

NAME:

HONORS CHEMISTRY

SECTION:

Thermodynamics Webquest

Introductory Material

<http://www.physicsplanet.com/articles/three-laws-of-thermodynamics>

<http://www.grc.nasa.gov/WWW/k-12/airplane/thermo.html> Follow the thermodynamics guided tour

<http://www4.uwsp.edu/cnr/wcee/keep/Mod1/Rules/EnConversion.htm>

1. Define the term "thermodynamics."

2. State the First Law of Thermodynamics. What does it mean?



3. Give a real-world example that illustrates the first law of thermodynamics.

4. State the Second Law of Thermodynamics. What does it mean?

5. Give a real-world example that illustrates the second law of thermodynamics.

THE FOURTH LAW OF THERMODYNAMICS



the temperature in your office building will always be unbearably hot or unbearably cold - never somewhere in between

6. State the Third Law of Thermodynamics. What does it mean?

7. What does it mean when two objects are in thermal equilibrium? What law of thermodynamics does this illustrate?

12. Create a 3 step heating/cooling curve problem for this element; then, write out a complete solution for this problem, including a sketch showing the temperature vs. time changes.

Thermodynamic Processes

<http://physics.bgsu.edu/~stoner/p201/engine/sld007.htm>

13. What is a reversible process?

14. What is an irreversible process?

http://webphysics.davidson.edu/physlet_resources/bu_semester1/index.html

http://webphysics.davidson.edu/physlet_resources/gustavus_physlets/isothermalwork.html

http://webphysics.davidson.edu/physlet_resources/bu_semester1/index.html

<http://www.grc.nasa.gov/WWW/K-12/airplane/pvtsplot.html>

15. What is an adiabatic process?

16. What is an isothermal process?

17. What is an isochoric process?

18. What is an isobaric process?

19. Draw and label a P-V diagram that shows how each type of thermodynamic process affects the pressure and volume of a gas.

Entropy

http://www.avogadro.co.uk/h_and_s/entropy.htm

20. Describing entropy as disorder is actually an oversimplification. What is another way to describe entropy? Explain.



21. Give an example of an everyday process that illustrates an increase in entropy.

Gibb's Free Energy

<http://www.chem.tamu.edu/class/majors/tutorialnotefiles/gibbs.htm>

http://www.saskschools.ca/curr_content/chem30_05/1_energy/energy3_3.htm

<http://www2.ucdsb.on.ca/tiss/stretton/CHEM2/equil9.htm>

22. What is the difference between an endergonic process and an exergonic process?

23. Can a reaction that is endothermic with a decrease in entropy ever occur spontaneously?
Justify your answer.

BONUS: Complete a problem at the website below. Attach your receipt and a written out solution. (+3 points, no partial credit)

<http://chemistry2.csudh.edu/homework/hwbornhaber.html>