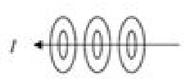
Aplusphysics magnetism worksheet answers

CHAPTER 27: Magnetism

Responses to Questions

1. The compass needle aligns itself with the local magnetic field of the Earth, and the Earth's magnetic field lines are not always parallel to the surface of the Earth.

2. The magnetic field lines are concentric circles around the wire. With the current running to the left, the field is directed counterclockwise when looking from the left end. So, the field goes into the page above the wire and comes out of the page below the wire.



3. The force is downward. The field lines point from the north pole to the south pole, or left to right. Use the right hand rule. Your fingers point in the direction of the current (away from you). Curl them in the direction of the field (to the right). Your thumb points in the direction of the force (downward).

4. $\vec{\mathbf{F}}$ is always perpendicular to both $\vec{\mathbf{B}}$ and $\vec{\ell}$. $\vec{\mathbf{B}}$ and $\vec{\ell}$ can be at any angle with respect to each other.

5. Alternating currents will have little effect on the compass needle, due to the rapid change of the direction of the current and of the magnetic field surrounding it. Direct currents will deflect a compass needle. The deflection depends on the magnitude and direction of the current and the distance from the current to the compass. The effect on the compass decreases with increasing distance from the wire.

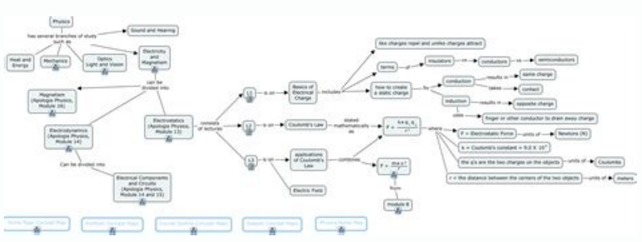
6. The kinetic energy of the particle will stay the same. The magnetic force on the particle will be perpendicular to the particle's velocity vector and so will do no work on the particle. The force will change the direction of the particle's velocity but not the speed.

7. Positive particle in the upper left: force is downward toward the wire. Negative particle in the upper right: force is to the left. Positive particle in the lower right: force is to the left. Negative particle in the lower left: force is upward toward the wire.

8. In the areas where the particle's path is curving up towards the top of the page, the magnetic field is directed into the page. Where the particle's path curves downward towards the bottom of the page, the magnetic field is directed out of the page. Where the particle is moving in a straight line, the magnetic field direction is parallel or anti-parallel to the particle's velocity. The strength of the magnetic field is greatest where the radius of curvature of the path is the smallest.

9. (*a*) Near one pole of a very long bar magnet, the magnetic field is proportional to $1/r^2$.
   (*b*) Far from the magnet as a whole, the magnetic field is proportional to $1/r^3$.

10. The picture is created when moving charged particles hit the back of the screen. A strong magnet held near the screen can deflect the particles from their intended paths, and thus distort the picture. If the magnet is strong enough, it is possible to deflect the particles so much that they do not even reach the screen, and the picture "goes black."



Thank you for your participation! Magnetism is closely related to electricity. In essence, magnetism is a force caused by moving charges. In the case of permanent magnets, the moving charges are the orbits of electrons spinning around nuclei. In very basic terms, strong permanent magnets have many atoms with electrons spinning in the same direction. Non-magnets have more random arrangements of electrons spinning around the nucleus. For electromagnets, the current itself provides the moving charges. In all cases, magnetic fields can be used to describe the forces due to magnets. Question: Which type of field is present near a moving electric charge? an electric field, only a magnetic field, only both an electric field and a magnetic field neither an electric field nor a magnetic field Answer: (3) An electric field is present due to the electric charge, and a magnetic field is present because the charge is in motion. Magnets are polarized, meaning every magnet has two opposite ends. The end of a magnet that points toward the geographic north pole of the Earth is called the north pole of the magnet, while the opposite end, for obvious reasons, is called the magnet's south pole. Every magnet has both a north and a south pole. There are no single isolated magnetic poles, or monopoles. If you split a magnet in half, each half of the original magnet exhibits both a north and a south pole, giving you two magnets. Physicists continue to search both physically and theoretically, but to date, no one has ever observed a north pole without a south pole, or a south pole without a north pole. You used electric field lines to help visualize what would happen to a positive charge placed in an electric field. In order to visualize a magnetic field, you can draw magnetic field lines (also known as magnetic flux lines) which show the direction the north pole of a magnet would tend to point if placed in the field. Magnetic field lines are drawn as closed loops, starting from the north pole of a magnet and continuing to the south pole of a magnet. Inside the magnet itself, the field lines run from the south pole to the north pole. The magnetic field is strongest in areas of greatest density of magnetic field lines, or areas of the greatest magnetic flux density. Magnetic field strength (B) is measured in units known as Tesla (T). Much like electrical charges, like poles exert a repelling force on each other, while opposite poles exert an attractive force on each other. Materials can be classified as magnets, magnet attractables (materials which aren't magnets themselves but can be attracted by magnets), and non-attractables. Question: The diagram below shows the lines of magnetic force between two north magnetic poles. At which point is the magnetic field strength greatest? Answer: (B) has the greatest magnetic field strength because it is located at the highest density of magnetic field lines. Question: The diagram below represents a 0.5-kilogram bar magnet and a 0.7-kilogram bar magnet with a distance of 0.2 meter between their centers. Which statement best describes the forces between the bar magnets? Gravitational force and magnetic force are both repulsive. Gravitational force is repulsive and magnetic force is attractive. Gravitational force is attractive and magnetic force is repulsive. Gravitational force and magnetic force are both attractive. Answer: (3) Gravity always attracts and the north poles repel each other. Question: A student is given two pieces of iron and told to determine if one or both of the pieces are magnets. First, the student touches an end of one piece to one end of the other. The two pieces of iron attract. Next, the student reverses one of the pieces and again touches the ends together. The two pieces attract again. What does the student definitely know about the initial magnetic properties of the two pieces of iron? Answer: At least one of the pieces of iron is a magnet, but we cannot state with certainty that both are magnets. Question: Draw a minimum of four field lines to show the magnitude and direction of the magnetic field in the region surrounding a bar magnet. Answer: Question: When two ring magnets are placed on a pencil, magnet A remains suspended above magnet B, as shown at right. Which statement describes the gravitational force and the magnetic force acting on magnet A due to magnet B? The gravitational force is attractive and the magnetic force is repulsive. The gravitational force is repulsive and the magnetic force is attractive. Both the gravitational force and the magnetic force are attractive. Both the gravitational force and the magnetic force are repulsive. Answer: (1) Gravity can only attract, and because magnet A is suspended above magnet B, the magnetic force must be repulsive. PS-6.1 Explain how the law of conservation of energy applies to the transformation of various forms of energy (including mechanical energy, electrical energy, chemical energy, light energy, sound energy, More information PHYSICAL WORLD Heat & Energy GOD S DESIGN 4th Edition Debbie & Richard Lawrence God s Design for the Physical World is a complete physical science curriculum for grades 3 8. The books in this series are More information Literacy Advantage Physical Science Physical Science Literacy Advantage offers a tightly focused curriculum designed to address fundamental concepts such as the nature and structure of matter, the characteristics More information Get Energized! What are two types of energy? Energy is the ability to cause change. Energy takes many different forms and causes many different effects. There are two general types of energy: kinetic energy More information Current Staff Course Unit/ Length August August September September October Unit Objectives/ Big Ideas Basic Outline/ Structure PS4- Types of Waves Because light can travel through space, it cannot be More information Physics 9e/Cutnell correlated to the College Board AP Physics 1 Course Objectives Big Idea 1: Objects and systems have properties such as mass and charge. Systems may have internal structure. Enduring More information Physics 30 Worksheet #10 : Magnetism From Electricity 1. Draw the magnetic field surrounding the wire showing electron current below. x 2. Draw the magnetic field surrounding the wire showing electron More information entre Number andidate Number Surname Other Names andidate Signature General ertificate of Education dvanced Level Examination June 212 Physics PHY4/1 Unit 4 Fields and Further Mechanics Section Monday More information Astronomy 110 Homework #04 Assigned: 02/06/2007 Due: 02/13/2007 Name: Directions: Listed below are twenty (20) multiple-choice questions based on the material covered by the lectures this past week. Choose More information Name Partners Date Visual Quantum Mechanics The Next Generation Energy Diagrams I Goal Changes in energy are a good way to describe an object s motion. Here you will construct energy diagrams for a toy More information Energy and Energy Transformations Test Review Completion: 1. Mass 13. Kinetic 2. Four 14. thermal 3. Kinetic 15. Thermal energy (heat) 4. Electromagnetic/Radiant 16. Thermal energy (heat) 5. Thermal 17. More information .1.1 Measure the motion of objects to understand.1.1 Develop graphical, the relationships among distance, velocity and mathematical, and pictorial acceleration. Develop deeper understanding through representations More information TEACHER BACKGROUND INFORMATION THERMAL ENERGY In general, when an object performs work on another object, it does not transfer all of its energy to that object. Some of the energy is lost as heat due to More information Sample Questions for the AP Physics 1 Exam Sample Questions for the AP Physics 1 Exam Multiple-choice Questions Note: To simplify calculations, you may use g 5 10 m/s 2 in all problems. Directions: Each More information Practice final for Basic Physics spring 2005 answers on the last page Name: Date: 1. A 12 ohm resistor and a 24 ohm resistor are connected in series in a circuit with a 6.0 volt battery. Assuming negligible More information [Assignment View] [Eðlisfræði 2, vor 2007 27. Magnetic Field and Magnetic Forces Assignment is due at 2:00am on Wednesday, February 28, 2007 Credit for problems submitted late will decrease to 0% after More information 13 ELECTRONS IN ATOMS Conceptual Curriculum Concrete concepts More abstract concepts or math/problem-solving Standard Curriculum Core content Extension topics Honors Curriculum Core honors content Options More information Preview of Period 2: Forms of Energy 2.1 Forms of Energy How are forms of energy defined? 2.2 Energy Conversions What happens when energy is converted from one form into another form? 2.3 Efficiency of More information Online Courses for High School Students 1-888-972-6237 PHYSICS Course Description: This course provides a comprehensive survey of all key areas: physical systems, measurement, kinematics, dynamics, momentum, More information Concept 1: Properties of Objects and Materials Classify objects and materials by their observable properties. Kindergarten Grade 1 Grade 2 Grade 3 Grade 4 PO 1. Identify the following observable properties More information Unit/Lesson Plan Title: Roller Coaster Potential or Kinetic??? Primary Subject: Science/Physics Integrated Subjects: Technology, Reading and Math Grade Level: 7th grade Length of Unit/Lesson: 2 weeks Research More information Forms of Energy Energy is Fun! Energy comes in many flavors! Kinetic Energy Potential Energy Thermal/heat Energy Chemical Energy Electrical Energy Electrochemical Energy Electromagnetic Radiation Energy More information 59 Prelab Exercises: Hooke's Law and the Behavior of Springs Study the description of the experiment that follows and answer the following questions.. (3 marks) Explain why a mass suspended vertically More information Science Standard 3 Energy and Its Effects Grade Level Expectations Science Standard 3 Energy and Its Effects The flow of energy drives processes of change in all biological, chemical, physical, and geological More information Physical Science Curriculum The Georgia Performance Standards are designed to provide students with the knowledge and skills for proficiency in science. The Project 2061 s Benchmarks for Science Literacy More information GETTING CURRENT: Generating Electricity Using a Magnet PLANNING OVERVIEW SUBJECT AREAS: Physical Science, Math, Language Arts TIMING: Preparation: 30 minutes Activity: 1-2 45-minute class periods Summary More information Unit Grades K-3 Awareness Teacher Overview What is energy? Energy makes change; it does things for us. It moves cars along the road and boats over the water. It bakes a cake in the oven and keeps ice frozen More information Indiana Content for Educators SCIENCE PHYSICAL SCIENCE teachers are expected to have a broad understanding of the knowledge and skills needed for this educator license, and to use that knowledge to help More information Protons, neutrons and electrons Nuclear Structure particle relative charge relative mass proton 1 1 atomic mass unit neutron 0 1 atomic mass unit electron -1 negligible mass Protons and neutrons make up More information Forms of Energy AZ State Standards Concept 3: Conservation of Energy and Increase in Disorder Understand ways that energy is conserved, stored, and transferred. PO 1. Describe the following ways in which More information 1. What is the wavelength of a 256-hertz sound wave in air at STP? 1. 1.17 10 6 m 2. 1.29 m 3. 0.773 m 4. 8.53 10-7 m 2. The graph below represents the relationship between wavelength and frequency of More information 1. Which of the following statements about a spring-block oscillator in simple harmonic motion about its equilibrium point is false? (A) The displacement is directly related to the acceleration. (B) The More information Unit 3 Work and Energy Suggested Time: 25 Hours PHYSICS 2204 CURRICULUM GUIDE 55 DYNAMICS Work and Energy Introduction When two or more objects are considered at once, a system is involved. To make sense More information Chapter 22: Electric motors and electromagnetic induction The motor effect movement from electricity When a current is passed through a wire placed in a magnetic field a force is produced which acts on More information SAM Teachers Guide Heat and Temperature Overview Students learn that temperature measures average kinetic energy, and heat is the transfer of energy from hot systems to cold systems. They consider what More information Work and Energy Ch. 6 Work = Force Distance Work increases the energy of an object. Energy can be converted back to work. Therefore, energy and work have the same unit: Newton meter = Nm Energy per gram, More information Appendix A: Science Practices for AP Physics 1 and 2 Science Practice 1: The student can use representations and models to communicate scientific phenomena and solve scientific problems. The real world More information Conceptual: 1, 3, 5, 6, 8, 16, 18, 19 Problems: 4, 6, 8, 11, 16, 20, 23, 27, 34, 41, 45, 56, 60, 65 Conceptual Questions 1. The magnetic field cannot be described as the magnetic force per unit charge More information Chapter 6 WORK AND ENERGY PREVIEW Work is the scalar product of the force acting on an object and the displacement through which it acts. When work is done on or by a system, the energy of that system More information As you know, some substances are made up of only one kind of atom and these substances are called elements. You already know something about a number of elements you ve heard of hydrogen, helium, silver, More information Interaction at a Distance Lesson Overview: Students come in contact with and use magnets every day. They often don t consider that there are different types of magnets and that they are made for different More information Eighth Grade Science Curriculum Approved July 12, 2004 The Georgia Performance Standards are designed to provide students with the knowledge and skills for proficiency in science at the eighth grade level. More information Lab 4: Magnetic Force on Electrons Introduction: Forces on particles are not limited to gravity and electricity. Magnetic forces also exist. This magnetic force is known as the Lorentz force and it is More information Chapter 2: Forms of Energy Goals of Period 2 Section 2.1: To describe the forms of energy Section 2.2: To illustrate conversions from one form of energy to another Section 2.3 To describe energy storage More information Magnetism 1. An electron which moves with a speed of 3.0 10 4 m/s parallel to a uniform magnetic field of 0.40 T experiences a force of what magnitude? (e = 1.6 10 19 C) a. 4.8 10 14 N c. 2.2 10 24 N b. More information 260 17-1 I. THEORY EXPERIMENT 17 QUALITATIVE STUDY OF INDUCED EMF Along the extended central axis of a bar magnet, the magnetic field vector B r, on the side nearer the North pole, points away from this More information D R I G r e e n P o w e r P r o g r a m G r e e n B o x H.S. Solar Energy: Solar Powered Cars Created by: Learning Cycle 5E Lesson Based upon and modified from Roger Bybee* (1990) *Bybee, R & Landes, N. More information The following instructional plan is part of a GaDOE collection of Unit Frameworks, Performance Tasks, examples of Student Work, and Teacher Commentary. Many more GaDOE approved instructional plans are More information Waves: Recording Sound Waves and Sound Wave Interference (Teacher s Guide) OVERVIEW Students will measure a sound wave by placing the Ward s DataHub microphone near one tuning fork A440 (f=440hz). Then More information Test Bank - Chapter 4 The questions in the test bank cover the concepts from the lessons in Chapter 4. Select questions from any of the categories that match the content you covered with students. The More information What is Energy? What is the relationship between energy and work? Compare kinetic and potential energy What are the different types of energy? What is energy? Energy is the ability to do work. Great, but More information Barbie Bungee Jump High School Physics Kris Bertelsen Augusta Middle/High School Concept: The change in energy storage systems during a bungee jump activity demonstrates how energy can be transferred from More information AAHS-CHEMISTRY FINAL EXAM PREP-REVIEW GUIDE MAY-JUNE 2014 DR. GRAY CLASS OF 2016 UNIT I: (CHAPTER 1-Zumdahl text) The Nature of Science and Chemistry 1. Explain why knowledge of chemistry is central to More information Vocabulary: Define the following terms. Law of Universal Gravitation Gravity Study Guide Weight Weightlessness Gravitational Field Black hole Escape velocity Math: Be able to use the equation for the law More information Basics of Nuclear Physics and Fission A basic background in nuclear physics for those who want to start at the beginning. Some of the terms used in this factsheet can be found in IEER s on-line glossary. More information Energy Transfer in a Flash-Light (Teacher Copy) Florida Sunshine State Standards Benchmark: SC.B. 1.3.1 AA The student identifies forms of energy and explains that they can be measured and compared. (Also More information 1. The diagram below represents magnetic lines of force within a region of space. 4. In which diagram below is the magnetic flux density at point P greatest? (1) (3) (2) (4) The magnetic field is strongest More information Electromagnetic Power! Lesson Overview Students will investigate the characteristics of electromagnetism and then use what they learn to plan and conduct an experiment on electromagnets. Suggested Grade More information Lesson 39: Kinetic Energy & Potential Energy Total Mechanical Energy We sometimes call the total energy of an object (potential and kinetic) the total mechanical energy of an object. Mechanical energy More information CHEMISTRY STANDARDS BASED RUBRIC ATOMIC STRUCTURE AND BONDING Essential Standard: STUDENTS WILL UNDERSTAND THAT THE PROPERTIES OF MATTER AND THEIR INTERACTIONS ARE A CONSEQUENCE OF THE STRUCTURE OF MATTER, More information H2 PHYSICS DEFINITIONS LIST Scalar Vector Term Displacement, s Speed Velocity, v Acceleration, a Average speed/velocity Instantaneous Velocity Newton s First Law Newton s Second Law Newton s Third Law More information Name Date Time to Complete h m Partner Course/ Section / Grade Magnetic Fields and Their Effects This experiment is intended to give you some hands-on experience with the effects of, and in some cases More information Magnetism Magnetism Opposite poles attract and likes repel Opposite poles attract and likes repel Like electric force, but magnetic poles always come in pairs (North, South) Like electric force, but magnetic More information P.S./PHYSICS The University of the State of New York REGENTS HIGH SCHOOL EXAMINATION PHYSICAL SETTING PHYSICS Wednesday, June 17, 2015 1:15 to 4:15 p.m., only The possession or use of any communications More information Introduction to Electricity & Magnetism Dr Lisa Jardine-Wright Cavendish Laboratory Examples of uses of electricity Christmas lights Cars Electronic devices Human body Electricity? Electricity is the presence More information Boardworks AS Physics Vectors 24 slides 11 Flash activities Prefixes, scalars and vectors Guide to the SI unit prefixes of orders of magnitude Matching powers of ten to their SI unit prefixes Guide to More information Physical Science Period: Name: ANSWER KEY Date: Practice Test for Unit 3: Ch. 3, and some of 15 and 16: Kinetic Theory of Matter, States of matter, and and thermodynamics, and gas laws. 1. The Kinetic More information Forms of Energy Freshman Seminar Energy Energy The ability & capacity to do work Energy can take many different forms Energy can be quantified Law of Conservation of energy In any change from one form More information Chapter 18: The Structure of the Atom 1. For most elements, an atom has A. no neutrons in the nucleus. B. more protons than electrons. C. less neutrons than electrons. D. just as many electrons as protons. More information PHYS 222 Spring 2012 Final Exam Closed books, notes, etc. No electronic device except a calculator. NAME: (all questions with equal weight) 1. If the distance between two point charges is tripled, the More information Teacher s Guide Grade Level: 9 12 Curriculum Focus: Physical Science Lesson Duration: Three class periods Program Description Examine Isaac Newton's laws of motion, the four fundamental forces of the universe, More information 1. A student wearing shoes stands on a tile floor. The students shoes do not fall into the tile floor due to (A) a force of repulsion between the shoes and the floor due to macroscopic gravitational forces. More information ch 15 practice test Multiple Choice Identify the letter of the choice that best completes the statement or answers the question. 1. Work is a transfer of a. energy. c. mass. b. force. d. motion. 2. What More information Physics 42 Lab 4 Fall 202 Cathode Ray Tube (CRT) PRE-LAB Read the background information in the lab below and then derive this formula for the deflection. D = LPV defl 2 SV accel () Redraw the diagram More information AP* Atomic Structure & Periodicity ree Response Questions KEY page 1 1980 a) points 1s s p 6 3s 3p 6 4s 3d 10 4p 3 b) points for the two electrons in the 4s: 4, 0, 0, +1/ and 4, 0, 0, - 1/ for the three More information 55 Name Date Partners LAB 6: GRAVITATIONAL AND PASSIVE FORCES And thus Nature will be very conformable to herself and very simple, performing all the great Motions of the heavenly Bodies by the attraction More information physics 111N work & energy conservation of energy entirely gravitational potential energy kinetic energy turning into gravitational potential energy gravitational potential energy turning into kinetic More information PHY115 Experiment 11 Build A Simple Electric Motor (example #1) MATERIAL This is the necessary equipment. Present any list of material in your written lab report. 1.5 V battery in series 1 ceramic magnet More information Practice Test SHM with Answers MPC 1) If we double the frequency of a system undergoing simple harmonic motion, which of the following statements about that system are true? (There could be more than one More information Curriculum Overview IB Physics SL YEAR 1 JUNIOR TERM I (2011) Resources: Gregg Kerr, Nancy Kerr, (2004) Physics International Baccalaureate, IBID Press, Victoria, Australia. Tim Kirk and Neil Hodgson Physics More information 1 What You Will Learn Explain the relationship between energy and work. Compare kinetic and potential energy. Describe the different forms of energy. Vocabulary energy kinetic energy potential energy mechanical More information Magnets and Electromagnets Magnets and Electromagnets Can you make a magnet from a nail, some batteries and some wire? Problems Can the strength of an electromagnet be changed by changing the voltage of More information Activity 2 Newton s Law of Universal Gravitation GOALS In this activity you will: Explore the relationship between distance of a light source and intensity of light. Graph and analyze the relationship More information Basic Chemistry Why do we study chemistry in a biology course? All living organisms are composed of chemicals. To understand life, we must understand the structure, function, and properties of the chemicals More information XX. Introductory Physics, High School High School Introductory Physics Test The spring 2013 high school Introductory Physics test was based on learning standards in the Physics content strand of the Massachusetts More information Roanoke Pinball Museum Key Concepts What are Pinball Machines Made of? SOL 3.3 Many different materials are used to make a pinball machine: 1. Steel: The pinball is made of steel, so it has a lot of mass. More information FORMS OF ENERGY LESSON PLAN 2.1 Introduction to Forms of Energy This lesson is designed for 3rd 5th grade students in a variety of school settings (public, private, STEM schools, and home schools) in the More information Chapter 28: MAGNETIC FIELDS 1 Units of a magnetic field might be: A C m/s B C s/m C C/kg D kg/c s E N/C m 2 In the formula F = q v B: A F must be perpendicular to v but not necessarily to B B F must be More information Electromagnetism and Circular Motion in a Cyclotron Contents p. 3 About Physics in Action Funding Availability Videos in the Physics in Action Series p. 5 Physics in Action: Electromagnetism and Circular More information Atomic Structure: Chapter Problems Bohr Model Class Work 1. Describe the nuclear model of the atom. 2. Explain the problems with the nuclear model of the atom. 3. According to Niels Bohr, what does n stand More information Chapter 13 Spectroscopy NMR, IR, MS, UV-Vis Main points of the chapter 1. Hydrogen Nuclear Magnetic Resonance a. Splitting or coupling (what s next to what) b. Chemical shifts (what type is it) c. Integration More information THIS IS A NEW SPECIFICATION H Thursday 23 May 2013 Morning GCSE TWENTY FIRST CENTURY SCIENCE PHYSICS A A181/02 Modules P1 P2 P3 (Higher Tier) *A137270613* Candidates answer on the Question Paper. A calculator More information AP PHYSICS C Mechanics - SUMMER ASSIGNMENT FOR 2016-2017 Dear Student: The AP physics course you have signed up for is designed to prepare you for a superior performance on the AP test. To complete material More information Objectives: PS-7.1 Physical Science Study Guide Unit 7 Wave properties and behaviors, electromagnetic spectrum, Doppler Effect Illustrate ways that the energy of waves is transferred by interaction with More information GenTech Practice Questions Basic Electronics Test: This test will assess your knowledge of and ability to apply the principles of Basic Electronics. This test is comprised of 90 questions in the following More information TEACHER S CLUB EXAMS GRADE 11 PHYSICAL SCIENCES: PHYSICS Paper 1 MARKS: 150 TIME: 3 hours INSTRUCTIONS AND INFORMATION 1. This question paper consists of 12 pages, two data sheets and a sheet of graph More information Adapted from State of Delaware TOE Unit MAKING SENSE OF ENERGY Electromagnetic Waves GOALS: In this Part of the unit you will Learn about electromagnetic waves, how they are grouped, and how each group More information Energy transformations Objectives Describe examples of energy transformations. Demonstrate and apply the law of conservation of energy to a system involving a vertical spring and mass. Design and implement More information Jenn Maeng Lesson overview Subject: Chemistry Grade: 10-12 Topic: Stoichiometry Concepts: Stoichiometric Conversions Essential How do we quantify changes in systems? questions: Objectives Students will More information

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