

Name _____ Date _____ Class _____

CHAPTER 16 STUDY GUIDE FOR CONTENT MASTERY**Energy and Chemical Change****Section 16.1 Energy**

In your notebook, read about the nature of energy.

In the space at the left, write true if the statement is true; if the statement is false, change the italicized word or phrase to make it true.

- true* _____ 1. Energy is the ability to do work or produce heat.
- cannot be* _____ 2. The law of conservation of energy states that energy can be created and destroyed.
- true* _____ 3. Chemical potential energy is energy stored in a substance because of its composition.
- true* _____ 4. Heat is a form of energy that flows from a warmer object to a colder object.
- true* _____ 5. A calorie is the amount of energy required to raise the temperature of one gram of pure water by one degree Celsius.
- false* _____ 6. A calorie is the SI unit of heat and energy.
- true* _____ 7. The specific heat of a substance is the amount of heat required to raise the temperature of one gram of that substance by one degree Celsius.

- true* _____ 8. Kinetic energy is energy of motion.
- both potential and kinetic energy* _____ 9. Chemicals participating in a chemical reaction contain only potential energy.
- 1000 calories* _____ 10. One nutritional Calorie is equal to 100 calories.

- true* _____ 11. One calorie equals 4.184 joules.
- true* _____ 12. When a fuel is burned, some of its chemical potential energy is lost as heat.
- multiply* _____ 13. To convert kilojoules to joules, divide the number of kilojoules by 1000 joules/1 kilojoule.

Answer the following questions. Show all your work.

14. If the temperature of a 500-g sample of liquid water is raised 2.00°C, how much heat is absorbed by the water? The specific heat of liquid water is 4.184 J/g·°C.

$$q = c \times m \times \Delta T$$

$$q = 4.184 \text{ J/g} \cdot ^\circ\text{C} \times 500 \text{ g} \times 2.00^\circ\text{C}$$

$$q = 4.184 \times 10^3 \text{ J} = 4.18 \text{ kJ}$$

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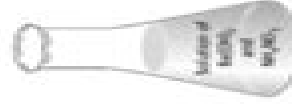
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CHAPTER 16 STUDY GUIDE FOR CONTENT MASTERY**Section 16.2 Heat in Chemical Reactions and Processes**

In your notebook, read about measuring heat and about chemical energy and the universe.

For each item in Column A, write the letter of the matching item in Column B.

- | Column A | Column B |
|---|--------------------------------|
| b. _____ 1. An insulated device used to measure the amount of heat absorbed or released during a chemical or physical process | a. system |
| c. _____ 2. The study of heat changes that accompany chemical reactions and phase changes | b. calorimeter |
| d. _____ 3. The specific part of the universe that contains the reaction or process you wish to study | c. thermodynamics |
| e. _____ 4. The change in enthalpy in a chemical reaction | d. universe |
| f. _____ 5. A system plus its surroundings | e. enthalpy |
| g. _____ 6. The heat content of a system at constant pressure | f. enthalpy change of reaction |
| h. _____ 7. Everything in the universe except the system being studied | g. surroundings |



Use the illustration to answer the following questions.

8. A solution is studying the solution in the flask. What is the system?
The system is the solution of NaOH and HNO₃.
9. What are the surroundings?
The surroundings include everything except the solution.
10. What is the universe?
The universe is the solution plus the surroundings.

Study Guide for Content Mastery

Chemistry: Matter and Change • Chapter 16

Chapter 16 Study Guide Answers Energy Chemical Change

Silberberg



Chapter 16 Study Guide Answers Energy Chemical Change:

Study Guide to Accompany Basics for Chemistry Martha Mackin, 2012-12-02 *Study Guide to Accompany Basics for Chemistry* is an 18 chapter text designed to be used with *Basics for Chemistry* textbook Each chapter contains Overview Topical Outline Skills and Common Mistakes which are all keyed to the textbook for easy cross reference The Overview section summarizes the content of the chapter and includes a comprehensive listing of terms a summary of general concepts and a list of numerical exercises while the Topical Outline provides the subtopic heads that carry the corresponding chapter and section numbers as they appear in the textbook The Fill in Multiple Choice are two sets of questions that include every concept and numerical exercise introduced in the chapter and the Skills section provides developed exercises to apply the new concepts in the chapter to particular examples The Common Mistakes section is designed to help avoid some of the errors that students make in their effort to learn chemistry while the Practical Test section includes matching and multiple choice questions that comprehensively cover almost every concept and numerical problem in the chapter After briefly dealing with an overview of chemistry this book goes on exploring the concept of matter energy measurement problem solving atom periodic table and chemical bonding These topics are followed by discussions on writing names and formulas of compounds chemical formulas and the mole chemical reactions calculations based on equations gases and the properties of a liquid The remaining chapters examine the solutions acids bases salts oxidation reduction reactions electrochemistry chemical kinetics and equilibrium and nuclear organic and biological chemistry This study guide will be of great value to chemistry teachers and students

Study Guide [to] Chemistry, a Systematic Approach [by] Sisler, Dresdner, and Mooney William H. Myers, William T. Mooney, 1980

Fundamentals of Chemistry, Study Guide James E. Brady, John R. Holum, 1988-04-20 This Third Edition of the widely used fundamentals textbook for science majors maintains the conversational writing style that made the previous editions so popular while including up to date treatments of important and current topics Emphasizes descriptive chemistry chemical reactions and properties while maintaining a solid treatment of chemical principles Common chemicals are used whenever possible as examples in both theoretical discussions and in problems and exercises Incorporates many pedagogical aids each chapter begins with a brief table of contents and each section begins with a preview of topics covered Chapters include frequent margin comments figures and photographs

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Study Guide and Glossary to Accompany Chemical Principles Daniel L. Reger, Edward E. Mercer, Robert S. Boikess, 1978

Handbook of Research on Science Learning Progressions Hui Jin, Duanli Yan, Joseph Krajcik, 2024-07-30 Gathering

contributions from leading scholars around the world this handbook offers a comprehensive resource on the most recent advances in research surrounding the theories methodologies and applications of science learning progressions Researchers and educators have used learning progressions to guide the design and alignment of curriculum instruction and assessment and to help students learn scientific knowledge and practices in a coherent and connected way across multiple years This handbook lays out the development and current state of research in this field across four sections learning progression theories and methodologies learning progressions to promote student learning teachers learning and use of learning progressions and new technology in learning progression research Featuring internationally recognized experts in learning progression research as well as up and coming voices the Handbook of Research on Science Learning Progressions offers a defining new resource for researchers teachers and teacher educators and curriculum and assessment developers in science education

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