

|  |  |  |
|--|--|--|
| <b>Grade 2</b><br><b>DRAFT</b>   | <b>Lesson:</b><br><b>Physical Changes</b>  | Reference to English Interconnections Lesson<br><b>Physical Changes</b> pg. 64 |
| <b>Science Standard(s): 3.2 Physical Science</b>   |  |  |
| <b>Content Objective(s):</b>   | <b>Language Objective(s):</b>  |  |
| Students will demonstrate how matter can change but is not destroyed during the matter experiment in groups of three<br><i>I can demonstrate how to change matter but not destroy it in a group of three.</i>  | Students will describe the attributes of an orange in a complete sentence with a partner.<br><br><i>I can describe an orange in complete sentence with a partner.</i>  |  |
| <b>Essential Questions:</b><br>What can we learn about non-living things?  | <b>Academic Vocabulary for Word Wall:</b><br><b>Listen:</b> matter, physical change, mass (weight)<br><b>Speak:</b> matter, change, mass (weight)<br><b>Read:</b><br><b>Write:</b><br><b>Sentence Frames:</b><br>The orange is _____. (describing) |  |
| <b>Materials:</b> <ul style="list-style-type: none"> <li>• orange (food item)</li> <li>• kitchen scale or balance scale</li> <li>• smarties (tablet candy)</li> <li>• plastic sandwich bags (1 for each group)</li> </ul>  | <b>Additional Lesson Vocabulary:</b><br>Demonstrate, experiment taste, color, size, smell, orange, round   |  |
| <b>Lesson: Physical Changes</b>  |  | <b>Instructional Time: 30 minutes</b>  |
| <p><b>Opening: (5 minutes)</b><br/> <b>T: "Today we are learning about how things change. I need a girl to come up and help me. Girls raise your hand if you want to help me."</b><br/>         Choose one female student to come to the front of the class.<br/> <b>T: "Look at ____."</b> (an example of what you can say) <b>"She has brown hair and blue eyes. She is ____ tall. She is wearing blue pants and a white shirt. Thank you, take a seat."</b><br/> <b>T: "What boy wants to help me?" "He has ....."</b></p> <ul style="list-style-type: none"> <li>• <b>Introduction to New Material (Direct Instruction): (10 minutes)</b></li> </ul> <p><b>T: "I just described two students.</b></p> <ul style="list-style-type: none"> <li>• Hold up an orange (or any type of food) and ask students to describe it.</li> </ul> <p><b>T: "Let's describe an orange. What does an orange look like"</b> (If students cannot describe the orange, ask questions with choices like "Is it round or square?" "Is it hard or soft?" etc.)<br/>         S: will answer, "the orange is orange" or "the orange is round"...</p> <p><b>T: "Right, the orange is the color orange, and it is round."</b><br/> <b>T: "We can describe everything we see. When we look at objects we describe them based on weight, color, shape, size, taste and smell."</b></p> <ul style="list-style-type: none"> <li>• Teacher will make a list of the different descriptors with picture references on the board. Make 2 columns next to each word. In one column write the descriptors for the whole orange. In the 2<sup>nd</sup> column write the descriptors for the cut-up orange. This way they can compare the two stages of the orange.             <ul style="list-style-type: none"> <li>○ Color</li> <li>○ Shape</li> <li>○ Size</li> <li>○ Weight</li> <li>○ Taste</li> <li>○ Smell</li> </ul> </li> </ul> <p><b>T: "Let's describe the orange according to these 6 things."</b><br/> <b>T: "What color is the orange?"</b><br/>         S: "The orange is orange."<br/> <ul style="list-style-type: none"> <li>• Write the color next to the word color.</li> </ul> <b>T: "What shape is the orange?"</b><br/>         S: "The orange is round" or "The orange is a sphere." (They might say circle. Remind them that in math they learned a 3-dimensional round object is called a sphere.)<br/> <ul style="list-style-type: none"> <li>• Write the shape next to the word shape.</li> </ul> </p> |  |  |

**T: "What is the size of the orange?"**

S: "The orange is 3 inches." (or some random number) "The orange is the same as my hand." "The orange is the size of a ball."

**T: "How much does the orange weigh? Is it heavy like my desk or light like a book?"**

S: will probably not know the answer, or give a random guess.

**T: "We are going to weigh the orange on the scale. It weighs..."** (Teacher demonstrates weighing the orange on a scale. Can use a standard scale or a balance scale, whatever is available at your school.)

- Write the weight next to the word weight

- If you have the opportunity for the students to smell and taste the orange, continue this process with taste and smell. If not, then just mention that smell and taste can sometimes also be used to describe objects.

**T: "We have described our orange. Now I want to change the orange. Do you think I can change the orange? Turn to your neighbor and tell them 'yes or no we can change the orange.'"**

S: will turn to their neighbors and tell them "yes we can change the orange."

**T: "I think we can change the orange, watch this, I am going to cut it into smaller pieces."**

- Cut the orange.

**T: "Did I change the orange? Turn to your neighbor and tell them, 'yes we changed the orange or no we did not change the orange.'"**

S: will turn to their neighbor and tell them "yes we changed the orange."

**T: "Let's check the cut up orange against the original orange."**

**T: "What color is it?"**

S: "The color is orange."

**T: "Did the color change?"**

S: "no the color did not change." (Write orange in the 2<sup>nd</sup> column under cut-up orange next to color.)

**T: "What shape is it? Is it still a sphere?"**

S: "No, it is not a sphere." Or "no, it is more like a triangle."

- Continue to go through the descriptors until you get to the weight. Make a big deal about the weight.

**T: "Do you think the weight changed? Let's check it. "**

- Weigh the orange using the same scale and method.

**T: "The orange weighs \_\_\_\_ . Is that the same as before I cut it up? Shake your head yes or no!"**

**T: "You are right, the weight stayed the same. Actually, the weight will always stay the same. You can change matter, but cannot change weight or mass. In science the word we use for weight is mass."**

**T: "It is time to do an experiment!"**

### **Experiment and Record: (10 minutes)**

- Each group of 3 will be given a sandwich bag with 2 packages of smarties in it. They will describe the candy (they are small, round, hard, colorful, sweet, ...) and then weigh the smarties (supervised by the teacher).
- When finished weighing the candy they will stomp on the candy in order to crush them.
- As the students stomp the candies have them chant: *Stomp the matter make it change. Will the mass remain the same?*
- They will describe the candy again and then weigh it.
- Each student will have a responsibility – recording description the first time, recording description the second time (drawing or writing), weighing, and each student will stomp on the candies.

### **Guided Practice:**

#### **Use the modeling cycle:**

##### **Teacher Does:**

- Teacher will demonstrate step by step what is expected of the group without recording any of the results. Display the recording sheet on the projector, document camera, or large chart paper. This sheet should be the same as the one used for the oranges so the students will already know what to do. Demonstrate how to record your observations on the chart.

**T: "Let me show you the experiment. Each group of 3 will get 2 packages of smarties."**

- "First, you will describe the candy." – "The candy is pink, yellow, round, hard and sweet."

- "Second, weigh the smarties up here with me. Don't forget to write down the weight."

- Pretend to do the rest of the experiment.

- "Third, crush the smarties. When you crush the smarties I want you to say 'crush the matter make it change, will the mass remain the same?'" (say this with the students 5 times in a fun chant style)

- "Fourth, describe the candy again." – "The candy is pink, sweet..."

- "Fifth, weigh the candy again. Don't forget to write it down."

Teacher Does with Students:

**T: "I need two student to come up and do the experiment with me. Who wants to help?"**

**T: "Here you are, we all have different responsibilities. I am going to weigh the orange. Student #1 will you please record what the smarties look now, student #2 you will record what the smarties look like after we stomp on them.**

**T: "Please tell me about the smarties."**

*S: All of the students in the group will respond, "smarties are yellow, pink, round, ...."*

**T: "Right, please weigh the smarties and don't forget to write it down."**

*S: will weigh the smarties and write it down.*

**T: "Please pretend to crush them."**

*S: will pretend to crush the smarties and chant "crush the matter make it change, will the mass remain the same?"*

**T: "Then you will describe the smarties and weigh them again."**

3 Students Do:

- 3 students will demonstrate the experiment.

**T: "I need three students to come up and help me."**

*S: will come up and demonstrate the experiment.*

**T: "Before you begin the experiment, we need to know who is doing what. The TALLEST will weigh the Smarties,, the shortest is the first recorder, and the one in the middle is the second recorder. You will all stomp!!" (You can choose to give each student a number 1, 2, or 3 in the group rather than using tallest, smallest, middle if you worry the students will discuss too much before deciding. #1 weighs the Smarties. #2 is the first recorder, and #3 is the second recorder.)**

**T: "First get your smarties, and then show me the experiment."**

All Students Practice:

**T: "Now it is your turn. I am going to separate you into groups of three. You will work together to do the experiment.**

**Remember, the tallest will weigh the Smarties, the shortest is the 1<sup>st</sup> recorder and the one in the middle is the 2<sup>nd</sup> recorder. At the end you will need to hand in your recording sheet. Make sure all three names are on the paper.(Can use the numbers instead of height to determine the roles)**

**Closing: (5 minutes)**

- Teacher will get the students' attention and bring them back together on the carpet.

**T: "Tell me about your experiment. Did you crush the matter?"**

*S: "yes we crushed the smarties (matter)!"*

**T: "Did you make it change?"**

*S: "we made the shape change" or "we made the color change" ....*

**T: "Did you change the mass (weight)?"**

*S: "we did not change the mass?"*

**T: "You are right, we did not change the mass. We cannot change the mass. Let's repeat the chant.**

*S: "crush the matter make it change, will the mass remain the same?" YES*

**Assessment:**

Lab: How has it changed? Worksheet.

**Extra Ideas:**