

# States of Matter

Science

Year 4

Lesson 4 of 7

Learning Objective	Resources	
<p>To research the temperature in degrees Celsius (°C) at which materials change state.</p>	<p>Slides Worksheets 4A/4B/4C Materials Fact Cards 'Ice balloons', bowls/troughs, water, thermometers/temperature sensors, food colouring etc. (FSD? activity only)</p>	
Teaching Input		
<ul style="list-style-type: none"> <li>• What is temperature? Children to think, pair, share their ideas then write a definition on the slides.</li> <li>• How can we measure temperature? What units of measurement can we use? Invite children to share their ideas.</li> <li>• Go through the information on the slides about temperature and how it is measured.</li> <li>• What is it called when liquid water is turned into a solid? What temperature does this happens at?</li> <li>• Explain that when water freezes or solidifies it turns from a liquid to a solid. The freezing or solidifying temperature of water is 0 °C. When ice heats up it starts to melt. How long do you think it would take this bowl of ice to melt in this classroom? What if the room was 10 °C hotter or 10 °C colder? What if there was just one ice cube instead of a bowlful? Invite children to share their ideas.</li> <li>• Explain that other solids also melt when heated. Do you know how plastic toys are formed? Show slides explaining the process of plastic injection moulding.</li> <li>• Some materials have surprising melting points! Show slide describing the metal Gallium.</li> <li>• Explain that children will now use a variety of sources of information to record and present findings about the changing states of a range of materials.</li> </ul>		
Main Activity		
<p><u>Lower ability:</u> Give each group of children a set of Materials Fact Cards to look at. On worksheet 4A, children are to use this information to draw the missing bars on a partially completed bar chart. They can then use this and the cards to help them answer questions about the materials.</p>	<p><u>Middle ability:</u> Give each group of children a set of Materials Fact Cards to look at. On worksheet 4B, children are to use this information to draw the scale and bars on a blank bar chart. They can then use this and the cards to help them answer questions about the materials.</p>	<p><u>Higher ability:</u> Give each group of children a set of Materials Fact Cards to look at. On worksheet 4C, children are to use this information to draw a bar chart. They can then use this and the cards to help them answer the questions about the materials.</p>
Fancy something different...?		
<ul style="list-style-type: none"> <li>• Show children some balloons that have been filled with water and frozen in advance, troughs or bowls of water, thermometers or temperature sensors, food colouring etc. Encourage them to think of how they could use these items to learn more about states of matter.</li> <li>• Ask children to think of some questions they could ask about the properties of ice, the changing state of water and the relationship between changes in temperature and the changing state of materials.</li> <li>• Provide groups of children with balloons and equipment; they are to use these to explore the properties of ice and its changing state as well as attempt to answer their questions.</li> <li>• After children have had sufficient time, bring the activity to an end and encourage children to share their findings.</li> <li>• Ask children what further questions were raised about changing states of matter by doing this activity. What kind of scientific enquiries might help them answer these questions?</li> </ul>		
Plenary	Assessment Questions	
<p>Write the words 'properties', 'degrees Celsius (°C)', 'temperature', 'materials', 'change', 'state', 'melt', 'freeze' and 'solidify' on the board. What have we learned today? Children to think of statements connecting two or more of the words to explain what they have learned.</p>	<ul style="list-style-type: none"> <li>• Why do some materials change state?</li> <li>• How does temperature affect the rate at which materials change?</li> </ul>	