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## Lesson Plan Template

Lesson Segment Focus Thermal Energy Changing States of Matter

Lesson 1 of 1

Course & topic addressed States of Matter

Date \_\_\_\_\_ Grade 7

### Student Outcomes

Specific learning objectives for this lesson.	1. Students will compare the rising temperature to the change in state of matter. 2. Students will analyze the data of the experiment by putting it into a spreadsheet.
Describe the connection to previous lessons. (Prior knowledge of students this builds upon)	Students will know what the different phases of matter is.
Knowledge of students background (personal, cultural, or community assets)	

### State Academic Content Standards

List the state academic content standards with which this lesson is aligned. Include state abbreviation and number & text of the standard.	7-PS1-4 Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
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### Academic Language Support

What planned instructional supports might you use to assist students to understand key academic language to express and develop their content learning? What will you do to provide varying supports for students at different levels of academic language development?	I could provide a word wall for the key vocabulary words.
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### Key Vocabulary

What vocabulary terms/content specific terminology must be addressed for students to master the lesson?	<b>Thermal Energy, Solid, Liquid, Gas, Kinetic Energy, Temperature</b>
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## Materials

Materials needed by teacher for this lesson.	Heat resistant container, Ice cubes, burners, thermometers, Excel example, Smartboard
Materials needed by students for this lesson.	Chromebooks to access Excel

## Lesson Timeline with Instructional Strategies & Learning Tasks (This should be VERY DETAILED)

Amount of Time	Teaching & Learning Activities	Describe what YOU (teacher) will be doing and/or what STUDENTS will be doing during this part of the lesson.
5 Minutes	<b>Introduction:</b> Students will discuss the phase changes and why they happen.	I will begin class by having a quick discussion about the different states of matter. I know they will already know what they are and their properties, but I would just like to refresh their memory. I will ask, "What are the three states of matter?" I will then ask, "What are the properties of each state?"
35 Minutes	<b>Instruction:</b> Students will be in groups and will conduct the experiment in which they will see that thermal energy will affect the phase change.	I will begin by showing the students my example of the spreadsheet and will give directions on what we will be doing. I will only require each group to create a spreadsheet, but when they email them to me for a grade they must put all students name in the content area. Before I have the students preform the experiment, I will show them the website <a href="https://courses.lumenlearning.com/boundless-chemistry/chapter/kinetic-molecular-theory-of-matter/">https://courses.lumenlearning.com/boundless-chemistry/chapter/kinetic-molecular-theory-of-matter/</a> on my smartboard. This will give them further knowledge about kinetic energy and its role in the experiment. I will already have the burners placed on the student's desks. I will ask the students to get into groups of about 5. I will quickly review the safety for labs and will caution them to try not to burn themselves on the burner. I will then give each group a heat resistant container with ice in it. I will instruct them to take the initial temperature of the ice and record it in their spreadsheets. The students will then heat the ice until it melts but is not yet boiling. They will record the temperature again at the liquid stage. They will continue to heat the water until it boils and creates steam. The students will again record the temperature for the gas phase. I will ask students during their experiment what it is that causes the particles in the substance to change into a different state of matter. (Kinetic Energy) Once the students have finished their own spreadsheet within their group, I will have them compare data with two other groups. They will then put the other two groups data on different pages in Excel. In the Compare page on Excel they will compare their temperatures to the two other groups and find a final average.
5 Minutes	<b>Closure:</b> Students will answer an exit slip.	I will have students answer an exit slip before leaving that will have the questions: How did Kinetic energy play a role in the phase changes? How did your temperatures compare to the two other groups? How did you contribute to your group experiment?

Amount of Time	Teaching & Learning Activities	Describe what YOU (teacher) will be doing and/or what STUDENTS will be doing during this part of the lesson.

**Accommodations/Modifications**

How might I modify instruction for:  Remediation? Intervention? IEP/504? LEP/ESL?	I could assign them to specific groups so I can ensure that they get extra help. I could also print out a sheet that explains Kinetic energy and the steps to the lab.
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**Differentiation:**

How might you provide a variety of instructional methods/tasks/instructional strategies to ensure all student needs are met?	<b>I could provide a word wall. I will also be providing group discussion.</b>
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**Assessments: Formative and/or Summative**

Describe the tools/procedures that will be used in this lesson to monitor students' learning of the lesson objective/s (include type of assessment & what is assessed).	<input checked="" type="checkbox"/> Formative / <input type="checkbox"/> Summative	Exit slip
	<input type="checkbox"/> Formative / <input type="checkbox"/> Summative	
	<input type="checkbox"/> Formative / <input type="checkbox"/> Summative	

**Research/Theory**

Identify theories or research that supports the approach you used.	
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**Lesson Reflection/Evaluation**

What went well? What changes should be made? How will I use assessment data for next steps?	<i>TO BE FILLED IN AFTER TEACHING</i>
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Include supporting material such as slides, pictures, copy of textbook, and handouts for any activities students will be using as part of your lesson.

\*adapted from: <http://webcache.googleusercontent.com/search?q=cache:EsQcNWuG1ZoJ:web.mnstate.edu/harms/StudentTeachers/edTPA-LessonPlan.doc+&cd=2&hl=en&ct=clnk&gl=us>; <http://www.moreheadstate.edu/getmedia/cd3fd026-939f-4a47-a938-29c06d74ca01/Lesson-Plan-and-Reflections.aspx>;  
<http://www.mcneese.edu/f/c/9cb690d2/Lesson%20Plan%20Rubric%20Aligned%20with%20InTASC.docx>; <https://www.uwsp.edu/education/Documents/edTPA/Resource12.pdf>;  
<https://www.uwsp.edu/education/Documents/edTPA/Resource11.pdf>; <https://www.uwsp.edu/education/Documents/edTPA/Resource11a.pdf>;  
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