Science Standard	**Correlation** (by page numbers) Make all correlations using the teacher text. Identify only *significant* areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard.
PH.1 The student will investigate and understand how to plan and conduct investigations in which	
a) the components of a system are defined;	Included throughout the Lab manual (essentially every lab)
b) instruments are selected and used to extend observations and measurements of mass, volume, temperature, heat exchange, energy transformations, motion, fields, and electric charge;	Included throughout the Lab manual (essentially every lab)
c) information is recorded and presented in an organized format;	Included throughout the Lab manual (essentially every lab)
d) metric units are used in all measurements and calculations;	Included throughout the Lab manual (essentially every lab)
e) the limitations of the experimental apparatus and design are recognized;	Included throughout the Lab manual (essentially every lab)
f) the limitations of measured quantities through the appropriate use of significant figures or error ranges are recognized;	Included throughout the Lab manual (essentially every lab)
g) data gathered from non-SI instruments are incorporated through appropriate conversions; and	Included throughout the Lab manual
h) appropriate technology, including computers, graphing calculators, and probeware is used for gathering and analyzing data and communicating results.	Lab 3.3A, 3.4A, 4.3A, 4.4A, 5.3A, 8.2A, 9.2A, 10.1A, 10.2A,

Science Standard	**Correlation** (by page numbers) Make all correlations using the teacher text. Identify only *significant* areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard.
PH.2 The student will investigate and understand how to analyze and interpret data. Key concepts include	
a) a description of a physical problem is translated into a mathematical statement in order to find a solution;	Embedded throughout the Lab manual (essentially every lab)
b) relationships between physical quantities are determined using the shape of a curve passing through experimentally obtained data;	Lab 3.1A, 3.3A, 9.2A
c) the slope of a linear relationship is calculated and includes appropriate units;	Lab 3.1A, 3.3A
d) interpolated, extrapolated, and analyzed trends are used to make predictions; and	Lab 1.3A, 3.2A, 9.2A
e) analysis of systems employs vector quantities utilizing trigonometric and graphical methods.	8-16, 24, 125-129

Science Standard	**Correlation** (by page numbers) Make all correlations using the teacher text. Identify only *significant* areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard.
PH.3 The student will investigate and understand how to demonstrate scientific reasoning and logic. Key concepts include	
a) analysis of scientific sources to develop and refine research hypotheses;	Embedded throughout the text and student labs.
b) analysis of how science explains and predicts relationships;	Embedded throughout the text and student labs.
c) evaluation of evidence for scientific theories;	Embedded throughout the text and student labs.
d) examination of how new discoveries result in modification of existing theories or establishment of new paradigms; and	Embedded throughout the text and student labs.
e) construction and defense of a scientific viewpoint (the nature of science).	Embedded throughout the text and student labs.

Science Standard	**Correlation** (by page numbers) Make all correlations using the teacher text. Identify only *significant* areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard.
PH.4 The student will investigate and understand how applications of physics affect the world. Key concepts include	
a) examples from the real world; and	Embedded throughout the text and labs
b) exploration of the roles and contributions of science and technology.	Embedded throughout the text and labs

Science Standard	**Correlation** (by page numbers) Make all correlations using the teacher text. Identify only *significant* areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard.
PH.5 The student will investigate and understand the interrelationships among mass, distance, force, and time through mathematical and experimental processes. Key concepts include	
a) linear motion;	8-17, 23-24, 122-125, 130, 136, Lab 3.1A, 6.1A
b) uniform circular motion;	17-26, 126-128, 131-135, 137, Lab 7.2A, 8.1A
c) projectile motion;	
d) Newton's laws of motion;	12, 170-172, 328-330, 332-338, 341-345
e) gravitation;	10, 12, 48-49, 52-53
f) planetary motion; and	48-49
g) work, power, and energy.	84-94, 298-306, Lab 2.1A, 2.2A, 2.3A, 5.2A, 5.3A, 6.1A, 6.2A, 6.3A

Science Standard	**Correlation** (by page numbers) Make all correlations using the teacher text. Identify only *significant* areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard.
PH.6 The student will investigate and understand that quantities including mass, energy, momentum, and charge are conserved. Key concepts include	
a) kinetic and potential energy;	230-253, 258-261, 265-266, 272-276, Lab 5.1A, 5.2A, 5.3A
b) elastic and inelastic collisions; and	333-335
c) electric power.	262-276

Science Standard	**Correlation** (by page numbers) Make all correlations using the teacher text. Identify only *significant* areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard.
PH.7 The student will investigate and understand properties of fluids. Key concepts include	
a) density and pressure;	28-46, 95-105, 192-199, Lab 1.2A, 2.2A
b) variation of pressure with depth;	33, 44-46
c) Archimedes' principle of buoyancy;	34-36
d) Pascal's principle;	37-43
e) fluids in motion; and	138-148, 184-199, 254-258, 261, 307-315
f) Bernoulli's principle.	254-258, 261

Science Standard	**Correlation** (by page numbers) Make all correlations using the teacher text. Identify only *significant* areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard.
PH.8 The student will investigate and understand that energy can be transferred and transformed to provide usable work. Key concepts include	
a) transformation of energy among forms, including mechanical, thermal, electrical, gravitational, chemical, and nuclear; and	236-253, 258-261, 268-274, 276, 279-294, 298-323, 385, 393-403, 407-421, 470-477, 482-492, Lab 2.1A, 2.2A, 2.3A, 3.4A, 5.1A, 5.2A, 5.3A, 6.1A, 6.2A, 6.3A, 9.1A
b) efficiency of systems.	114-117, 289-291, 294, 301-302, 313-315, Lab 2.3A, 6.1A, 6.2A, 6.3A

Science Standard	**Correlation** (by page numbers) Make all correlations using the teacher text. Identify only *significant* areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard.
PH.9 The student will investigate and understand how to use models of transverse and longitudinal waves to interpret wave phenomena. Key concepts include	
a) wave characteristics (period, wavelength, frequency, amplitude and phase);	355-368, 382-383, 388-403, Lab 8.1A, 8.2A, 9.1A
b) fundamental wave processes (reflection, refraction, diffraction, interference, polarization, Doppler effect); and	369-383, 450-467, Lab 10.1A, 10.2A
c) light and sound in terms of wave models.	361-366, 375-376, 381, 390-403, Lab 8.2A, 9.1A

Science Standard	**Correlation** (by page numbers) Make all correlations using the teacher text. Identify only *significant* areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard.
PH.10 The student will investigate and understand that different frequencies and wavelengths in the electromagnetic spectrum are phenomena ranging from radio waves through visible light to gamma radiation. Key concepts include	
a) the properties and behaviors of radio, microwaves, infrared, visible light, ultraviolet, X-rays, and gamma rays; and	384-403, 422-423, Lab 9.1A
b) current applications based on the wave properties of each band.	392-403, 422-423, Lab 9.1A

Science Standard	**Correlation** (by page numbers) Make all correlations using the teacher text. Identify only *significant* areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard.
PH.11 The student will investigate and understand how light behaves in the fundamental processes of reflection, refraction, and image formation in describing optical systems. Key concepts include	
a) application of the laws of reflection and refraction;	426-449, Lab 10.1A, 10.2A
b) construction and interpretation of ray diagrams;	428-433, 436-449, 452, 455-457, 467, Lab 10.1A, 10.2A
c) development and use of mirror and lens equations; and	430-433, 439-449, Lab 10.1A, 10.2A
d) predictions of type, size, and position of real and virtual images.	428, 431-433, 442-449, Lab 10.2A

Science Standard	**Correlation** (by page numbers) Make all correlations using the teacher text. Identify only *significant* areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard.
PH.12 The student will investigate and understand how to use the field concept to describe the effects of gravitational, electric, and magnetic forces. Key concepts include	
a) inverse square laws (Newton's law of universal gravitation and Coulomb's law); and	48-49, 51-53
b) operating principles of motors, generators, transformers, and cathode ray tubes.	54-55, 62, 109-113, 116-117, 152, 156, 266-274, 276, Lab 2.2A, 2.3A, 5.1A, 5.3A, 6.2A, 6.3A

Science Standard	**Correlation** (by page numbers) Make all correlations using the teacher text. Identify only *significant* areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard.
PH.13 The student will investigate and understand how to diagram and construct basic electrical circuits and explain the function of various circuit components. Key concepts include	
a) Ohm's law;	203-204, 206-215, 218, 273, 276, 318, Lab 4.3A
b) series, parallel, and combined circuits; and	59-63, 151, 156, 207-215, 218, 266, 273, 275-276, 319, Lab 4.3
c) circuit components including resistors, batteries, generators, fuses, switches, and capacitors.	56-63, 151, 156, 207-215, 263, 266, 275-276, 322, Lab 6.3A

Science Standard	**Correlation** (by page numbers) Make all correlations using the teacher text. Identify only *significant* areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard.
PH.14 The student will investigate and understand that extremely large and extremely small quantities are not necessarily described by the same laws as those studied in Newtonian physics. Key concepts include	
a) wave/particle duality;	470-479
b) wave properties of matter;	475-476
c) matter/energy equivalence;	408-410, 418-419
d) quantum mechanics and uncertainty;	
e) relativity;	408-409
f) nuclear physics;	413-420
g) solid state physics;	
h) superconductivity; and	
i) radioactivity.	410-413, Lab 9.2A

Additional Criteria	Evidence Please provide information that will assist the reviewers in identifying support for the following criterion indicators.
1. Safe use of materials and equipment is encouraged.	**Lab Manual Instructor's Guide:** 16, 55, 59, 94, 126, 139
2. Materials emphasize the use of effective instructional practices and learning theories. • Students are guided through different approaches such as the learning cycle. • Students are provided the opportunity to conduct scientific inquiry appropriate for their age, grade, and maturity. • Concepts are introduced through concrete experiences. • Students are required to use manipulative materials during investigations and activities. • Multiple opportunities are provided for students to apply concepts. • Learning activities offer opportunities for students to revise their prior knowledge and create new knowledge. • Students are encouraged to pose questions and to identify problems, as well as propose multiple solutions and design and conduct tests of inference. • Students collect and interpret data through a variety of technologies and draw conclusions based on that data.	**Lab Manual Instructor's Guide** **TG Volume I, II, III:** ii-v

Additional Criteria	Evidence Please provide information that will assist the reviewers in identifying support for the following criterion indicators.
3. Materials present content in an accurate, unbiased manner, and are based on sound science. • Materials do not contain content errors (omissions of current content, out-of-date content, overgeneralizations, etc.). • Materials do not contain production errors (misspelled words, word omissions, incorrect answers). • Diverse groups (racial, ethnic, cultural, linguistic), males and females, people with disabilities, and people of all ages are represented appropriately. • The materials are free of non-scientific explanation.	

Additional Criteria	Evidence Please provide information that will assist the reviewers in identifying support for the following criterion indicators.
4. Materials promote student assessment as an integral part of the instructional process. • Assessment suggestions and scoring criteria for student performances on work such as lab practicals or tasks, concept maps, research projects, observation checklists, etc., are provided. • Assessment items include multiple-choice, short answer, essay and open-ended questions with charts, graphs, and diagrams imbedded within the items. • Options include techniques for assessing students' prior knowledge. • Assessment items reflect the rigor and the intent of the standards. For example, they require students to use higher order thinking skills to apply, analyze, synthesize, evaluate, and make judgments or recommendations.	**Lab Manual Instructor's Guide**: 43, 55, 68 **TG Volume I:** 26, T-144 **TG Volume II**: T-181a, 275 **TG Volume III**: T-419a, 465

Additional Criteria	Evidence Please provide information that will assist the reviewers in identifying support for the following criterion indicators.
5. Materials are presented in an organized, logical manner and are appropriate for the age, grade, and maturity of the students. • Materials are organized appropriately within and among units of study. • Format design includes titles, subheadings, and appropriate cross-referencing for ease of use. • Writing style, length of sentences, and vocabulary are appropriate. • Graphics and illustrations are appropriate. • Level of abstraction is appropriate, and real life examples, including careers are provided. • Sufficient applications are provided to promote depth of understanding.	**Lab Manual Instructor's Guide:** III-IV, 21, 64 **TG Volume I**: XI-XIX **TG Volume II**: 323, 171, 296, T-184 **TG Volume III:** 331, 425