

Physical Science Grade 8

Text:	Pearson Education, Inc. (2005): <i>Physical Science- Science Explorer</i> , Pearson Prentice Hall: Needham, Massachusetts, Upper Saddle River, New Jersey
Supplemental Materials:	Prentice Hall All-In-One Teaching Resources Exam View, Computer Test Bank CD-ROM Teacher-made quizzes and tests
Course Description:	The students will develop a firm understanding of scientific inquiry through thinking and manipulative skills. Students will master the basic components of matter & energy through experimentation.
Methods of Evaluation:	Students will be evaluated through tests, quizzes, homework, lab activities, quarterly exams, and/or any other form of evaluation instrument the instructor finds applicable to the course.
Pace of Instruction:	First Semester: Chapters 1, 2, 3, 4, 9, 20 Second Semester: Chapters 10, 11, 12, 13, 16
Course Objectives:	<ol style="list-style-type: none">1. Explain what physical science involves.2. Identify skills that scientists use to learn about the natural world.3. Identify the properties used to describe matter.4. Define elements and explain how they relate to compounds.5. Describe the properties of a mixture6. Differentiate between weight and mass7. Identify the units used to express the amount of space occupied by matter.8. Describe how the density of a material is determined.9. Describe what a physical change is.10. Describe what a chemical change is.11. Explain how changes in matter are related to changes in energy.12. Identify forms of energy that are related to changes in matter.13. Describe how chemical energy is related to chemical change.14. Describe the characteristics of a solid15. Describe the characteristics of a liquid16. Describe the characteristics of a gas

17. Explain what happens to a substance during changes between solid and liquid.
18. Explain what happens to a substance during changes between a liquid and gas.
19. Explain what happens to a substance during changes between solid and gas.
20. List the types of measurements used when working with gases.
21. Explain how the temperature, volume and pressure of a gas are related.
22. Identify the type of relationship shown by the graph for Charles's law.
23. Identify the type of relationship shown by the graph for Boyle's law.
24. Describe how the atomic theory developed and changed.
25. Describe the modern model of the atom.
26. Tell what information about elements is found in the periodic table.
27. List the physical properties of metals.
28. Explain how the reactivity of metals change across the periodic table.
29. Describe the properties of nonmetals.
30. Explain what metalloids are.
31. Explain how the reactivity of elements is related to valence electrons.
32. Describe ions, and explain how they form bonds.
33. Describe how covalent bonds are formed.
34. Determine when an object is in motion.
35. Describe how scientist measure distance.
36. Calculate an object's speed and velocity.
37. Describe the motion of an object as it accelerates.
38. Calculate acceleration.
39. Explain how electric charges interact.
40. Explain what an electric field is.
41. Describe how static electricity builds up and transfers.
42. Explain how an electric current is produced.
43. Explain how conductors are different from insulators.
44. Describe what causes electric charges to flow in a circuit.
45. Explain how resistance affects current.

46. Explain how an electrochemical cell works.
47. Explain what Ohm's law is.
48. Describe the basic features of an electric circuit.
49. Identify how many paths currents can take in series and parallel circuits.
40. Describe what a force is.
41. Explain how balanced and unbalanced forces are related to an object's motion.
42. Describe friction, and identify factors that determine the friction force between two objects.
43. Identify the factors that affect the gravitational force between two objects.
44. Explain why objects accelerate during free fall.
45. State Newton's first law of motion.
46. State Newton's second law of motion.
47. State Newton's third law of motion.
48. Explain how an object's momentum is determined.
49. State the law of conservation of momentum.
50. Explain how a rocket lifts off the ground.
51. Describe the forces that keep a satellite in orbit.
52. Explain what pressure depends on.
53. Explain how fluids exert pressure.
54. Describe how fluid pressure changes with elevations and depth.
55. Describe the effect of the buoyant force.
56. Explain how the density of an object determines whether it sinks or floats.
57. State Pascal's principle, and recognize its applications.
58. Use Bernoulli's principle to explain how fluid pressure is related to the motion of a fluid.
59. List some applications of Bernoulli's principle.
60. Identify when work is done on an object.
61. Calculate the work done on an object.
62. Describe how energy, work, and power are related.
63. Name and describe the two basic kinds of energy.
64. Explain how an object's mechanical energy is determined.
65. Name some forms of energy associated with the particles that make up objects.
66. Describe how different forms of energy are related.
67. State the law of conservation of energy.

68. Define sound
69. Explain how sound waves interact.
70. Identify factors that affect the speed of sound.
71. Identify factors that affect the loudness of sound.
72. State what the pitch of sound depends on.
73. Explain what causes the Doppler effect.

*** Accelerated Physical Science**

The accelerated class follows basically the same curriculum as the regular class with the following exceptions:

- students must complete a Science Fair project
- supplemental activities are used from “Active Physics” published by Its About Time, Inc., Armonk, NY. This book was developed in association with the “American Association of Physic Teachers and the American Institute of Physics.
- activities included are: “Predictions”, “Sports”, “Home” and “Transportation”.