

Review guide for Thermodynamics end of Unit test:

The student should be prepared to answer a series of questions on the following topics. Some will be short answer, some will be mathematical and some will require you draw a picture or labeled diagram.

- How do the Celsius, Fahrenheit and Kelvin temperature scales differ from each other? What ‘natural properties’ are they based on?
- What exactly is Absolute Zero and why is it a true ‘bottom’ for temperature?
- What is the Heat Equation and how do we use it?
- How do the concepts of the calorie, the Food Calorie and the joule differ from each other? What is the basis of each measurement?
- What is the definition of energy? What is the definition of work?
- What is the concept of Specific Heat Capacity, C_p and how do we use it?
- How does the concept of Heat related to the concept of Energy?
- What is the concept of Kinetic Energy and how do we calculate it?
- What does the Boltzmann Energy Distribution graph tell us and how is it related to the concept of Temperature?
- What was the Paleocene-Eocene Thermal Maximum and why is it relevant today? How was life on Earth affected during this time? When did it occur (roughly)?
- What can the Ice core data tell us about past climate? How far back in time does it go? What massive geologic structure does it come from? What do we know about global carbon dioxide levels over that time span? What are the carbon dioxide levels today and how high are they likely to climb? Why do we have seasonal fluctuations in CO_2 ? How do we measure CO_2 levels?
- The Four States of Matter according to modern science? How did the ancient Greeks view matter?
- What are ‘intermolecular forces’?
- How does increasing temperature affect an object's ability to stay solid? Liquid? Gas?
- What do Phase Change diagrams tell us? What terms do we use to describe phase changes?
- Buoy vs Buoyancy vs Buoyant Force; what's the difference?
- How to determine the Buoyant force on an object
- What is the First Law of Thermodynamics?
- How to Calculate Percent Error.
- What is a Moulin and how do they form? What is happening to the Greenland Ice Sheet?
- What is El Nino?
- What is the shape of the graph that has been documenting increases in global temperature?

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Problem Solving section of test will include the following:

Given a student data set from the original Burning Chips lab could you calculate how much energy was captured by our cans of water? (starting temperature, ending temperature and mass of water)

Given a student data set for our Tennis Ball lab could you calculate how much kinetic energy the tennis ball had? (distance between thrower and catcher, mass of ball and time in the air?)

Given a student data set from our recent Heat of Fusion of Ice lab could you calculate the value the student might have come up with? (mass of empty container, mass with Hot Water, mass with Ice added, Starting temperature, ending temperature)

Given a student data set for our upcoming Unknowing Specific Heat Capacity Lab could you determine the C_p for the unknown metal? (mass of Cold Water, starting temp of cold water, mass of unknown metal, starting temp of unknown metal, and final temp of system).

Given a student data set for our upcoming buoyancy lab (mass of object, volume of object) could you determine what fraction would be submerged?

Add notes here..