

SCIENCE STANDARDS

Inquiry	Technology and Engineering
Cells	Interdependence
Flow of Matter and Energy	Heredity
Biodiversity and Change	The Universe
The Earth	The Atmosphere
Matter	Energy
Motion	Forces in Nature

Standard	Inquiry
What are the big ideas?	Students need to be able to select an investigation and answer a specific question. Students need to ask big questions, make predictions and plan how to investigate their questions. Students need to be able to graph data, organize data, diagrams, graphs, drawings and explain what they have investigated.
How can I help my child?	Have your children ask questions and try to solve them by setting up an experiment or researching the information. Use graphs and data. Write down the information. Use this Create- a -Graph link to make a graph about your findings.
Vocabulary Words	Senses, describe, predict, hypothesis, data, bar graph, pictograph, infer, scientist, scientific inquiry, observation
Websites for parents	Mythbusters : Solving Science Questions- http://school.discoveryeducation.com/teachers/myth-busters/ What is Science Inquiry? http://www.pwcs.edu/curriculum/sol/scientific.htm Understanding Scientific Inquiry http://www.suite101.com/content/scientific-inquiry-what-is-it-a46356 Create-a-graph http://nces.ed.gov/nceskids/createagraph/
Websites for kids	BBC Science Clips: http://www.bbc.co.uk/schools/scienceclips/ages/10_11/science_10_11.shtml

Standard	Technology and Engineering
What are the big ideas?	Recognize that tools technology and inventions are always being developed and changing because of scientific advancement. Notice how tools, technology and inventions are used to solve human problems.
How can I help my child?	Let your child explore how simple tools are used to make life easier and how everyday problems are solved with simple design. Let them take a design, such as the skateboard and make it better. Is there a problem that they could solve with a design they create? This is about the process of thinking through problem solving.
Vocabulary Words	Tools, natural, man-made, invent, products, engineer, hypothesis, results, conclusion
Websites for parents	How Stuff Works http://www.howstuffworks.com/ Inventions and how they change our lives! http://inventionsthatchangedourlives.blogspot.com/ Inventions : http://www.telegraph.co.uk/science/4981964/Top-10-inventions-that-changed-the-world.html
Websites for kids	<u>Zoom Science!</u> <i>Engineering-Design it! Activities</i> http://pbskids.org/zoom/activities/sci/#engineering Engineering for Kids http://www.biglearning.com/treasureengineering.htm

Standard	Cells
What are the big ideas?	Students need to identify the major parts of plant and animal cells and be able to compare and contrast the basic parts of a plant and animal cell.
How can I help my child?	<ul style="list-style-type: none"> • Your child needs to know that difference in animal and plant cells: cell wall, chloroplasts are two examples of the differences. How are they alike? • Draw pictures, use play doe, or things around the house to create an animal cell or plant cell.
Vocabulary Words	Plant cell, animal cell, cell wall, vacuole, nucleus, cytoplasm, cross-section, cell membrane, chloroplasts
Websites for parents	Biology for kids (this is just for your information) http://www.biology4kids.com/files/cell_main.html Bite size BBC clips: http://www.bbc.co.uk/schools/gcsebitesize/science/add_aqa/cells/cells1.shtml Comparison Visual http://waynesword.palomar.edu/lmexer1a.htm
Websites for kids	Parts of a cell Practice : http://www.footprints-science.co.uk/cells.htm view full screen Case of Mixed up Cells: http://www.beaconlearningcenter.com/WebLessons/MixedUpCells/default.htm "Cells Alive" Interactive Plants and Animal Cells: http://www.cellsalive.com/cells/3dcell.htm <i>This site goes in to deeper detail than what is needed to understand basics of cells.</i>

Standard	Interdependence
What are the big ideas?	<ul style="list-style-type: none"> • Students need to investigate different nutritional relationships among organisms in an ecosystem. Examples of these relationships would be: predator/prey, producer/consumer, and parasite/host. • Distinguish between symbiotic, commensal, parasitic relationships. • Establish the connections between human activities and natural disasters and their impact on the environment.
How can I help my child?	<ul style="list-style-type: none"> • Let students study the relationships of predator/ prey, producer/consumer, and parasite/host • Identify these relationships around the area : hawk and mouse • Know symbiotic relationships. Understand the vocabulary and be able to find examples
Vocabulary Words	<p>abiotic, biotic, ecosystem, environment, population, community, food chain, food web, producer, consumer, predator, prey, symbiosis, commensalism, mutualism, parasitism, host, natural disaster, threatened, endangered, extinct</p> <p>,</p>
Websites for parents	<p>Predator: http://idahoptv.org/dialogue4kids/season4/prey/facts.cfm</p>
Websites for kids	<p>Aquatic Ecosystems: http://studyjams.scholastic.com/studyjams/jams/science/ecosystems/aquatic-ecosystems.htm</p> <p>Video Symbiosis: http://video.nationalgeographic.com/video/player/kids/animals-pets-kids/fish-kids/fish-symbiosis-kids.html</p> <p>Video Ant and Butterfly: http://video.nationalgeographic.com/video/player/animals/bugs-animals/ants-and-termites/ant_caterpillarsymbiosis.html</p>

Standard	Flow of Matter and Energy
What are the big ideas?	Students need to demonstrate how living things depend on the process of photosynthesis to obtain energy. Compare how plants and animals obtain their energy needs.
How can I help my child?	<ul style="list-style-type: none"> • Describe the habitat of a particular organism based on the food water and shelter needs. • Look at pictures of habitats and determine how the needs of each organism are met. Examples: Plants need sun and water. Rabbits need grass and shelter. Owls need to eat mice and shelter in food.
Vocabulary Words	Predator, prey, organism, energy pyramid, herbivore, carnivore, omnivore, food chain, photosynthesis, chloroplasts
Websites for parents	Biology Background: http://www.kidsbiology.com/biology_basics/needs_living_things/living_things_have_needs1.php Energy Pyramid http://www.learner.org/courses/essential/life/session7/closer5.html
Websites for kids	Photosynthesis: http://www.youtube.com/watch?v=1gLa5EWn9OI Food Chains eWord Game: http://www.eduplace.com/kids/hmsc/activities/ewordgame/index.html?grade=3&unit=b&chapter=5 Food Chains: http://www.sciencekids.co.nz/gamesactivities/foodchains.html Food Web: Interactive Game http://teacher.scholastic.com/activities/explorer/ecosystems/be_an_explorer/map/foodweb_play.htm Energy Pyramid http://www.gould.edu.au/foodwebs/kids_web.htm

Standard	Heredity
What are the big ideas?	Students learn what complete and incomplete metamorphosis. Students are to draw conclusions about the relationship between reproduction and survival of the species.
How can I help my child?	<ul style="list-style-type: none">• Study life cycles in different organisms• Sequence pictures in order of a life cycle of a butterfly, frog, and human.• Match parents to offspring pictures
Vocabulary Words	Adult, parent, offspring, mature , family , life cycle, complete metamorphosis, and incomplete metamorphosis
Websites for parents	Gene School http://library.thinkquest.org/19037/heredity.html Metamorphosis: http://www.gadgetsscience.com/complete-and-incomplete-metamorphosis-in-insects/
Websites for kids	Match the baby animal to its mother http://www.teachnet.ie/dcorcoran/motherandbaby.htm Life Cycles: http://www-rci.rutgers.edu/~insects/lcycle.htm Metamorphosis: http://www.harcourtschool.com/activity/science_up_close/315/deploy/interface.html

Standard	Biodiversity and Change
What are the big ideas?	Students need to know that animals have features that help them survive. These are adaptations. Such as a frog's webbed feet. There are also behaviors that animals use to survive such as migration. These are behavioral adaptations. Students need to understand that fossils provide information from the past.
How can I help my child?	Look at books or other media and discuss how the animals need certain characteristics to live in their environment. Use the websites below to research extinct animals.
Vocabulary Words	Behavioral adaptations, physical adaptations, endangered, extinct, species, organism, Habitat, fossil, mimicry, trace fossils, cast fossils, mold fossils, amber, camouflage, investigate, environment , migration, hibernation, sedimentary rock
Websites for parents	Endangered and Extinct : http://www.animalport.com/extinct-animals/Extinct-Animals.html Physical and Behavioral Adaptations: http://www.nhptv.org/natureworks/nwep1.htm Fossils sites and activities http://www.valdosta.edu/~lakidd/topic.html
Websites for kids	National Geographic for Kids: http://kids.nationalgeographic.com/kids/animals/creaturefeature/ Animal Adaptations: http://www.ecokids.ca/pub/eco_info/topics/climate/adaptations/index.cfm

Standard	The Universe
What are the big ideas?	Students need to distinguish the difference between planets: appearance, size, and location. Identify tools and methods for identifying star patterns. Select information from complex data representation to draw conclusions about the planets
How can I help my child?	<ul style="list-style-type: none">• Know the planets order and appearance.• Sit outside with your child and look at the stars. Talk about patterns they may see.• Use a star chart to identify star patterns.
Vocabulary Words	solar system, universe, planet, star, constellation, moon, inner/terrestrial planets, outer/Jovian planets, asteroid belt
Websites for parents	The Night Sky http://nightskylive.net/index.php Astronomy for Kids http://www.kidsastronomy.com/solar_system.htm Star Chart http://www.kidsastronomy.com/astroskymap/
Websites for kids	School Tube Planet Facts Video http://www.schooltube.com/video/aa6417ef2569c0801379/Planet-Facts Earth, Moon and Sun http://www.bbc.co.uk/schools/ks2bitesize/science/physical_processes/earth_sun_moon/play.shtml
Children's Literature	Seymour Simon books: <u>Mars</u> , <u>Destination Jupiter</u> , <u>Earth</u>

Standard	The Earth
What are the big ideas?	Describe internal forces such as volcanoes, earthquakes, faulting and plate movements that are responsible for the earth's major geological features such as mountains, valleys, etc.
How can I help my child?	<ul style="list-style-type: none">• Identify internal forces in our world• Create a model to demonstrate forces such as a volcano, earthquake
Vocabulary Words	Earthquake, Epicenter , Fault, Continental Drift, Magnitude, Lava, Richter Scale, Plate Tectonics, Seismograph, Volcano, Magma
Websites for parents	All About Plate Tectonics: http://www.enchantedlearning.com/subjects/astronomy/planets/earth/Continents.shtml Make a Volcano http://chemistry.about.com/cs/howtos/ht/buildavolcano.htm
Websites for kids	Virtual Volcano Field Trip http://www.tramline.com/sci/volcano/ Earthquakes for Kids http://earthquake.usgs.gov/learn/kids/

Standard	The Atmosphere
What are the big ideas?	Describe the effects of the ocean on weather and climate. Explain how the mountains affect weather and climate.
How can I help my child?	Show your child how weather changes day to day by looking at the news and newspaper. Look at a map with mountain ranges and how they can affect weather and climate. Compare temperatures from Smoky Mountains to the Knoxville area.
Vocabulary Words	climate, weather, mountain affect, atmosphere
Websites for parents	Weather and Climate http://www.climateandweather.net/ Weather Wiz http://www.weatherwizkids.com/
Websites for kids	The Weather Channel http://www.theweatherchannelkids.com/weather-games/

Standard	Matter
What are the big ideas?	Students need to understand what are physical properties and chemical properties of various solids and liquids. Students need to describe the differences between melting, freezing, and evaporating. Students need to explore different types of changes to matter and the rate of changes.
How can I help my child?	Use water displacement to show that matter takes up space. Investigate how different materials freeze, melt, and evaporate.
Vocabulary Words	Matter, physical properties, chemical properties, chemical changes, physical changes, transparent, translucent, opaque, objects, solid, liquid, gas, scale, mass, volume, weight
Websites for parents	Matter Facts http://www2.mcdaniel.edu/Graduate/TI/pages/LEWIS/matterweb.htm Matter http://www.nyu.edu/pages/mathmol/textbook/4gradecover.html Vocabulary, Matter Song, Video http://teacher.scholastic.com/activities/studyjams/matter_states/
Websites for kids	Matter Games and Activities http://www.wartgames.com/themes/science/matter.html Matter Matching http://www.quia.com/mc/1204385.html Strange Matter http://www.strangematterexhibit.com/

Standard	Energy
What are the big ideas?	Students need to know the difference between potential energy and kinetic energy. Describe the difference between heat transfer of energy. Conduction-Convection-Radiation
How can I help my child?	Let your child classify heat transfer around the house into conduction, convection, and radiation.
Vocabulary Words	Light energy, heat energy, conduction. Convection, radiation, potential energy, kinetic energy, absorb, chemical energy
Websites for parents	Heat Transfer Tutorial (great for students) http://www.wisc-online.com/Objects/ViewObject.aspx?ID=SCE304 How does Heat Travel? http://coolcosmos.ipac.caltech.edu/cosmic_classroom/light_lessons/thermal/transfer.html Potential and Kinetic Energy http://www.energyeducation.tx.gov/energy/section_1/topics/potential_and_kinetic_energy/index.html
Websites for kids	Heat Transfer Rap: http://www.teachertube.com/viewVideo.php?video_id=159713 Song: http://www.kidsknowit.com/educational-songs/play-educational-song.php?song=Kinetic%20And%20Potential%20Energy Forces in Motion: http://www.bbc.co.uk/schools/scienceclips/ages/10_11/forces_action_fs.shtml

Standard	Motion
What are the big ideas?	Describe the relationship between mass, force and distance traveled.
How can I help my child?	Talk about friction working in everyday life. Ice on ground, rocky driveway vs. smooth cement
Vocabulary Words	Position, speed, acceleration, distance, mass, friction, Newton's Laws of Motion, Inertia, Mass, Force, Friction. Mass, Motion
Websites for parents	Laws of Motion- Inertia: http://www.physicsclassroom.com/class/newtlaws/u2l1b.cfm Speed Challenge http://sciencespot.net/Pages/classphys.html#Anchor-49575
Websites for kids	Motion Games for kids: http://www.wartgames.com/themes/science/motion.html

Standard	Forces of Nature
What are the big ideas?	Recognize that the Earth attracts objects without touching them. Investigate how the shape of an object influences the way it falls towards the Earth.
How can I help my child?	Let your child notice where magnets are found and identify the poles. Let them interact with the magnets. Talk with your child about lights and other electrical items. How do they work? What would happen if the circuit was broken?
Vocabulary Words	Gravity, Gravitational Pull, Force,
Websites for parents	The Earth is a Magnet : http://www.worsleyschool.net/science/files/magnet/earth/asamagnet.html Planet Earth: The Great Magnet- http://www.spaceweathercenter.org/swop/science_briefs/magnet/1.html Elephant and a Feather: http://www.physicsclassroom.com/mmedia/newtlaws/efar.cfm
Websites for kids	Gravity facts: http://www.projectshum.org/Gravity/