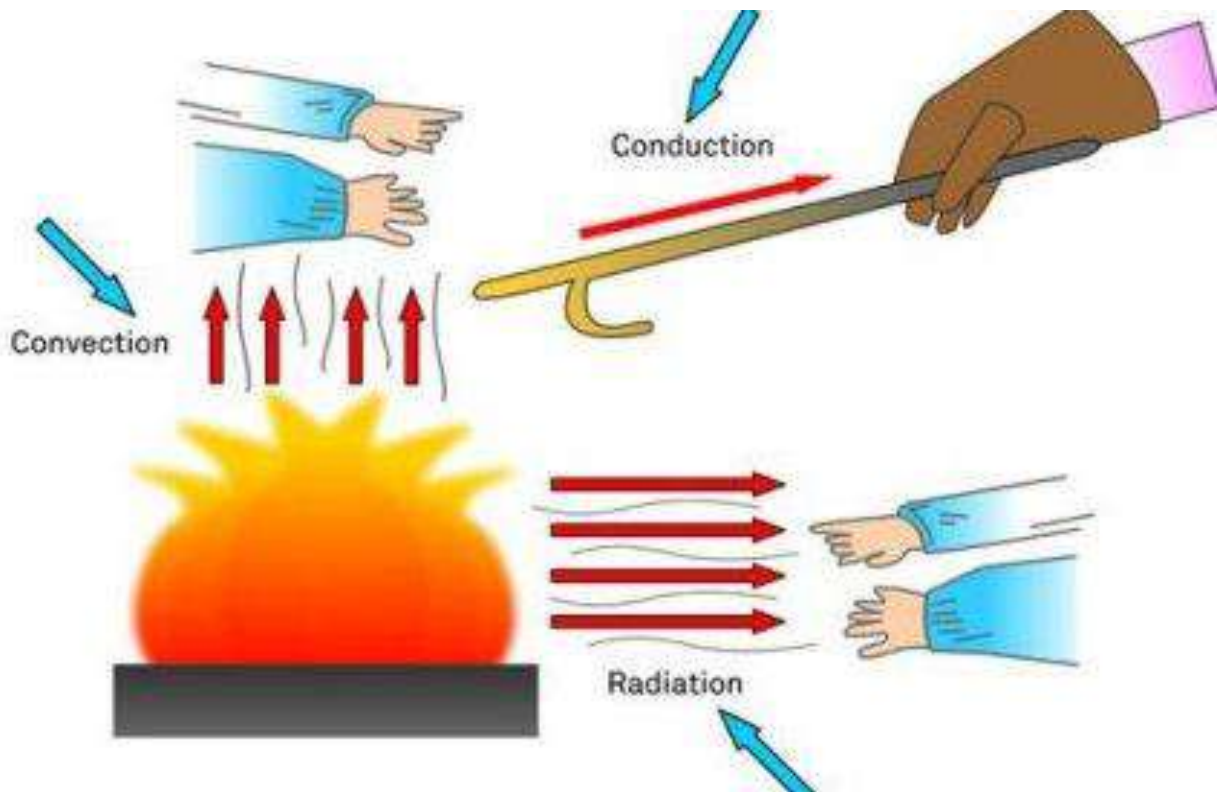
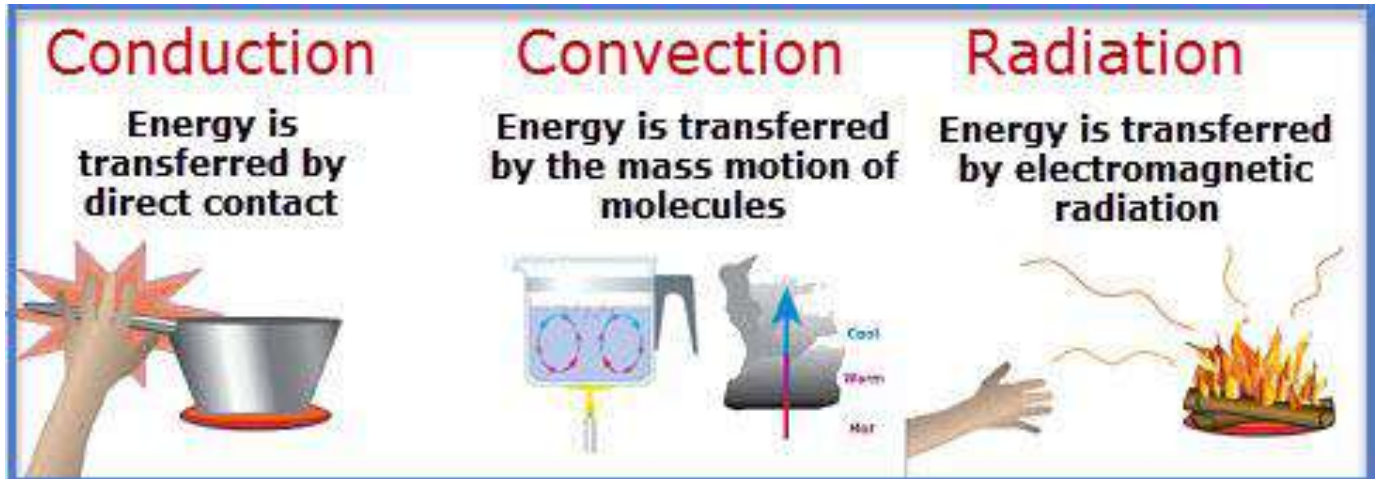


# 6th grade Science Packet #8

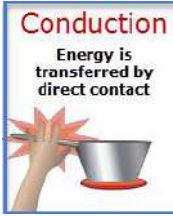

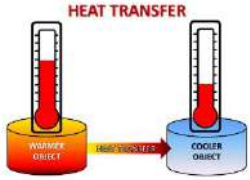
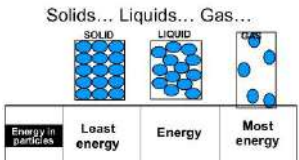

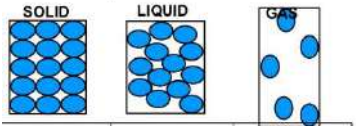


## The May Packet



Name		Period	
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Day of the Week	Lesson Details
Monday  5/11	<ul style="list-style-type: none"> <li>Vocab Boxes for Thermal Energy</li> </ul> Vocab <ul style="list-style-type: none"> <li>Kinetic energy, Temperature, particle, mass, Thermal energy, Heat transfer, Conduction, convection, Radiation</li> </ul> I can Statement <ul style="list-style-type: none"> <li>I can explain what thermal energy is and what it depends on.</li> </ul> Standard <ul style="list-style-type: none"> <li>PS3.A: Temperature is a measurement of energy (Average Kinetic Energy) of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present.</li> </ul>
Tuesday  5/12	<ul style="list-style-type: none"> <li>Concept Review: Thermal Energy</li> </ul> Vocab <ul style="list-style-type: none"> <li>Kinetic energy, Temperature, particle, mass, Thermal energy, Heat transfer, Conduction, convection, Radiatio</li> </ul> I can Statement <ul style="list-style-type: none"> <li>I can explain what thermal energy is and what it depends on.</li> </ul> Standard <ul style="list-style-type: none"> <li>PS3.A: Temperature is a measurement of energy (Average Kinetic Energy) of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present.</li> </ul>
Wednesday  5/13	<ul style="list-style-type: none"> <li>Conduction Blocks (Spoons) Lab</li> <li>Click here to watch me do the lab</li> </ul> Vocab <ul style="list-style-type: none"> <li>Conduction, convection, Radiation</li> </ul> I can Statement <ul style="list-style-type: none"> <li>I can differentiate between conduction, convection, and radiation.</li> </ul> Standard <ul style="list-style-type: none"> <li>PS3.A: Temperature is a measurement of energy (Average Kinetic Energy) of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present.</li> </ul>
Thursday  5/14	<ul style="list-style-type: none"> <li>Butter Boat Lab</li> <li>Click here to watch me do the lab</li> </ul> Vocab <ul style="list-style-type: none"> <li>Conduction, convection, Radiation</li> </ul> I can Statement <ul style="list-style-type: none"> <li>I can differentiate between conduction, convection, and radiation.</li> </ul> Standard <ul style="list-style-type: none"> <li>PS3.A: Temperature is a measurement of energy (Average Kinetic Energy) of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present.</li> </ul>
Friday  5/15	<ul style="list-style-type: none"> <li>Ice and the Balloon Lab</li> <li>Click here to watch me do the lab</li> </ul> Vocab <ul style="list-style-type: none"> <li>Conduction, convection, Radiation</li> </ul> I can Statement <ul style="list-style-type: none"> <li>I can differentiate between conduction, convection, and radiation.</li> </ul> Standard <ul style="list-style-type: none"> <li>PS3.A: Temperature is a measurement of energy (Average Kinetic Energy) of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present.</li> </ul>

Vocab Definitions: [Click here for my video going over the vocab](#) (or message me for the link)

Vocab Word	Definition	
<b>Conduction</b>	Heat moving through an object (Touching)	 <p><b>Conduction</b> Energy is transferred by direct contact</p>
<b>Convection</b>	Heat is circulated through a fluid, like air or water	 <p><b>Convection</b> Energy is transferred by the mass motion of molecules</p>
<b>Heat transfer</b>	The movement of the heat energy from areas where there is more heat to areas that there is less heat (conduction, convection, radiation)	 <p><b>HEAT TRANSFER</b></p>
<b>Kinetic Energy</b>	is energy due to mass and speed of the object.	 <p>Solids... Liquids... Gas...</p>
<b>Mass</b>	The amount of matter (number of particles) in an object.	 <p>Mass = 100kg Weight = 200N</p> <p>Mass = 100kg Weight = 1200N</p>
<b>Particle</b>	A small piece of matter	 <p><b>SOLID</b>   <b>LIQUID</b>   <b>GAS</b></p>
<b>Radiation</b>	Transfer of heat between objects that are not touching	 <p><b>Conduction</b> Energy is transferred by direct contact</p> <p><b>Convection</b> Energy is transferred by the mass motion of molecules</p> <p><b>Radiation</b> Energy is transferred by electromagnetic radiation</p>
<b>Temperature</b>	A measure of the average kinetic energy of the particles in a system	
<b>Thermal Energy</b>	is the total amount of energy in a substance due to the motion and number of particles in a system.	

## Conduction

Definition:

Draw or use the word in a sentence

## Convection

Definition:

Draw or use the word in a sentence

## Heat Transfer

Definition:

Draw or use the word in a sentence

## Kinetic Energy

Definition:

Draw or use the word in a sentence

## Mass

Definition:

Draw or use the word in a sentence

## Particle

Definition:

Draw or use the word in a sentence

## Radiation

Definition:

Draw or use the word in a sentence

## Temperature

Definition:

Draw or use the word in a sentence

## Thermal Energy

Definition:

Draw or use the word in a sentence

### **Concept Review: Thermal Energy**

Match the following words with the correct definition

Vocab Word	Definitions
1. _____ Conduction	A. Heat is circulated through a fluid, like air or water B. Transfer of heat between objects that are not touching C. Heat moving through an object (Touching)
2. _____ Convection	
3. _____ Radiation	

### **Answer the following questions**

Questions	Answers
4. You have a pot of soup on the stove heating up. Is that conduction, convection, or radiation?	
5. You feel the heat of the iron on your hand as you hover your hand above the iron. Is that conduction, convection, or radiation?	
6. The liquid of the soup is circulating the heat inside the pot. Is that conduction, convection, or radiation?	
7. You accidentally touch the stove and feel the heat. Is that conduction, convection, or radiation?	
8. The heat is circulating in the water vapor above the soup pot. Is that conduction, convection, or radiation?	
9. You feel the warmth of the sun on your skin. Is that conduction, convection, or radiation?	
10. What is kinetic energy?	
11. What is temperature?	
12. What has a higher temperature a water bottle in the fridge, or a water bottle on the kitchen table?	

Questions	Answers
13. What has a higher temperature; the sun or Jupiter?	
14. How does heat transfer?	<p>The correct answer is ____</p> <p>A. From hotter objects to even hotter objects</p> <p>B. From colder objects to hotter objects</p> <p>C. From hotter objects to colder objects</p> <p>D. It doesn't matter heat just go wherever it wants</p>
15. You have a glass of hot water that is at 100°C and you pour it into a tub of water that is at 20°C. How does the heat transfer?	The heat from the water at ____°C transfers to the water at ____°C
16. You put your hand into a tub of ice water. Your hand has the temperature of 37°C and the tub of ice water has a temperature of 0°C. How does the heat transfer?	The heat transfers from _____ to the _____
17. What is thermal energy?	
18. What has more thermal energy; the Sun or the Earth?	
19. What has more thermal energy; a bathtub at 100°C or a bathtub at 20°C?	
20. What has more thermal energy: a soda in the fridge or a soda on the kitchen table?	
21. An ice-cream cone melting because of the sun is an example of which type of heat transfer?	<p>The correct answer is ____</p> <p>A. Conduction</p> <p>B. Convection</p> <p>C. Radiation</p>
22. Ice melting in a lemonade is an example of which type of heat transfer?	<p>The correct answer is ____</p> <p>A. Conduction</p> <p>B. Convection</p> <p>C. Radiation</p>
23. Your hand accidentally touching a hair curler's hot metal part is an example of which type of heat transfer?	<p>The correct answer is ____</p> <p>A. Conduction</p> <p>B. Convection</p> <p>C. Radiation</p>

# **Conduction Spoons**

If you have the materials at home, try doing the lab on your own. If you don't just watch the video of me doing the lab and follow along. [Click here for the video.](#) (or message me for the link)

## **Directions for the lab**

In this lab you are trying to determine spoon material will cause the butter to melt the fastest. Will it be the wooden spoon? The plastic spoon? Or the metal spoon? This will help us determine which spoon type is better at conducting heat into the butter.

1. Predict which spoon type will melt the ice the fastest and write it down on #1 of the observations section.
2. Gather materials
  - a) Wooden Spoon
  - b) Plastic Spoon
  - c) Metal Spoon
  - d) Butter or margarine or cheese
  - e) Bowl with hot water
3. Place a bit of butter or margarine into each spoon like in this picture.
4. Now place the spoons into the bowl of hot water with the ends with butter sticking out.
5. Observe which type of spoon melts the butter the fastest.



## **Observation section**

Observation Question	Observation (fill in the blank or answer the question)
1. I predict that the _____ spoon will melt the butter the fastest (aka is a better conductor).	
2. I observed that the _____ spoon melted the fastest	
3. Why did one spoon melt the butter faster than the others? a. (think about how energy transfer may differ between the 3 different spoon types)	
4. Where is the energy transferring from and to?	
5. What type of energy transfer is happening in this lab? a. (Conduction, convection, or radiation?)	
6. Which type of spoon should you use to eat ice cream? a. (which type of spoon is most likely to not melt the ice cream by conducting heat from your hand to the ice cream?)	

## **Butter Boat**

If you have the materials at home, try doing the lab on your own. If you don't just watch the video of me doing the lab and follow along. [Click here for the video.](#) (or message me for the link)

### **Directions for the lab**

For this lab you are going to observe what happens to the butter inside the butter boat.

1. Predict what will happen to the butter in the boat and write it down on #1 in the observations section.
2. Gather materials
  - a) Butter or margarine or cheese
  - b) Aluminum foil
  - c) Container that can hold hot water
  - d) Hot water
3. Use the aluminum foil to make a boat shape.
4. Place the aluminum boat in the container with hot water.
5. Carefully place a piece of butter or margarine in the butter boat
6. Observe what happens to the butter.



### **Observation section**

Observation Question	Observation (fill in the blank or answer the question)
1. Write your prediction	I predict that
2. Write your observation of the lab. What happened at the end to the butter or margarine?	
3. What state of matter is the butter at the beginning of the lab? (Solid, Liquid, or Gas)	
4. What state of matter is the butter at the end of the lab? (Solid, Liquid, or Gas)	
5. Where is thermal energy transferring from and to? (Who has the energy first and where does it go at the end?)	
6. What types of heat transfer are happening in the lab? There are 2 types in this lab. (Conduction, Convection, or Radiation?)	



## **Ice and the Balloon Lab**

If you have the materials at home, try doing the lab on your own. If you don't just watch the video of me doing the lab and follow along. [Click here for the video.](#) (or message me for the link)

### **Directions for the lab**

For this lab you are going to observe what happens to the balloon once it is placed in the freezer for 5 minutes.

1. Predict what will happen to the balloon in this lab and write it down on #1 in the observations section.
2. Gather materials
  - a) Balloon
  - b) Marker or Sharpie
  - c) Freezer
3. Blow up the balloon and tie it
4. Draw a face on the balloon, it will help you see the difference at the end.
5. Put the balloon in the freezer
6. Wait 5 minutes or leave it overnight
7. Take the balloon out of the freezer and observe what happened to it.
8. Next play with the balloon using your hands. You can throw it like a ball or just keep holding on to it for 5 minutes.
9. Observe what happens to the balloon.



### **Observation section**

Observation Question	Observation (fill in the blank or answer the question)
1. Write your prediction  (the balloon will increase in size, decrease in size, stay the same, explode, etc...)	I predict that
2. What happened to the balloon after you took it out of the freezer?	
3. When the balloon was in the freezer, how was the thermal energy transferring?	First the thermal energy was in the _____ then it transferred to _____.
4. What happened to the balloon after you played with it or held it for 5 minutes?	
5. When the balloon was in your hand, how was the thermal energy transferring?	First the thermal energy was in the _____ then it transferred to _____.
6. What type of heat transfer happened in this lab? (Conduction, Convection, or Radiation?)	