**Thermal Energy & Heat Chapter 16**

**

**See** [**https://www.learningctronline.com/courses**](https://www.learningctronline.com/courses) **for Materials and Resources.**

**Topics:**

1. Thermal Energy & Heat

**Objectives:**

* *Define and calculate Potential Energy (PE) in terms of gravitational PE, and explain elastic PE.*
* *Define and calculate Kinetic Energy (KE) related to the motion of object.*
* *Recognize maximum PE, maximum KE, maximum velocity, rest position, and when PE = KE for moving objects.*
* *Identify specific forms of energy and how they can be transformed into other forms based on the conservation of Energy.*
* Define heat flow direction, temperature, thermal expansion, and specific heat.
* Calculate / measure heat changes in a system using a calorimeter.
* Distinguish the three types of heat transfer (radiation, conduction, convection).
* Explain the difference between thermal insulators and conductors.
* Define Thermodynamics related to three laws.

TAKE NOTE

1. Guided Reading Note-Taking Worksheet (Pearson Text) (1 week)

1. Pearson Concepts in Action Worksheets
2. Lab Convection Activity
3. Lab Specific Heat Lab
4. Test Energy & Heat Transfer
5. Class Song: On Top of Ole Smokey Just Keep Pressing On!
6. Week 22 Devotional (<https://www.learningctronline.com/devotional>)

Pearson Text Chapter 16: Thermal Energy & Heat pp. 472-497

**Guided Reading Note-Taking Worksheet:**

Complete the worksheet for Chapter 16: Thermal Energy & Heat (16.1 – 16.3).

**Class Notes: PowerPoint or PDF**

**Homework**:

* 16.1 Thermal Energy & Matter Worksheet (Pearson Concepts in Action)
* 16.2 Heat & Thermodynamics Worksheet (Pearson Concepts in Action)
* *Assignments will be “spot checked” during class or submitted via email.*

**Lab**: Convection Activity

* Complete the lab using the worksheet provided.
* Save the documents into your LAB folder in the Physical Science folder on your desktop.

**Lab**: Specific Heat Lab

* Perform the lab as directed using the worksheet provided.
* Complete all calculations and data, showing work whenever appropriate.
* Conclusions should be answered in complete sentences that convey a complete thought.
* Save the documents into your LAB folder in the Physical Science folder on your desktop.
* *Assignments will be “spot checked” during class or submitted via email.*

**TEST:** Energy & Heat

1) the academic integrity policy

* Tests must be completed **WITHOUT** referring to books, notes, the internet, people, or any outside resources.
* Students **MAY** use the approved Periodic Tables, approved Reference Tables, or approved equation (formula) sheet (provided by the teacher) along with calculators and scratch paper.
* A guardian should be proctoring the test. Proctoring means to monitor the following:

2) The test is composed of 20 multiple choice questions and some written problems.

* The **multiple-choice test must be taken "in one sitting"**, meaning that once you start the test, you must complete it without interruption. (40 minutes)
* Take a short break (5-10 minutes)
* The **written portion of the test must be taken "in one sitting"**, meaning that once you start the test, you must complete it without interruption. (30 minutes)

3) There is a **90-minute time limit** on this test. Please have the proctor write the time taken at the top of your answer sheet with their signature or initials.

4) Proctors should NOT be reading the test or engaging students during the test.

5) Do NOT use RED font. Black font is best.

Supplemental Resources (Optional)

1. Energy Transfer Lab
2. Heating Curve of Water Lab
3. Vocabulary Crossword Chapter 15-16
4. Energy Problem Set

[**http://somup.com/cFX609niZa**](http://somup.com/cFX609niZa) **Specific Heat of a Metal (3:04) The metal's temperature decreased drastically while water's temperature increased a little.**

[**http://somup.com/cYfrYVirL5**](http://somup.com/cYfrYVirL5) **Heat Transfer: Radiometer (1:41)**

[**http://somup.com/cYfrqvirJF**](http://somup.com/cYfrqvirJF) **Heat Transfer: Convection (2:08)**

<https://screencast-o-matic.com/watch/cYhFbBkvqv> Called for Freedom to Serve One Another Galatians 2:13; The Nazarene (3:42)