

FORMAT FOR CORRELATION TO THE GEORGIA PERFORMANCE STANDARDS

Subject Area: Science/Grade 8 **State-Funded Course:** Science/Grade 8 (physical science)

Textbook Title: CPO Science Physical Science

Publisher: CPO Science

The GPSs for grades K-12 Science and 9-12 Mathematics may be accessed on-line at: <http://www.georgiastandards.org/>.

<u>Standard</u> (Cite Number)	<u>Standard</u> (Cite specific standard)	<u>Where Taught</u> (If print component, cite page number; if non-print, cite appropriate location.) ST = student text page; LM = lab manual page
	Students will explore the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.	ST: Chapters 1, 2, and throughout LM: Throughout the investigation manual
S8CS1.a	Understand the importance of—and keep—honest, clear, and accurate records in science.	ST: 28-29, 32, 76, 318, 340, 404, 422 LM: 3-4, 6, 9, 10, 14, 15, 17-19, 22,24, 27-30, 34, 39, 42, 47, 49-51, 53-54, 56-57, 65, 69, 73, 76, 78-80, 83-84, 94, 98, 110
S8CS1.b	Understand that hypotheses are valuable if they lead to fruitful investigations, even if the hypotheses turn out not to be completely accurate descriptions.	ST: 33, 41, 45 LM: 6-7,9-10, 19-20, 26
	Students will use standard safety practices for all classroom laboratory and field investigations.	LM: 86 - 91
S8CS2.a	Follow correct procedures for use of scientific apparatus.	ST: 11-12, 24, 46, 54, 56-57, 76, 184, 277, 294, 299, 424 LM: 1-5, 8, 13, 16-10, 23, 26, 28-29, 42-43, 49, 51-52, 56, 73, 77, 79, 88-90, 95-103, 105-108

S8CS2.b	Demonstrate appropriate techniques in all laboratory situations.	ST: 11-13, 24, 30, 35, 37, 62, 81, 86, 97, 102, 128, 132, 138, 192-193, 198, 284, 299-300, 302 LM: 2, 4-5, 7, 9, 12, 16, 28, 30, 34, 56, 78, 92, 95, 97, 101-105, 107-108 Ancillary Skillsheet: Significant Differences in Measurement
S8CS2.c	Follow correct protocol for identifying and reporting safety problems and violations.	ST: 424 LM: 28, 75, 77, 86-91
	Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.	ST: Chapters 1 and 2 and throughout LM: Throughout investigation manual Ancillary Skillsheets: Dimensional Analysis, Ratios and Proportions, Gear Ratios, Significant Differences in Measurement
S8CS3.a	Analyze scientific data by using, interpreting, and comparing numbers in several equivalent forms, such as integers, fractions, decimals, and percents.	ST: 24, 36, 42, 48, 61, 83, 86, 98, 115, 138, 184, 200, 227, 444 LM: 9, 27, 29, 50, 56
S8CS3.b	Use the mean, median, and mode to analyze a set of scientific data.	ST: 42, 44-45, 51 LM: 8-10, 18, 55, 58
S8CS3.c	Apply the metric system to a scientific investigation that includes metric to metric conversion. (i.e. centimeters to meters)	ST: 11-12, 24, 30, 35, 37 LM: 4-5, 16, 34, 79, 95, 97-98, 107-108 Ancillary Skillsheet : Significant Differences in Measurement
S8CS3.d	Decide what degree of precision is adequate, and round off appropriately.	ST: 30,42,48 LM: 16, 50, 73 Ancillary Skillsheet : Significant Differences in Measurement
S8CS3.e	Address the relationship between accuracy and precision and the importance of each	ST: 24, 29, 41, 44-45, 61-63, 184, 242, 404, 444 LM: 3,5-6, 10, 14, 20, 24, 38, 40, 49
S8CS3.f	Use ratios and proportions, including constant rates, in appropriate problems.	ST: 36, 83, 86, 98, 115, 138, 200, 227 LM: 9, 27, 29, 56 Ancillary Skillsheet : Dimensional Analysis, Ratios and Proportions, Gear Ratios

	Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities.	ST: Chapters 1, 2, and throughout LM: Throughout investigation manual
S8CS4.a	Use appropriate technology to store and retrieve scientific information in topical, alphabetical, numerical, and keyword files, and create simple files.	Ancillary Skillsheet : Using computer spreadsheets
S8CS4.b	Use appropriate tools for measuring objects and/or substances.	ST: 11-12, 24, 46, 54, 56-57, 76, 184, 277, 294, 299, 424 LM: 1-5, 8, 13, 16-19, 23, 26, 28-29, 42-43, 49, 51-52, 56, 73, 77, 79, 88-90, 95-103, 105-108
S8CS4.c	Learn and use on a regular basis standard safety practices for scientific investigations.	ST: 424 LM: 28, 75, 77, 86-91
	Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.	ST: Chapters 1 – 3 and throughout LM: Throughout investigation manual
S8CS5.a	Observe and explain how parts can be related to other parts in a system such as the role of simple machines in complex machines.	ST: 10, 22, 96-99, 129-130, 134, 219, 390 LM: 28-30
S8CS5.b	Understand that different models (such as physical replicas, pictures, and analogies) can be used to represent the same thing.	ST: 63 LM: 83
	Students will communicate scientific ideas and activities clearly.	ST: Chapters 1, 2, and throughout LM: 92 - 94 and throughout

S8CS6.a	Write clear, step-by-step instructions for conducting scientific investigations, operating a piece of equipment, or following a procedure.	ST: 102 LM: 7, 12, 92
S8CS6.b	Write for scientific purposes incorporating information from a circle, bar, or line graph, data tables, diagrams, and symbols.	ST: 29, 60-63, 76, 222, 269, 294, 340, 364, 380, 444 LM: 14-15, 17, 22, 27, 32, 92-94, 110-111
S8CS6.c	Organize scientific information using appropriate tables, charts, and graphs, and identify relationships they reveal.	ST: 48, 60-63, 76, 222, 294, 318, 340, 404, 424 LM: 3-4, 6, 9-11, 14-15, 17-19, 22, 24, 27-30, 34, 39, 42, 47, 49-51, 53-54, 56-57, 65, 69, 73, 76, 78-80, 83-84, 94, 98, 110-111
	Students will question scientific claims and arguments effectively.	ST: Throughout the student text LM: Throughout the investigation manual
S8CS7.a	Question claims based on vague attributions (such as “Leading doctors say...”) or on statements made by people outside the area of their particular expertise.	ST: 380, 424, 442, 444
S8CS7.b	Identify the flaws of reasoning that are based on poorly designed research (i.e., facts intermingled with opinion, conclusions based on insufficient evidence).	ST: 28, 32, 34, 41, 54, 430, 424, 442, 444 LM: 10, 24, 43, 80
S8CS7.c	Question the value of arguments based on small samples of data, biased samples, or samples for which there was no control.	ST: 34, 42, 45, 54 LM: 10, 24, 43, 80
S8CS7.d	Recognize that there may be more than one way to interpret a given set of findings.	ST: 24, 28-29, 41, 45, 242, 270, 404, 444 LM: 6-7, 10, 14, 20, 38, 40, 49, 58, 76, 80

	Students will investigate the characteristics of scientific knowledge and how it is achieved.	ST: Chapters 1, 2, and throughout LM: Throughout the investigation experiences
S8CS8.a	When similar investigations give different results, the scientific challenge is to judge whether the differences are trivial or significant, which often requires further study. Even with similar results, scientists may wait until an investigation has been repeated many times before accepting the results as meaningful.	ST: 24, 184, 444 LM: 5
S8CS8.b	When new experimental results are inconsistent with an existing, well-established theory, scientists may require further experimentation to decide whether the results are flawed or the theory requires modification.	ST: 24, 29, 33, 43 LM: 5
S8CS8.c	As prevailing theories are challenged by new information, scientific knowledge may change and grow.	ST: 28, 32, 325, 345, 360, 379
	Students will investigate the features of the process of scientific inquiry. Students will apply the following to inquiry learning practices:	ST: Chapters 1, 2, and throughout LM: Throughout the investigation experiences
S8CS9.a	Investigations are conducted for different reasons, which include exploring new phenomena, confirming previous results, testing how well a theory predicts, and comparing competing theories.	ST: 24, 28-29, 32-33, 43 LM: 5,13, 43, 58

S8CS9.b	Scientific investigations usually involve collecting evidence, reasoning, devising hypotheses, and formulating explanations to make sense of collected evidence.	ST: 28, 32, 270 LM: 7, 43, 58, 76, 80
S8CS9.c	Scientific experiments investigate the effect of one variable on another. All other variables are kept constant.	ST: 34,41, 45, 54 LM: 10,24, 43, 80
S8CS9.d	Scientists often collaborate to design research. To prevent this bias, scientists conduct independent studies of the same questions.	ST: 24,29, 33, 43 LM: 5
S8CS9.e	Accurate record keeping, data sharing, and replication of results are essential for maintaining an investigator's credibility with other scientists and society.	ST: 24, 29, 33, 43 LM: 5
S8CS9.f	Scientists use technology and mathematics to enhance the process of scientific inquiry.	ST: 7, 36, 42-45, 48, 61, 83, 86, 90-91, 98, 115, 122-123, 138, 184, 200, 227, 338 LM: 8-9,23,27,29,56 Ancillary Skillsheet : Dimensional Analysis, Ratios and Proportions, Gear Ratios
S8CS9.g	The ethics of science require that special care must be taken and used for human subjects and animals in scientific research. Scientists must adhere to the appropriate rules and guidelines when conducting research.	ST: 424 LM: 28, 75, 77, 86-91
	Students will examine the scientific view of the nature of matter.	ST: Chapters 1, 11 – 18 LM: 50 – 84
S8P1.a	Distinguish between atoms and molecules.	ST: 18-20, 174, 324, 329, 339 LM: 59, 62, 69-70

S8P1.b	Describe the difference between pure substances (elements and compounds) and mixtures.	ST: 20, 314, 363-364, 368, 370
S8P1.c	Describe the movement of particles in solids, liquids, gases, and plasmas states.	ST: 96, 280, 303, 310, 351, 354-355 LM: 53
S8P1.d	Distinguish between physical and chemical properties of matter as physical (i.e., density, melting point, boiling point) or chemical (i.e., reactivity, combustibility).	ST: 281, 303, 316-317, 344, 350, 357-358 LM: 52-53
S8P1.e	Distinguish between changes in matter as physical (i.e., physical change) or chemical (development of a gas, formation of precipitate, and change in color).	ST: 314, 344, 365, 367, 370, 407-408, 410, 413 LM: 71
S8P1.f	Recognize that there are more than 100 elements and some have similar properties as shown on the Periodic Table of Elements.	ST: 5, 318, 343-346, 348-353, 357, 369, 371-372, 374, 407 LM: 61, 64-68
S8P1.g	Identify and demonstrate the Law of Conservation of Matter.	ST: 411, 420 LM: 79-80
	Students will be familiar with the forms and transformations of energy.	ST: Chapters 1 and 6 LM: 26 - 30
S8P2.a	Explain energy transformation in terms of the Law of Conservation of Energy.	ST: 6-5, 10, 15-16, 31, 130-131, 134, 148-150 LM: 26-27

S8P2.b	Explain the relationship between potential and kinetic energy.	ST: 10, 130 LM: 26
S8P2.c	Compare and contrast the different forms of energy (heat, light, electricity, mechanical motion, sound) and their characteristics.	ST: 15-16, 31, 130, 132, 148, 196, 263-264, 287, 289, 290 LM: 26, 35-37
S8P2.d	Describe how heat can be transferred through matter by the collisions of atoms (conduction) or through space (radiation). In a liquid or gas, currents will facilitate the transfer of heat (convection).	ST: 18-19, 88-89, 92, 278, 283-284, 286-290, 303, 358 LM: 50-53, 74, 100
	Students will investigate relationship between force, mass, and the motion of objects.	ST: Chapters 3 – 7 LM: 11 – 34
S8P3.a	Determine the relationship between velocity and acceleration.	ST: 4,6, 34-35, 40, 54-56, 60, 64, 66-67, 73, 75-76, 94, 110, 113, 115-116, 157, 177 LM: 8-10, 13, 15, 22, 24, 27, 31
S8P3.b	Demonstrate the effect of balanced and unbalanced forces on an object in terms of gravity, inertia, and friction.	ST: 70, 72, 82, 87-102, 109-111, 113, 115-118, 120-121, 142, 156, 160, 219, 221 LM: 18-21
S8P3.c	Demonstrate the effect of simple machines (lever, inclined plane, pulley, wedge, screw, and wheel and axle) on work.	ST: 22, 135-137, 142-144 LM: 28-30
	Students will explore the wave nature of sound and electromagnetic radiation.	ST: Chapters 9 – 10 LM: 41 - 49

S8P4.a	Identify the characteristics of electromagnetic and mechanical waves.	ST: 218-221, 225, 228, 235, 250, 252 LM: 41-43, 45
S8P4.b	Describe how the behavior of light waves is manipulated causing reflection, refraction diffraction, and absorption.	ST: 46, 74-75, 257, 261-265, 270, 390 LM: 46, 48
S8P4.c	Explain how the human eye sees objects and colors in terms of wavelengths.	ST: 246, 250, 254-255, 257, 259, 332 LM: 46
S8P4.d	Describe how the behavior of waves is affected by medium (such as air, water, solids).	ST: 236 LM: 44
S8P4.e	Relate the properties of sound to everyday experiences.	ST: 223, 226-227, 233-238, 240-242 LM: 44
S8P4.f	Diagram the parts of the wave and explain how the parts are affected by changes in amplitude and pitch.	ST: 218, 220-221, 226-228, 230, 235, 237 LM: 41-45
	Students will recognize characteristics of gravity, electricity, and magnetism as major kinds of forces acting in nature.	ST: Chapters 7, 8 LM: 31 - 40
S8P5.a	Recognize that every object exerts gravitational force on every other object and that the force exerted depends on how much mass the objects have and how far apart they are.	ST: 100, 154
S8P5.b	Demonstrate the advantages and disadvantages of series and parallel circuits and how they transfer energy.	ST: 196 LM: 35-37

S8P5.c	Investigate and explain that electric currents and magnets can exert force on each other.	ST: 209, 214 LM: 40
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