

# PHYSICAL CHANGES WITH PAPER

## **BIG IDEA 9: CHANGES IN MATTER**

### **BENCHMARKS AND TASK ANALYSES**

**SC.K.P.9.1** Recognize that the shape of materials such as paper and clay can be changed by cutting, tearing, crumpling, smashing, or rolling.

- changes the shape of paper by cutting, tearing, crumpling, smashing, or rolling.
- changes the shape of clay by cutting, tearing, crumpling, smashing, or rolling.

**SC.K.N.1.5** Recognize that learning can come from careful observation.

- observes a variety of objects (living and nonliving).
- discusses observations of objects.
- states what was learned from observations.

**SC.K.N.1.2** Make observations of the natural world and know that they are descriptors collected using the five senses.

- uses five senses to make and discuss observations.
- tells which senses were used to make observations.

### **KEY QUESTION**

What can we do to paper to change the way it looks?

### **TEACHER BACKGROUND INFORMATION**

When you do something to change the way an object looks, that is called a physical change. The properties of the object stay the same but it looks different. Cutting, tearing, rolling, crumpling, and smashing are only a few ways to create physical changes in an object. Baking is NOT a physical change. A chemical change occurs once heat is applied to create a new substance.

Anything that takes up space is called matter. Air, water, rocks, and even people are examples of matter. Different types of matter can be described by their mass. The mass of an object is the amount of material that makes up the object. A bowling ball, for example, has more mass than a beach ball.

### **MATERIALS**

#### **Teacher**

paper  
scissors  
zip lock bag of Cheerios

#### **Per student**

paper samples (tissue, construction paper, news paper, magazines, and notebook paper)  
scissors

### **SAFETY**

- Always follow OCPS science safety guidelines.
- Remind students not to place objects in their mouths.
- Remind students to use scissors properly.
- Tell students to only cut the paper.

### **TEACHING TIPS**

- Have extra paper on hand.
- The vocabulary in this lesson is very important, so make sure that your students are verbalizing what they are doing to make their paper look different.



## **ENGAGE**

Hold up a baggie of Cheerios. Ask: *What could I do to change the way the way this matter (Cheerios) looks?* (various answers) Do what each child suggests. After trying each suggestion, ask students what sense(s) they used to observe that the Cheerios changed. (Possible responses: *I used my ears to hear a crunch; I used my eyes to see the pieces get smaller...*)

## **EXPLORE**

Give each child a piece of paper (the type of paper does not have to be the same). Ask them to do something to make the matter (paper) look different. Ask: *What did you do to make the matter (paper) look different?* (various answers) Hold up your own piece of paper and cut it with scissors. Ask: *Does my paper look different? What did I do to make it look different?* (cut it) Have students cut their own paper and ask various students what they did to make their paper look different stressing that they CUT it to make it look different. Ask: *Can we do anything else to change the way our paper looks?* Tear your paper and ask: *Does my paper look different? How did I make it look different?* (tore it) Allow students to tear their papers and ask a few of them to verbalize what they did to change the way their paper looked. Hold up your paper and crumple it. Ask: *Does my paper look different? What did I do to make it look different?* (crumpled it) Students may respond with 'balled it up', squashed it, etc. Tell them another word for that is "crumple." Allow students to crumple their own paper and ask various students what they did to make their paper look different emphasizing the word crumple. Hold up your paper (for the last time!) and then roll it into a cylinder shape. Ask *Does my paper look different? What did I do to make it look different?* (rolled it) Allow students to roll their paper and ask various students what they did to make their paper look different, emphasizing the word rolled.

## **EXPLAIN**

Ask: *How can we change matter?* (This is the essential question for Big Idea 9: Changes in Matter. The essential question is an open-ended question designed to generate student thinking demonstrated through conversation about the topic. Answers will vary.)

Ask: *What did we do to change the way our matter (paper) looked?* (crumpling, tearing, rolling, cutting)  
*Are there are things we could do to make our matter (paper) look different?* (various answers such as coloring) *Is there other matter that we could crumple, roll, tear, or cut?*

## **EXTEND AND APPLY**

Allow students to crumple, tear, roll, or cut something other than paper.

## **ASSESSMENT**

- Are your students able to use the correct term (e.g., crumple, tear, cut, roll) for the action that they used?
- Are your students able to implement the correct terms (e.g., if you ask them to tear the paper do they tear it or cut it)?



# PHYSICAL CHANGES WITH CLAY

## **BIG IDEA 9: CHANGES IN MATTER**

### **BENCHMARKS AND TASK ANALYSES**

**SC.K.P.9.1** Recognize that the shape of materials such as paper and clay can be changed by cutting, tearing, crumpling, smashing, or rolling.

- changes the shape of paper by cutting, tearing, crumpling, smashing, or rolling.
- changes the shape of clay by cutting, tearing, crumpling, smashing, or rolling.

**SC.K.N.1.5** Recognize that learning can come from careful observation.

- observes a variety of objects (living and non-living).
- discusses observations of objects.
- states what was learned from observations.

### **KEY QUESTION**

What can we do to clay to change the way it looks?

### **TEACHER BACKGROUND INFORMATION**

When you do something to change the way an object looks that is called a physical change. The properties of the object stay the same but it looks different. Cutting, tearing, rolling, crumpling, and smashing are only a few ways to create physical changes in an object. Baking is NOT a physical change. Once heat is applied to create a new substance that is a chemical change.

Anything that takes up space is called matter. Air, water, rocks, and even people are examples of matter. Different types of matter can be described by their mass. The mass of an object is the amount of material that makes up the object. A bowling ball, for example, has more mass than a beach ball.

### **MATERIALS**

#### **Teacher**

clay or PlayDoh  
scissors  
rolling pin

#### **Per student**

clay or PlayDoh  
scissors

### **SAFETY**

- Always follow OCPS science safety guidelines.
- Remind students to not place objects in their mouths.
- Remind students of how to use scissors properly.
- Tell students to only cut the clay.

### **TEACHING TIPS**

The vocabulary in this lesson is very important, so make sure that your students are verbalizing what they are doing to make their clay look differently.



## **ENGAGE**

Hold up a ball of clay or PlayDoh. Ask: *What could I do to change the way this looks?* (various answers) Do what each child suggests. Ask: *What did I change about the clay?* (the way it looks) *What did we do yesterday to change the way our paper looked?* (cut, tear, roll, and crumple) After trying each suggestion, ask students what sense(s) they used to observe that the clay changed. (Possible responses: *I used my eyes to see the clay change shape; I used my skin to feel that the shape of the clay is different...etc.*)

## **EXPLORE**

Give each child a piece of clay or PlayDoh. Ask them to do something to make the clay or PlayDoh look different. Ask: *What did you do to make your clay or PlayDoh look different?* (various answers) Hold up your own piece of clay and cut it with scissors. Ask: *Does my clay look different? What did I do to make it look different* (cut it). Have students cut their own clay and ask various students what they did to make their clay look different, stressing that they CUT it to make it look different. Ask: *Can we do anything else to change the way our clay looks?* Hold up your clay and then flatten it into a flat pancake shape. Ask: *Does my clay look different? What did I do to make it look different?* (flattened it) Allow students to flatten their clay and ask various students what they did to make their clay look different emphasizing the word "flattened it." Tear your clay and ask: *Does my clay look different? How did I make it look different?* (tearing it) Allow students to tear their clay and ask a few of them to verbalize what they did to change the way their clay looked. Hold up your clay and roll it into a ball. Ask *Does my clay look different? What did I do to make it look different* (rolled it). Allow students to roll their clay into ball. Hold your clay up and smash it. Ask *Does my clay look different? What did I do to change the way it looked?* (smashed it) Students may respond with crumple. Tell them that the word we are using today is smash. Allow students to smash their clay and verbalize what they did to make their clay look differently (smashing).

## **EXPLAIN**

Ask: *What did we do to change the way our clay looked?* (smashing, tearing, rolling, cutting) *Are there are things we could do to make our clay look different?* (various answers) *Are there other things that we could smash, roll, tear, or cut?*

## **EXTEND AND APPLY**

Allow students to smash, tear, roll, or cut something other than clay.  
Demonstrate the use of a rolling pin and ask students what it did to the clay.

## **ASSESSMENT**

- Are your students able to use the correct term (e.g., smash, tear, cut, roll) for the action that they used?
- Are your students able to implement the correct terms (e.g., if you ask them to tear the clay do they tear it or cut it)?

