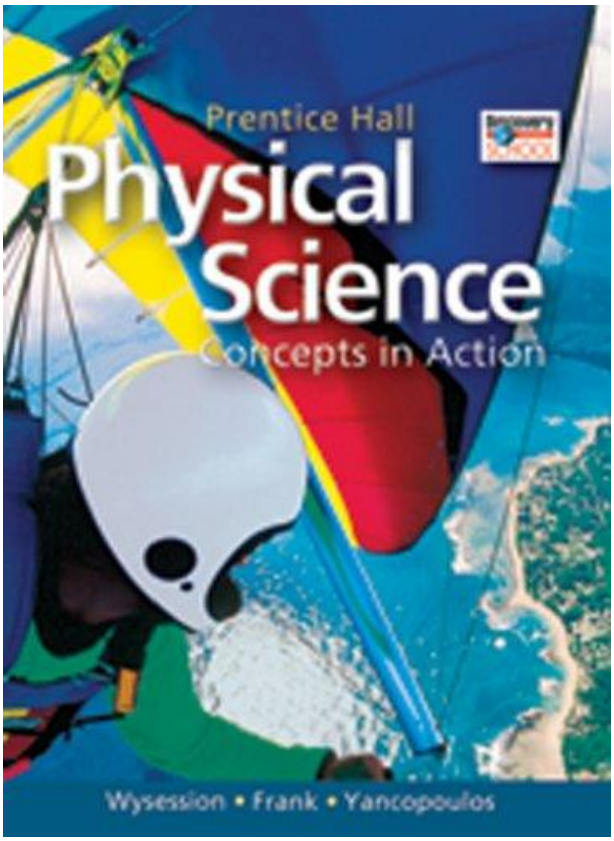
A Correlation of

Prentice Hall
Physical Science
Concepts in Action
©2011



to the

Alabama Content Standards for Physical Science

High School

A Correlation of Physical Science, Concepts in Action, ©2011
to the
Alabama Content Standards for Physical Science
High School

INTRODUCTION

This document demonstrates how ***Physical Science: Concepts in Action,* ©2011** meets the Alabama Content Standards for Physical Science, grades 9-12. Correlation page references are to the Student and Teacher's Editions.

Physical Science: Concepts in Action helps students make the important connection between the science they read and what they experience every day. Relevant content, lively explorations and a wealth of hands-on activities take students' understanding of science beyond the page and into the world around them.

21st Century Skills

Each chapter in ***Physical Science*** begins with an activity geared toward developing one or more 21st century skills. All of these activities task students to capture what they are learning in biology class and apply the knowledge to solving real-life problems in order to encourage productive, thoughtful members of the 21st century world.

Virtual Physical Science

A Pearson exclusive, this is the most robust interactive lab available. A proven formula for reading success before during, and after every lesson enables students to fully understand key concepts.

The Complete Interactive Textbook

Available online and on CD-ROM. Audio of the full text read-aloud supports English language learners and reluctant readers. PresentationEXPRESS helps you create dynamic presentations with slides, videos, and participatory activities.

A Correlation of Physical Science, Concepts in Action, ©2011
to the
Alabama Content Standards for Physical Science
High School

Alabama Content Standards for Physical Science High School	Physical Science Concepts in Action, ©2011
ALABAMA COURSE OF STUDY – SCIENCE	
PHYSICAL SCIENCE CORE – HIGH SCHOOL	
Students will:	
1. Recognize periodic trends of elements, including the number of valence electrons, atomic size, and reactivity.	**SE / TE:** 124, 126-129, 130-138, 139-145
• Categorizing elements as metals, nonmetals, metalloids, and noble gases	**SE / TE:** 135-138, 139-145
• Differentiating between families and periods	**SE / TE:** 131
• Using atomic number and mass number to identify isotopes	**SE / TE:** 110, 112
2. Identify solutions in terms of components, solubility, concentration, and conductivity.	**SE / TE:** 228-234, 235-239
• Comparing saturated, unsaturated, and supersaturated solutions	**SE / TE:** 236
• Comparing characteristics of electrolytes and nonelectrolytes	**SE / TE:** 248-249
• Describing factors that affect solubility and rate of solution, including nature of solute and solvent, temperature, agitation, surface area, and pressure on gases	**SE / TE:** 228-234, 235-239
3. Contrast the formation of ionic and covalent bonds based on the transfer or sharing of valence electrons.	**SE / TE:** 159, 160-164, 165-169
• Demonstrating the formation of positive and negative monatomic ions by using electron dot diagrams	**SE / TE:** 156, 158-159
4. Use nomenclature and chemical formulas to write balanced chemical equations.	**SE / TE:** 192-198
• Explaining the law of conservation of matter	**SE / TE:** 192-195

A Correlation of Physical Science, Concepts in Action, ©2011
to the
Alabama Content Standards for Physical Science
High School

Alabama Content Standards for Physical Science High School	Physical Science Concepts in Action, ©2011
• Identifying chemical reactions as composition, decomposition, single replacement, or double replacement	**SE / TE:** 199-204
• Defining the role of electrons in chemical reactions	**SE / TE:** 204-205
5. Describe physical and chemical changes in terms of endothermic and exothermic processes.	**SE / TE:** 86, 208-209
6. Identify characteristics of gravitational, electromagnetic, and nuclear forces.	**SE / TE:** 378-382
7. Relate velocity, acceleration, and kinetic energy to mass, distance, force, and time.	**SE / TE:** 336-337, 342-348, 356-362, 447-448
• Interpreting graphic representations of velocity versus time and distance versus time	**SE / TE:** 334, 347-348
• Solving problems for velocity, acceleration, force, work, and power	**SE / TE:** 345-346, 413-415
• Describing action and reaction forces, inertia, acceleration, momentum, and friction in terms of Newton's three laws of motion	**SE / TE:** 342-348, 356-362, 372-377
• Determining the resultant of collinear forces acting on a body Example: solving problems involving the effect of a tailwind or headwind on an airplane	**SE / TE:** 398-399
• Solving problems for efficiency and mechanical advantage of simple machines	**SE / TE:** 424-426
8. Relate the law of conservation of energy to transformations of potential energy, kinetic energy, and thermal energy.	**SE / TE:** 446-452, 453-459

A Correlation of Physical Science, Concepts in Action, ©2011
to the
Alabama Content Standards for Physical Science
High School

Alabama Content Standards for Physical Science High School	Physical Science Concepts in Action, ©2011
• Identifying the relationship between thermal energy and the temperature of a sample of matter	**SE / TE:** 475
• Describing the flow of thermal energy between two samples of matter	**SE / TE:** 475
• Explaining how thermal energy is transferred by radiation, conduction, and convection	**SE / TE:** 479-483
• Relating simple formulas to the calculation of potential energy, kinetic energy, and work	**SE / TE:** 413-414, 447-449
9. Compare methods of energy transfer by mechanical and electromagnetic waves.	**SE / TE:** 500, 533
• Distinguishing between transverse and longitudinal mechanical waves	**SE / TE:** 501-502
• Relating physical properties of sound and light to wave characteristics Examples: loudness to amplitude, pitch to frequency, color to wavelength and frequency	**SE / TE:** 514-521
10. Explain the relationship between electricity and magnetism. Example: using a moving charge to create a magnetic field and using a moving magnetic field to induce a current in a closed wire loop	**SE / TE:** 637-639
• Differentiating between induction and conduction	**SE / TE:** 479-480, 602-603
• Identifying mechanical, magnetic, and chemical methods used to create an electrical charge Examples: - mechanical—rubbing materials together, - magnetic—moving a closed loop of wire across a magnetic field, - chemical—using batteries	**SE / TE:** 601-603, 604-607

A Correlation of Physical Science, Concepts in Action, ©2011
to the
Alabama Content Standards for Physical Science
High School

Alabama Content Standards for Physical Science High School	Physical Science Concepts in Action, ©2011
• Describing electrical circuits in terms of Ohm's law	**SE / TE:** 607
11. Describe the nuclear composition of unstable isotopes and the resulting changes to their nuclear composition.	**SE / TE:** 292-293, 299-300, 304
• Identifying types of nuclear emissions, including alpha particles, beta particles, and gamma radiation	**SE / TE:** 292-297
• Differentiating between fission and fusion	**SE / TE:** 309-315
• Identifying uses and possible negative side effects of nuclear technology Examples: - uses—nuclear power generation, medical applications, space travel; - negative effects—radioactive contamination, nuclear fuel waste and waste storage	**SE / TE:** 300-301, 306-307, 311, 314
12. Identify metric units for mass, distance, time, temperature, velocity, acceleration, density, force, energy, and power.	This objective is addressed throughout. See, for example: **SE / TE:** 17-18, 20-21, 23, 334, 337, 357, 367, 368, 375, 377, 386, 414-415, 425