

Quiz Dates: Nov. 10(Lingo) Nov. 12(CPQ)

TEST- Nov. 14th

Honors Freshman Physics

Thermal Energy

The goals of this unit will allow each student to:

- a. gain a better understanding of thermal energy and temperature as these relate to PE and KE, states of matter, and the processes involved in the movement of thermal energy
- a. continue making proper scientific measurements and calculations w/ significant digits
- b. define and properly use all vocabulary
- c. properly apply all terms in describing/explaining real world examples
- d. continue constructing and interpreting scientific graphs of motion
- e. teach someone else the concepts discussed
- f. practice proper laboratory safety & use of lab equipment and computers

Performance Objectives: After completing this unit, when asked in class or on a written test or quiz, each student will:

1. **Define** specific heat and **explain** why one substance warms up, or cools down, faster than another based on specific heat capacity
2. **Calculate** the energy required to change the temperature of any material given a table of specific heat capacity.
3. **Recognize** units for energy, specific heat capacity, temperature, heat of transformation, & density
4. **Describe** the relative nature of common temperature scales (Celsius, Kelvin, Fahrenheit)
5. **Describe** the difference between heat, temperature and thermal energy
6. **Predict** the equilibrium temperature of a mixture of water and another substance.
7. **Analyze** the direction of flow of heat
8. **Know** the direction of heating and cooling of the substance as well as the surroundings during changes of state
9. **Sketch** each state of matter's structure and behavior at the particle level
10. **Interpret** graphs of changes of state and **Describe** the energy changes as a solid is heated, becoming a liquid, a gas, and a plasma, and the reverse process.
11. **Calculate** the energy required to change the state of any given material given a table of heats of transformation.
12. **Calculate** changes in thermal energy using the heat equation and perform calculations involving specific heat.
13. **Describe** and compare sublimation and evaporation
14. **Analyze and describe** the processes of heat transfer by conduction, convection, and radiation
15. **List** various types of materials that are heat conductors and insulators

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Name: _____ Period: _____

This sheet will be used to keep track of reading & homework assignments. Each homework assignment is **worth 25pts** and must be turned in on the **DUE DATE**. Late homework will not be accepted. **5 points** will be added to the unit test for any student that has all the homework completed, turned in **on time** and reflecting **quality work**.

Quality Work is having the answer reflect the question. On **UV** assignments, the terms and definitions are written out. (Answering with the "term" only is not quality.) Each assignment turned in must be labeled with the following in the right-hand corner of the paper. Your Name, Date, Period, Homework # , Unit Name (Thermal Energy)

Each section must be clearly labeled with a heading UV, RC, SP or AYK and the problem numbers. Example:

Section 3.1 UV: 1- 4 (then number & do the problems). Repeat for RC, SP and/or AYK

Textbook Reference – Physics A First Course – CPO Science
Chapter 7 [pg. 165-189] Temperature, Energy, and Matter

Textbook Homework

UV-Understanding Vocabulary RC-Reviewing Concepts SP- Solving Problems AYK- Applying Your Knowledge

Due Date	Read	Homework Assignments 1 - 4				Teacher Signature
Oct. 17	7.1- p. 165-169	p. 188-189	UV: 1-4	RC: 1-4	SP: 1a-d	
Oct.20	7.2- p. 170-175	p. 188-189	UV: 5-8	RC: 5, 7-15,	SP: 2. 6a-c,	
Oct. 21	7.3- p. 176-180	p. 188-190	UV: 9-11	RC: 16-21	SP: 8-12	
Oct. 22	7.4- p.181-185	p. 188-190	UV: 12-14	RC: 22-31	SP: 13-15	
Total Homework Score						
Points Added to Test						

Check the class Website to get updates or to print out a new assignment sheet or other docs.

www.waltonhigh.org → Departments→ Science →Honors Freshmen Physics → Fall Handouts → Current unit.

Lingo to be learned - definitions are provided on-line

temperature, thermal energy, heat, specific heat capacity, conduction, convection, radiation, conductor, insulator, solid, liquid, gas, plasma, condensation, evaporation, sublimation, boiling/vaporization, freezing, melting, kinetic theory of matter, thermal expansion, heat of fusion, heat of vaporization, fluid, density, atom, compound, mixture, molecule