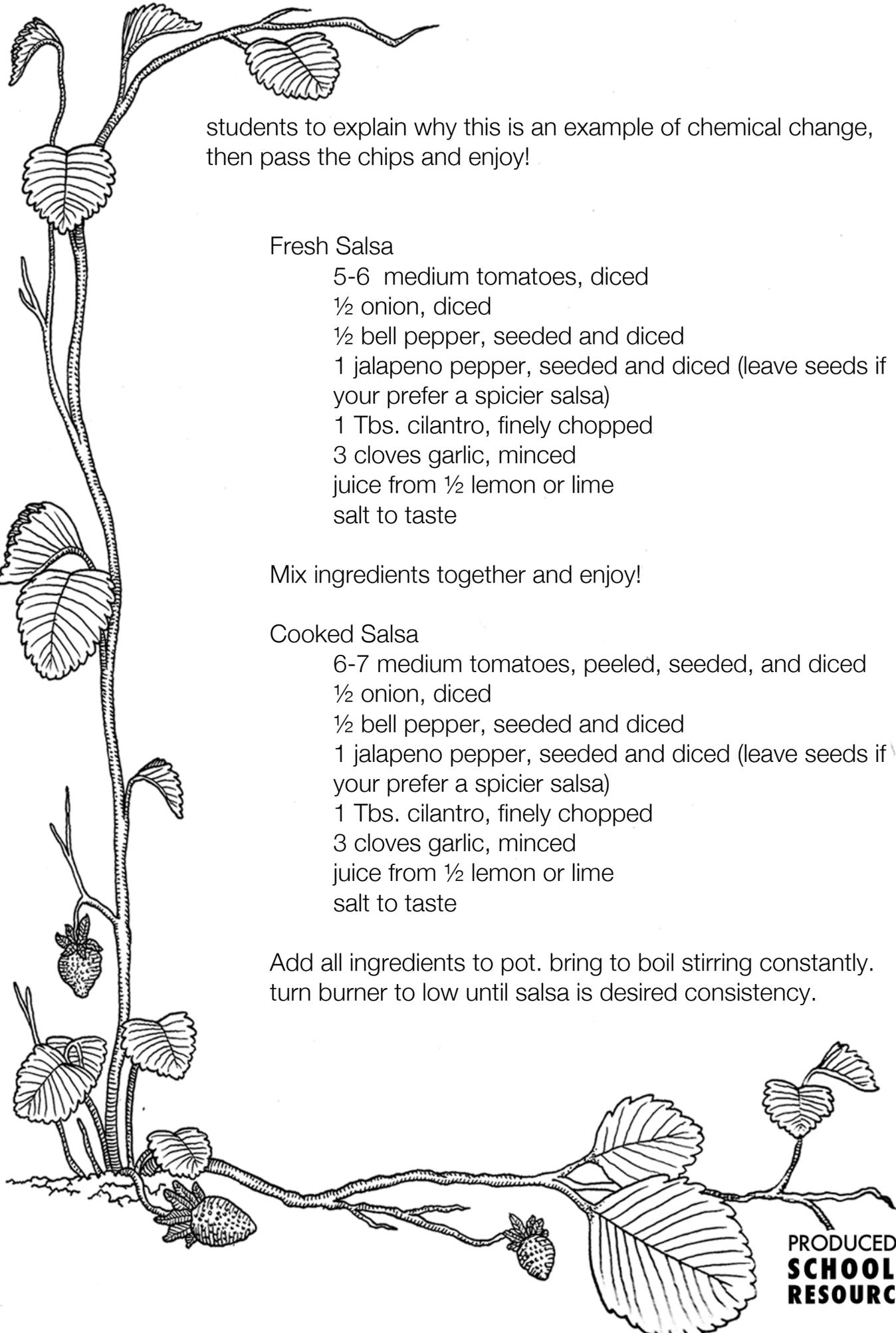
etc.) of the material change, the material itself is the same before and after the change.

Chemical Change: The substances present at the beginning of the change are not present at the end; new substances are formed.

*Definitions and “check for understanding” examples from:
<http://www.learner.org/courses/essential/physicalsci/session4/closer1.html>

Learning Activity

After students have an understanding of the differences in physical and chemical changes, begin the salsa demonstration. Each student will have a task for creating the salsa. Most students should be engaged in peeling, dicing, chopping, and mincing vegetables. Other students can wash the vegetables, pass out supplies, and mix the salsa together. Make sure to review safety rules and practices before allowing students to use paring knives. Once the vegetables have been cut, ask students what kind of change has occurred, as well as why they think that is the correct answer. Remind them that although in this situation the physical changes only had to do with the size and shape of the vegetables, physical changes can also occur as phase changes. At this point, mix together the ingredients for the fresh salsa and allow students a chance to taste. As students are mixing together the fresh salsa, have another group mix the cooked salsa ingredients, and begin cooking while students are eating the fresh salsa. After the cooked salsa is done, ask



students to explain why this is an example of chemical change, then pass the chips and enjoy!

Fresh Salsa

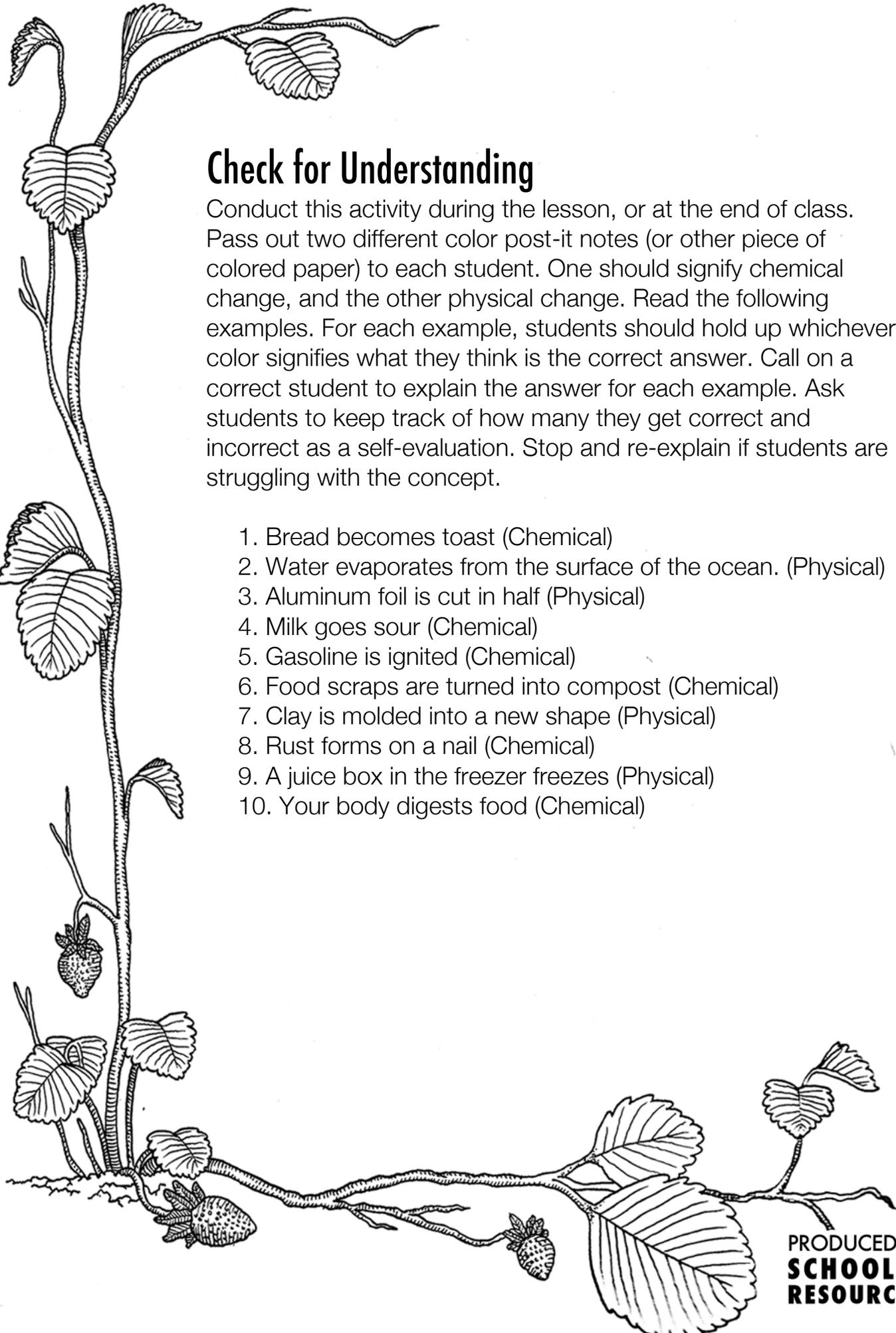
5-6 medium tomatoes, diced
½ onion, diced
½ bell pepper, seeded and diced
1 jalapeno pepper, seeded and diced (leave seeds if you prefer a spicier salsa)
1 Tbs. cilantro, finely chopped
3 cloves garlic, minced
juice from ½ lemon or lime
salt to taste

Mix ingredients together and enjoy!

Cooked Salsa

6-7 medium tomatoes, peeled, seeded, and diced
½ onion, diced
½ bell pepper, seeded and diced
1 jalapeno pepper, seeded and diced (leave seeds if you prefer a spicier salsa)
1 Tbs. cilantro, finely chopped
3 cloves garlic, minced
juice from ½ lemon or lime
salt to taste

Add all ingredients to pot. bring to boil stirring constantly. turn burner to low until salsa is desired consistency.



Check for Understanding

Conduct this activity during the lesson, or at the end of class. Pass out two different color post-it notes (or other piece of colored paper) to each student. One should signify chemical change, and the other physical change. Read the following examples. For each example, students should hold up whichever color signifies what they think is the correct answer. Call on a correct student to explain the answer for each example. Ask students to keep track of how many they get correct and incorrect as a self-evaluation. Stop and re-explain if students are struggling with the concept.

1. Bread becomes toast (Chemical)
2. Water evaporates from the surface of the ocean. (Physical)
3. Aluminum foil is cut in half (Physical)
4. Milk goes sour (Chemical)
5. Gasoline is ignited (Chemical)
6. Food scraps are turned into compost (Chemical)
7. Clay is molded into a new shape (Physical)
8. Rust forms on a nail (Chemical)
9. A juice box in the freezer freezes (Physical)
10. Your body digests food (Chemical)