InterActions In Physical Science Correlation to the New Jersey Core Curriculum Content Standards, 8th grade

STANDARD 5.1 (SCIENTIFIC PROCESSES)
All Students will develop problem-solving, decision making and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results.

Strands and Cumulative Progress Indicators	Location/Page where Standard is found
A. Habits of Mind	
1. Evaluate the strengths and weaknesses of data, claims, and arguments.	12-15, 25-27, 28-34, 36-40, 48-55, 102-106, 114-118, 137-143, 174-178, 295-297, 332, 446-447, 590-597, 621-622, 623, 636
2. Communicate experimental findings to others.	12-15, 16-24, 28-34, 56-64, 79-82, 83-86, 87-92, 137-143, 149-154, 637
3. Recognize that the results of scientific investigations are seldom exactly the same and that replication is often necessary.	8-14, 16-24, 79-82, 87-92, 114-118, 156-158, 168-173, 248-254, 290-294, 313-317, 376-379, 444-447, 510-513, 540-542
4. Recognize that curiosity, skepticism, open-mindedness, and honesty are attributes of scientists.	621-622, 623, 636-637
B. Inquiry and Problem Solving	

1. Identify questions and make predictions that can be addressed by conducting investigations.	16-24, 79-82, 87-92, 114-118, 156-158, 168-173, 248-254, 290-294, 313-317, 374-377, 442-445, 446-447, 508-511, 541-545
2. Design and conduct investigations incorporating the use of a control.	12-15, 25-27, 41-47, 56-64, 93-96, 248-254, 621-622, 623
3. Collect, organize, and interpret the data that result from experiments.	16-24, 56-64, 137-143, 149-154, 290-294, 298-301, 308-312, 318-324, 12-15, 25-27, 28-34, 36-40, 48-55, 102-106, 114-118, 174-178, 295-297, 332, 446-447, 590-597
C. Safety	
1. Know when and how to use appropriate safety equipment with all classroom materials.	611-614, 647-649, 56-64, 229, 290-294, 385-389
2. Understand and practice safety procedures for conducting science investigations.	79-82, 102-106, 14-118, 168-173, 188-190, 308-312, 374-379, 392-397, 611-614

STANDARD 5.2 (SCIENCE AND SOCIETY)

All Students will develop an inderstanding of how people of varfious cultures have contributed to the advancement of science and technology, and how major discoveries and events have advanced science and technology.

Strands and Cumulative Progress Indicators	**Location/Page where Standard is found**
A. Cultural Contributions	
1. Recognize that scientific theories: ▪ develop over time, ▪ depend on the contributions of many people, and ▪ reflect the social and political climate of their time.	446-458, 16-24, 79-82, 87-92, 114-118, 156-158, 168-173, 248-254, 290-294, 313-317, 376-379, 444-445, 510-513, 540-542

2. Know that scientists are men and women of many cultures who often work together to solve scientific and technological problems.	183, 230-232, 267, 419, 517-518, 519-522
3. Describe how different people in different cultures have made and continue to make contributions to science and technology.	182-184, 186-187, 211-212, 218-224, 237-239, 253-254, 601-607, 532-533, 588-595, 596-600
B. Historical Perspectives	
1. Develop a time lineDescribe the impact of major events and people in the history of science and technology, in conjunction with other world events.	183, 230, 231, 267, 517, 519, 528, 522
2. Describe the development and exponential growth of scientific knowledge and technological innovations.	353-362, 446-458

STANDARD 5.3 (MATHEMATICAL APPLICATIONS)

All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.

Strands and Cumulative Progress Indicators	**Location/Page where Standard is found**
A. Numerical Operations	
1. Express quantities using appropriate number formats, such as: ▪ decimals. ▪ percents. ▪ scientific notation.	615-616, 8-11, 12-15, 76-78, 79-82, 83-86, 87-92, 93-96, 102-106, 137-143, 288-289, 290-294, 298-301, 333-335
B. Geometry and Measurement	
1. Perform mathematical computations using labeled quantities and express answers in correctly derived units.	12-15, 79-82, 93-96, 102-106, 137-143, 144-154, 243-247, 270-274

C. Patterns and Algebra	
1. Express physical relationships in terms of mathematical equations derived from collected data.	79-82, 93-96, 102-106, 137-143, 144-154, 243-247, 270-274
D. Data Analysis and Probability	
1. Represent and describe mathematical relationships among variables using: ▪ graphs. ▪ tables.	12-15, 79-82, 83-86, 102-106, 137-143, 144-154, 308-312, 318-324, 333-335, 378-384
2. Analyze experimental data sets using measures of central tendency: ▪ mean. ▪ mode. ▪ median	144-154, 8-11, 12-15, 93-96, 295-297, 615-616
3. Construct and use a graph of experimental data to draw a line of best fit and identify a linear relationship between variables.	137-143, 144-154, 12-15, 308-3123, 318-324
4. Use computer spreadsheets, graphing and database applications to assist in quantitative analysis of data.	196-200, 203-206, 318-324, 464-472, 490-496, 512-516

STANDARD 5.4 (NATURE AND PROCESS OF TECHNOLOGY)
All students will understand the interrelationships between science and technology and develop a conceptual understanding of the nature and process of technology.

Strands and Cumulative Progress Indicators	**Location/Page where Standard is found**
A. Science and Technology	
1. Compare and contrast science with technology, illustrating similarities and differences between these two human endeavors.	446-453, 528-534, 333-335, 353-362, 538-540, 586-587

B. Nature of Technology	
1. Analyze a product or system to determine the problem it was designed to solve, the design constraints, trade-offs and risks involved in using the product or system, how the product or system might fail, and how the product or system might be improved.	430, 446-458, 588-595, 586-587, 569-571, 353-362, 16-24, 25-27, 28-34
C. Technological Design	
1. Recognize how feedback loops are used to control systems.	133-136, 162-167, 114-118, 255-258, 313-317

STANDARD 5.7 (PHYSICS)

All students will gain an understanding of natural laws as they apply to motion, forces, and energy transformations.

Strands and Cumulative Progress Indicators	**Location/Page where Standard is found**
A. Motion and Forces	
1. Use quantitative data to show that when more than one force acts on an object at the same time, the forces can reinforce or cancel each other producing a net (unbalanced) force that will change speed and/or direction of the object.	186-187, 188-190, 191-192, 193-195, 196-200, 201-202, 203-206, 207-209, 213-217, 243-247
2. Recognize that every object exerts a gravitational force on every other object, and that the force depends on how much mass the objects have and how far apart they are.	226-227, 228-229, 230-232, 233-235, 237-239, 240-242, 258-269, 275-282
3. Recognize that the sun is a major source of the Earth's energy and that solar energy includes visible, infrared and, ultraviolet radiation.	259-269, 313-317, 348-352
B. Energy Transformations	
1. Recognize that the sun is a major source of the Earth's energy and that solar energy includes visible, infrared and, ultraviolet radiation.	259-269, 313-317, 348-352
2. Describe the nature of various forms of energy, including heat, light, sound, chemical, mechanical, and electrical and trace energy transformations from one form to another.	577-583, 112-113, 114-118, 133-136, 156-158, 159-161, 162-167, 168-173, 175-178, 255-258, 308-312, 313-317,

	318-324, 353-362
3. Describe how heat can be conducted through materials or transferred across space by radiation and know that if the material is a fluid, convection currents may aid the transfer of heat.	308-312, 313-317, 490-496, 512-516
4. Show that light is reflected, refracted, or absorbed when it interacts with matter and that colors may appear as a result of this interaction.	336-341, 342-347, 348-352, 126-132