South Carolina State Standards Science Seventh Grade	**Reading Comprehension Series Science**	**Car Builder**	**Truck Builder**
Inquiry			
Abilities Necessary to do Scientific Inquiry		✔	✔
1. Identify Process Skills That Can Be Used In Scientific Investigations		✔	✔
Observe - observe patterns of objects and events; distinguish between qualitative and quantitative observations		✔	✔
Classify - Arrange data in sequential order; use scientific (field guides, charts, periodic tables) and dichotomous keys for classification	✔	✔	✔
Measure - select and use appropriate tools (metric ruler, graduated cylinder, thermometer, balances, spring scales, and stopwatches) and units (meter, liter, Celsius, gram, Newton, and second) to measure to the unit required in a particular situation; select and use appropriate metric prefixes to include milli-, centi-, and kilo-		✔	✔
Infer - make inferences based on observations		✔	✔
Predict - predict the results of actions based on patterns in data and experiences		✔	✔
2. Design and Conduct a Scientific Investigation	✔	✔	✔
Recognize potential hazards within a scientific investigation and practice appropriate safety procedures		✔	✔
Pose questions and problems to be investigated		✔	✔
Obtain scientific information from a variety of sources (such as Internet, electronic encyclopedias, journals, community resources)	✔	✔	✔
Distinguish and operationally define independent (manipulated) and dependent (responding) variables		✔	✔
Manipulate one variable over time with repeated trials and controlled conditions		✔	✔
Collect and record data using appropriate metric measurements		✔	✔
Organize data in tables and graphs		✔	✔
Analyze data to construct explanations and draw conclusions		✔	✔

3. Use appropriate tools and techniques to gather, analyze, and interpret data	✔	✔	✔
Select and use appropriate tools and technology (calculators, computers, probes, thermometers, balances, spring scales, microscopes, binoculars, and hand lenses) to perform tests, collect data,	✔	✔	✔
Analyze and interpret data using computer hardware and soft ware designed for these purposes		✔	✔
4. Develop descriptions, explanations, predictions, and models using evidence		✔	✔
Discriminate among observations, inferences, and predictions		✔	✔
Construct and/or model to carry out/support scientific investigations		✔	✔
5. Think critically and logically to make relationships between evidence and explanations		✔	✔
Review and summarize data to show cause-effect relationships in experiments		✔	✔
State explanations in terms of independent (manipulated and dependent (responding) variables		✔	✔
State hypotheses in ways that include the independent (manipulated) and dependent (responding) variables		✔	✔
6. Recognize and analyze alternative explanations and predictions -		✔	✔
7. Communicate scientific procedures and explanations - use drawings, written and oral expression to communicate information; create drawings, diagrams, charts, tables and graphs to communicate data; interpret and describe patterns of data on drawings, diagrams, charts, tables, graphs, and maps; create and/or use scientific models to communicate information	✔	✔	✔
8. Use mathematics in all aspects of scientific inquiry - use mathematics to gather, organize and present data; use mathematics to structure convincing explanations		✔	✔
Understanding About Scientific Inquiry			
Different kinds of questions suggest different kinds of scientific investigations - relate how the kin of question being asked directs the type of investigation conducted (observing and inventing, and making models)		✔	✔
Current scientific knowledge & understanding guide scientific investigation		✔	✔
Mathematics is important in all aspects of scientific inquiry		✔	✔
Technology used to gather data enhances accuracy and allows scientists to analyze and quantify results - compare and contrast the quality of data collected with & without technological devices		✔	✔

Scientific explanations emphasize evidence, have logical consistent arguments & use scientific principle, models & theories - discus how scientific knowledge advances when new scientific explanations displace previously accepted knowledge		✔	✔
Science advances through legitimate skepticism		✔	✔
Scientific investigations sometimes result in new ideas & phenomena for study		✔	✔
ABILITIES OF TECHNOLOGICAL DESIGN		✔	✔
1. Identify appropriate problems for technological design - identify a specific need for a product; determine whether the product will meet the needs and be used		✔	✔
2. Design a solution or product - compare and contrast different proposals using selected criteria (cost, time, trade-off and materials needed) communicate ideas with drawings and simple models		✔	✔
3. Implement a proposed design - select suitable tools and techniques to ensure adequate accuracy; organize materials, devise a plan and work collaboratively where appropriate		✔	✔
4. Evaluate completed technological designs or products - measure the quality of the product based on the original purpose or need and the degree to which it meets the needs of the users; suggest improvements and try proposed modifications to the design		✔	✔
5. Communicate the process of technological design - identify the stages of problem design: problem, solution design, implementation, and evaluation		✔	✔
UNDERSTANDINGS ABOUT SCIENCE AND TECHNOLOGY		✔	✔
1. Scientific inquiry and technological design have similarities and differences - compare and contrast scientific inquiry and technological design		✔	✔
2. Many different people in different cultures have made and continue to make contributions to science and technology - describe examples of contributions people have made to science and technology	✔		
3. Science and technology are reciprocal - explain how science and technology are essential to each other	✔		
4. Perfectly designed solutions do not exist. - discuss factors that affect product design and alter the original design; discuss risk versus benefit factors in product design		✔	✔
5. Technological designs have constraints - describe examples of constraints on technological designs; explain why constraints on technological design are unavoidable			
6. Technological solutions have intended benefits and unintended consequences		✔	✔

LIFE SCIENCE			
Unit of Study: Classification, Diversity, & Adaptations of Organisms Over Time			
Diversity and Adaptations of Organisms			
Millions of species of animals, plants, & microorganisms are alive today. Although different species might look dissimilar, the unity among organisms becomes apparent from an analysis of internal structures, the similarity of their chemical processes & the evidence of common ancestry observe, describe & examine the diversity of organisms over time, including differences & similarities based on kingdoms, phyla, classes (structure, body temperature, size, & shape)	✔		
Biological change accounts for the diversity of species developed through gradual processes over many generations. Biological adaptations, which involve the selection of naturally occurring variations in populations, enhance survival & reproductive success in a particular environment. How a species moves, obtains food, reproduces, and responds to danger are based in the species' evolutionary history -Suggest evidence of how species adapted to changes in their habitats; analyze how an adaptation can increase an organism's changes to survive & reproduce in a particular habitat (cacti needles/leaves & fur/scales); examine how natural selection increases the variations within populations	✔		
Extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient to allow its survival - determine the factors that contribute to an organism becomes extinct; explain some of the natural & human-made pressures that can cause extinction; examine ways to prevent the extinction of an organism	✔		
Fossils provide important evidence of how life & environmental conditions have changed. (Earth's history: Earth Science). Fossils indicate that many organisms that lived long ago are extinct. Extinction of species is common. Most of the species that have lived on the earth no longer exist - examine how scientists use fossils as clues to study the earth's past; observe, interpret & analyze fossilized tracks; list different types of fossils & infer how each formed (petrifaction, mold & cast, imprint); demonstrate how to determine the relative age of rocks & fossils (index fossil, oldest rock layer, & youngest rock layer); explain how scientists use technology to date rocks & fossils (radioactive dating)	✔		

The earth's processes we see today including erosion, movement of lithospheric plates, & changes in atmospheric composition, are similar to those that occurred in the past. Earth's history is also influenced by occasional catastrophes such as the impact of an asteroid or comet (Earth's History: Earth Science) - illustrate the principle of uniformitarianism (the concept that earth processes over time are consistent); explain how the geologic time scale is divided into units (era, period, & epoch); group different life forms according to the geologic time scale			
Earth			
Unit of Study: Earth and Space Systems	✔		
Earth in the Solar System	✔		
The earth is the third planet from the sun in the system that includes the moon, the sun, eight other planets & their moons, smaller objects, such as asteroids & comets (solar system) - describe features of the planets in terms of size composition, relative distance from the sun, & ability to support life; compare & contrast the Earth to other planets in terms of size, composition, relative distance from the sun, & ability to support life; describe features & explain the origins of asteroids, comets, & meteors	✔		
The sun, an average star, is central & largest body in the solar system - describe & classify the four layers of the sun's atmosphere (corona, chromosphere, photosphere, & core); evaluate how phenomena on the sun's surface affect Earth (sunspots, prominences, & solar flares); describe how the sun's solar wind affects Earth (auroras, interference in radios, & television communication)	✔		
Most objects in the solar system are in regular & predictable motion which explains such phenomena as the day, the year, phases of the moon, & eclipses - compare & contrast the earth's rotation & revolution as they relate to daily & annual changes; sequence & predict the passes of the moon (waxing, waning, crescent, new, & fully); demonstrate the arrangement of the sun, the moon & the earth during solar & lunar eclipses (including partial eclipses)	✔		
Gravity alone holds us to the earth's surface & explains the phenomena of the tides - compare & contrast the contributions of Copenicus & Galileo; diagram the relative position of the sun, the moon, & the earth during tides; examine the effect of the sun & moon on tides			
Seasons result from variations in the amount of the sun's energy hitting the surface, due to the tilt of the earth's rotation on its axis & the length of the day - analyze how the parallel rays of the sun effect the temperature of Earth & produce different amounts of healing on Earth's surface; diagram how the tilt of Earth's axis affects the seasons and the length of day; relate the seasons to the tilt of the earth and the angles of the sun's rays.			

Gravity is the force that keeps planets in orbit around the sun & governs the rest of the motion in the solar system - examine the role of gravity in keeping the sun & solar system in orbit; describe the relationship among gravity, distance & mass on orbiting bodies			
Unit of Study: Earth Processes			
Structure of the Earth System			
The solid Earth is layered with a lithosphere; hot, convecting; & dense metalic core - describe how seismic wave velocities support the existence of a layered Earth; explain the relative position, density, & composition of Earth's crust, mantle, & core; differentiate amont composition, density, & locaton of continental crust & oceanic crust; identify the lithosphere as comprised of crust & uppermost mantle, identify the asthenosphere as within the hot convecting mantle below the lithosphere; compare the physical nature of the lithosphere (brittle & rigid)			
Some changes in the solid Earth can be described as the "rock cycle." Old rocks at the earth's surface weather, forming sediments that are buried, then compacted, heated, & often recrystallized into new rock. Eventually, those new rocks may be brought to the surface by the forces that drive plate motions, & the rock cycle continues - identify & classify minerals that form rocks & explain how recrystallization of these minerals can take place; distinguish minerals by their physical properties with a dichotomous key; identify & classify common rock types based on physical characteristics (such as minerals present, grain size, banding or layering, presence of organic material); compare & contract intrusive & extrusive igneous rocks; clastic & chemical sedimentary rocks; & foliated & nonfoliated metamorphic rocks; explain how igneous, metamorphic, and sedimentary rocks are related in a			