

Science	SCI.IV.2.1	Grade: K
<p><u>Strand:</u> Using Scientific Knowledge in Physical Science - Changes in Matter</p> <p><u>Standard:</u> All students will investigate, describe and analyze ways in which matter changes</p> <p><u>Benchmark:</u> Describe common physical changes in matter: size, shape, melting, freezing (K-2)</p> <p>Constructing & Reflecting: SCI.I.1.1 - Generate reasonable questions about the world based on observation. SCI.I.1.2 - Develop solutions to problems through reasoning, observation, and investigation. SCI.I.1.3 -Manipulate simple devices that aid observation and data collection. SCI.I.1.4 -Use simple measurement devices to make measurements in scientific investigations. SCI.I.1.5 -Develop strategies and skills for information gathering and problem solving. SCI.I.1.6 - Construct charts and graphs and prepare summaries of observations. SCI.II.1.1 - Develop an awareness of the need for evidence in making decisions scientifically. SCI.II.1.4 - Develop an awareness of and sensitivity to the natural world.</p>		
<p>Vocabulary / Key Concept</p> <ul style="list-style-type: none"> • Melt • Freeze • Breaking • Dissolving • Tearing • Bending. 	<p>Context</p> <ul style="list-style-type: none"> • Changes in size or shape of familiar objects: <ul style="list-style-type: none"> ➤ making snowballs ➤ breaking glass ➤ crumbling cookies ➤ making clay models ➤ carving wood ➤ breaking bones • Changes in state of water or other substances: <ul style="list-style-type: none"> ➤ freezing of ice cream ➤ freezing of ponds ➤ melting wax or steel ➤ puddles drying up 	

Knowledge and Skills

Matter is made of the same original material after a physical change such as melting (solid to liquid), freezing (liquid to solid), or dissolving (solid to liquid).

Students will describe physical changes in substances and/or objects, including the change of size, shape, or state of matter (solid, liquid, gas).

Resources

Amazing Science Book Series:

Matter (used in SCI.V.1.1)

Instruction	Assessment
<p data-bbox="71 243 724 310">Benchmark Question: What are the common physical changes in matter?</p> <p data-bbox="71 344 672 411">Focus Question: What happens to matter when there is a physical change?</p> <p data-bbox="71 445 711 655">Bring a snowball in for students to observe. Using picture or written form, students should record their observations of changes in the snowball. Discussion needs to follow as to the change being a physical change or in the state of matter.</p> <p data-bbox="71 688 727 793">Take a piece of paper and crumple it. Discuss how the paper has not changed but the physical properties, size and shape have.</p> <p data-bbox="71 827 688 932">Prepare the following models, either real or through pictures. Students will describe the physical changes that have occurred.</p> <ul data-bbox="71 966 711 1377" style="list-style-type: none"><li data-bbox="71 966 711 1033">• Whole cookie to cookie crumbs-change in size, shape.<li data-bbox="71 1066 711 1134">• Clay ball to clay sculpture-Change in size, shape.<li data-bbox="71 1167 711 1234">• Ice cube to liquid water-Change in size, shape, melting-solid to liquid.<li data-bbox="71 1268 711 1377">• Glass of water and powdered drink mix to dissolving glass of water with powder mixed in the water-change in color.	None

Teacher Notes:

Investigate, describe and analyze ways in which matter changes.

Matter can be changed in many ways. Changes of state and changes in size and shape are two common changes that are important in the elementary school. All matter can exist as a solid, liquid, or gas depending on the temperature and pressure. In the early elementary years, instruction focuses on melting and freezing. In the later elementary years, changes such as dissolving and evaporating are added to students' experiences. Changes in the size of familiar objects such as making snowballs or crumbling cookies can be a part of the elementary grade experiences.

Students might also prepare mixtures and separate them to show how matter can be changed. Using filtration and sieves students can investigate many different types of mixtures. In the later elementary years, dissolving soluble substances and evaporation should also be included.

In the middle school years, sublimation, thermal expansion and contraction are concepts that are added to evaporation and condensation. Experiences that help students understand that mass is conserved as matter is changed are also important at this level. Chemical changes are important in the middle school years. Students should describe common chemical changes in terms of properties of reactants and products by the middle school years. Burning, rusting and photosynthesis are but some of the common chemical changes students should investigate.