

Melting Moments – Stage 2

Material World Strand

Term	1	2	3	4	Weeks	1	2	3	4	5	6	7	8	9	10	11
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Outcome	Lesson Sequence – Overview	Resources	Word Wall
<p>ST2-6MW-S describes how adding or removing heat causes a change of state</p> <ul style="list-style-type: none"> contribute to discussions about objects and materials and what happens when things are warmed or cooled <p>ST2-1WS-S questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations</p> <ul style="list-style-type: none"> identify the purpose and features of a science journal use scientific vocabulary appropriately brainstorm the reasons everyday objects might have changed shape identify possible questions for investigation. 	<p>Lesson 1</p> <p><u>Sunken shapes – Lesson focus p11</u></p> <ul style="list-style-type: none"> To capture students' interest and find out what they think they know about the way a change of state between solid and liquid can be caused by adding or removing heat. To elicit students' questions about the way to change the shape of objects by adding or removing heat. <p><u>Students:</u></p> <ul style="list-style-type: none"> observe objects that have changed shape due to melting and re-freezing brainstorm ideas about what happens when materials are warmed or cooled. 	<p>For the class</p> <ul style="list-style-type: none"> class science journal word wall 2 identical solid objects that melt (see 'Preparation') enlarged copy of 'Information note for families' (Resource sheet 1) enlarged copy of 'Run, run, runny' (Resource sheet 2) <i>Optional:</i> additional pairs of objects that melt <p>For each student</p> <ul style="list-style-type: none"> science journal 'Run, run, runny' folder or journal (eg, manila folder, book) 'Information note for families' (Resource sheet 1) 'Run, run, runny' (Resource sheet 2) 	<p>after</p> <p>before</p> <p>boiling</p> <p>burn</p> <p>Celsius</p> <p>change</p> <p>chocolate</p> <p>cool</p> <p>degrees</p> <p>energy</p> <p>evaporate</p> <p>evidence</p> <p>fair test</p> <p>freeze</p> <p>graph</p>

ST2-6MW-S describes how adding or removing heat causes a change of state

- discuss and compare results to form common understandings using appropriate vocabulary including 'solid' and 'liquid'
- identify solid materials that melt when warmed.

ST2-1WS-S questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations

- predict what will happen when different materials are heated and compare results with predictions
- work in teams to safely use appropriate equipment to investigate what happens when different materials are warmed
- record findings using a line drawing

Lesson 2

Heat it up – Lesson focus p18

- To provide hands-on, shared experiences of heating different materials.

Students

- *predict what will happen when different materials are heated*
- *work in teams to observe what happens when different materials are heated*
- *record their observations using line drawings and descriptive words.*



For the class

- class science journal
- word wall
- team roles chart
- team skills chart
- enlarged copy of 'Before and after' (Resource sheet 3)
- water-based liquid for some teams to heat (see 'Preparation')
- viscous liquid for some teams to heat (see 'Preparation')
- heat-resistant solids for some teams to heat (see 'Preparation')
- hat or bowl
- timing device eg a watch or stopwatch
- access to a refrigerator
- paper for list (see 'Preparation')
- *Optional:* heat sources (see 'Preparation')

For each team

- role wristbands or badges for Director, Manager, Speaker
- each team member's science journal
- 1 copy of 'Before and after' (Resource sheet 3)
- 2 large chocolate buttons, eg 5cm wide
- 3 plastic resealable bags with areas to record information on, eg 20cm wide
- marker to label bags

heat

ice

investigate

journal

liquid

material

melt

molecules

observe

resistant

science

solid

source


state

steam

storyboard

temperature

thermometer

<p>ST2-6MW-S describes how adding or removing heat causes a change of state</p> <ul style="list-style-type: none"> identify liquid materials that solidify when placed in a refrigerator. <p>ST2-1WS-S questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations</p> <ul style="list-style-type: none"> predict what will happen when different materials are cooled in a refrigerator and compare results with predictions work in teams to safely use appropriate equipment to investigate what happens when different materials are cooled in a refrigerator record findings using a storyboard discuss and compare results to form common understandings 	<h2>Lesson 3</h2> <p><u>Cool customers – Lesson focus p26</u></p> <ul style="list-style-type: none"> To provide hands-on, shared experiences of cooling different materials. <p><u>Students</u></p> <ul style="list-style-type: none"> <i>work in teams to observe what happens when different materials are cooled</i> <i>create a storyboard to explain what has been happening to their materials.</i> 	<p>For the class</p> <ul style="list-style-type: none"> class science journal word wall team skills chart team roles chart enlarged copy of 'Before and after' (Resource sheet 3) from Lesson 2 large sheet of paper access to a freezer alcohol-based liquid in bags to freeze (see 'Preparation' for quantity) <i>Optional:</i> Cooler bag to transport bags of materials (see 'Preparation') <p>For each team</p> <ul style="list-style-type: none"> role wristbands or badges for Director, Manager and Speaker each team member's science journal teams' refrigerated materials from Lesson 2 teams' copies of 'Before and after' (Resource sheet 3) from Lesson 2 1 A3 sized sheet of paper to create storyboards 	<p><i>warm</i></p> <p><i>vapour</i></p> <p><i>variables</i></p>
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<p>using appropriate vocabulary</p>			
<p>ST2-6MW-S describes how adding or removing heat causes a change of state</p> <ul style="list-style-type: none"> predict what will happen when different materials are placed in a freezer and compare results with predictions identify liquid materials that 'freeze' in a freezer. <p>ST2-1WS-S questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations</p> <ul style="list-style-type: none"> work in teams to safely use appropriate equipment to conduct their investigation record findings in a storyboard discuss and compare results to 	<p>Lesson 4 <u>Freeze it! – Lesson focus p31</u></p> <ul style="list-style-type: none"> To provide hands-on, shared experiences of freezing different materials. <p>Students</p> <ul style="list-style-type: none"> <i>work in teams to observe what happens when different materials are placed in a freezer</i> <i>play a game of 'freeze' and discuss the terms 'freeze' and 'melt'</i> <i>review and complete their storyboards from Lesson 3.</i> 	<p>For the class</p> <ul style="list-style-type: none"> class science journal word wall team skills chart team roles chart alcohol-based liquid in bags from Lesson 3 <i>Optional:</i> Cooler bag and ice to transport bags of materials (see 'Preparation') <p>For each team</p> <ul style="list-style-type: none"> role wristbands or badges for Director, Manager and Speaker each team member's science journal class science journal word wall team skills chart team roles chart alcohol-based liquid in bags from Lesson 3 <i>Optional:</i> Cooler bag and ice to transport bags of materials (see 'Preparation') 	

<p>form common understandings using appropriate vocabulary including 'melt' and 'freeze'</p>			
<p>ST2-6MW-S describes how adding or removing heat causes a change of state</p> <ul style="list-style-type: none"> identify that adding heat can change solid materials to liquids and removing heat can change liquid materials to solids. <p>ST2-1WS-S questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations</p> <ul style="list-style-type: none"> contribute to discussions about solids and liquids materials and what causes them to change state role-play materials changing state between solid and liquid <i>(optional)</i> read information texts to research information 	<p>Lesson 5</p> <p><u>Sometimes solid – Lesson focus p35</u></p> <ul style="list-style-type: none"> To support students to represent and explain their understanding of the way different materials change from solid to liquid at different temperatures, and introduce current scientific views. <p><u>Students</u></p> <ul style="list-style-type: none"> <i>role-play materials freezing and melting</i> <i>create a table identifying when materials are either solid or liquid</i> <i>identify that adding heat can change solid materials to liquids and removing heat can change liquid materials to solids.</i> 	<p>For the class</p> <ul style="list-style-type: none"> class science journal word wall blank poster paper 4m piece of rope factual texts about creating solids with particular shapes by melting and cooling materials <p>For each student</p> <ul style="list-style-type: none"> science journal storyboard from Lesson 4 	

<ul style="list-style-type: none"> organise information about materials in a table and interpret their findings 			
<p>ST2-6MW-S describes how adding or removing heat causes a change of state</p> <ul style="list-style-type: none"> identify questions about the factors affecting the melting rate of chocolate and predict the outcomes of their investigation <p>ST2-1WS-S questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations</p> <ul style="list-style-type: none"> work in teams to safely use appropriate equipment to investigate whether different shapes affect the melting rate of chocolate record findings, present them as a graph and identify patterns or trends discuss and compare results with predictions to form 	<h2>Lesson 6</h2> <p><u>Break it up – Lesson focus p41</u></p> <ul style="list-style-type: none"> To support students to plan and conduct an investigation of the way shape affects the melting rate of chocolate. <p><u>Students</u></p> <ul style="list-style-type: none"> <i>work in teams to investigate the way shape affects the melting rate of chocolate</i> <i>identify variables to change and keep the same in an investigation</i> <i>record and discuss observations</i> <i>present investigation results in a column graph</i> <i>make claims based on evidence about their results.</i> 	<p>For the class</p> <ul style="list-style-type: none"> class science journal word wall team skills chart team roles chart 1 enlarged copy of 'Melting investigation planner' (Resource sheet 4) timing device, eg, clock or timer <i>Optional:</i> heat sources (see 'Preparation') <p>For each team</p> <ul style="list-style-type: none"> role wristbands or badges for Director, Manager, Speaker each team member's science journal 3 copies of 'Melting investigation planner' (Resource sheet 4) 2 chocolate frogs or large chocolate buttons 2 plastic resealable bags with areas to write on marker <i>Optional:</i> timing device, eg, clock or timer 	

<p>common understandings</p> <ul style="list-style-type: none"> • make claims based on evidence about whether different shapes affect the melting rate of chocolate • reflect on the investigation including whether the test was fair. 			
<p>ST2-6MW-S describes how adding or removing heat causes a change of state</p> <ul style="list-style-type: none"> • identify that materials can change state between solid and liquid when heat is added or removed and that this affects objects in their everyday lives <p>ST2-1WS-S questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations</p> <ul style="list-style-type: none"> • share responses and opinions with others through creating a storyboard 	<p>Lesson 7 <u>Ready to set – Lesson focus p49</u></p> <ul style="list-style-type: none"> • To provide opportunities for students to represent what they know about the way a change of state between solid and liquid can be caused by adding or removing heat, and to reflect on their learning during the unit. <p><u>Students</u></p> <ul style="list-style-type: none"> • <i>create a storyboard to explain how the present in Lesson 1 changed shape</i> • <i>make claims about the way materials change with temperature change</i> • <i>participate in a class discussion to reflect on their learning during the unit.</i> 	<p>For the class</p> <ul style="list-style-type: none"> • class science journal • word wall • the objects from Lesson 1 • 1 enlarged copy of 'Too hot!' (Resource sheet 5) <p>For each student</p> <ul style="list-style-type: none"> • science journal • 1 copy of 'Too hot!' (Resource sheet 5) • <i>Optional:</i> material to create multimedia presentations 	

- contribute to discussions and express their opinions about their learning journey.

