

**Main Ideas, Key Points,
Questions:**

After watching the video segment, write down key points, main ideas and big questions.

Objective(s):

- *To design, build, and modify a working model of a calorimeter.*
- *To plan and carry out an investigation of the dissolution of ionic salts and their ability to release or absorb heat from the surroundings.*

Notes:

During the video segment, use words, phrases or drawings to take notes.

Summary:

After watching the video segment, write at least three sentences explaining what you learned. You can ask yourself: "If I was going to explain this to someone else, what would I say?"

After watching the video and performing any associated labs and/or experiments, you should be able to answer the following:

You should now have carried out the specific heat of gases lab and recorded all data. Once you have a completed data sheet, you may continue by watching the Unit 8D video.

- 1. After collecting your data in a data table, draw a line graph of the temperature of all four atmospheric gas samples over time.**
- 2. Which gas has the highest heat capacity?**
- 3. Why are scientists concerned about carbon dioxide even though it does not have the highest heat capacity in our atmosphere?**
- 4. What are two methods scientists use to measure the level of carbon dioxide in the atmosphere?**
- 5. A calorimeter is used to measure the amount of heat exchanged in a process. One way to use a calorimeter is to measure the heat energy in the chemical bonds of a food. What is another way to use a calorimeter (such as the one used by Georgia Power)?**
- 6. What does Georgia Power mean by the calorific value of fuel?**
- 7. Draw a picture of a “coffee cup calorimeter,” so you will remember how to build one of your own.**
- 8. You will now begin planning an investigation to determine which ionic salts will produce the best heat pack and cold pack. Write investigative questions here:**
- 9. You will write a procedure for your experiment, including how you plan to use the heat transfer calculation $q=mC\Delta T$.**
- 10. Identify three constants in the experiment.**

You will measure the heat absorbed or released when four different ionic compounds are dissolved in water: potassium chloride, calcium chloride, sodium bicarbonate, and sodium carbonate. You will be measuring the temperature change of the aqueous solution, which is mostly water, so make the assumption that the specific heat capacity of the solution is equal to the specific heat capacity of water. When you have completed this investigation and have drawn a graph of your data, you may proceed to the Unit 8E video.