

OASIS Science

Check Lists of Target Based Learning Activities

OASIS Families appreciate the flexibility to cross grade level and topic lines in their Science studies, which allows multiple students at different grade levels to work on the same topic together (...and it's more fun that way!).

This document lists all State Standards for what K-8 students should know and be able to do in Science. Use this document to track Science skills and topics as your students address each over the years and across the grades.

<p>Use this column to track student progress toward Learning Targets and make notes.</p>	<p>Symbol Key: → These activities are Learning Targets and define what a student will do. Targets are reported in the 30-Day Review.</p>
	<p>Science Kindergarten and 1st Grade</p> <p>Skills Systems: → Name parts of living and non-living things → Compare parts to whole objects → Identify common objects that can be taken apart without damage and those that cannot</p> <p>Inquiry: → Ask questions about objects, organisms, and environment and look for answers → Record observations (e.g. journal, picture graph) → Explain difference between real objects and models → Report observations of simple investigations (e.g. drawings, simple sentences)</p> <p>Tools and Materials: → Use simple tools to solve simple problems → Choose material to meet a need (e.g. make a paper box to hold seeds so they won't get lost) → Apply counting, measuring and classifying skills to solve problems</p> <p>Physical Science Push-Pull and Position: → Use common terms to describe position of objects (e.g. in front of, at the side, on top of, etc.) → Demonstrate motion by moving an object → Explain difference between exerting force to push or pull and a force like that of a magnet</p> <p>Liquids and Solids: → Predict the shape water (and frozen water) will take in a variety of containers → Sort liquids and solids</p> <p>Earth and Space Science Observing the Sun and Moon: → Observe and explain the objects in the sky that change minute by minute (e.g. planes, birds, clouds) and those that change only in observable patterns (e.g. sun, moon) → Compare sun position at various times of the day → Observe moon during different times of the day and month, and draw its various shapes.</p> <p>Properties and Change: → Sort objects into groups of human made and natural → Use descriptive words to describe earth objects (e.g. soft, hard, dry, wet, heavy, light) → Use descriptors to compare/contrast objects</p> <p>Life Science Plant and Animal Parts: → Identify external parts of human body, plants, animals → Observe plant and animal parts under a magnifier and draw or describe observations → Compare how different animals get food and water → Explain how plants get water</p> <p>Habitats: → Investigate an area where many plants and animals live and describe observations → Identify characteristics of a habitat that enable growth of plants and animals → List two or more things that humans do that might harm plants and animals in a habitat → Communicate ways humans protect habitats</p>

	<p>Classify Plants and Animals:</p> <ul style="list-style-type: none"> → Use logical rules to sort objects into groups (e.g. alive and not alive) → Given a list or images, classify as plant or animal → Describe several external features of plants that can be used to classify them (size, color, shapes etc.) → Describe how pairs of plants and/or animals are similar or different from each other
	<p>Science 2nd and 3rd Grades</p> <p>Skills</p> <p>Systems:</p> <ul style="list-style-type: none"> → Give examples of living and physical system (e.g. a whole animal or plant, a car, a table and chair set, etc.) → Predict what may happen to an object, plant or animal if a part was removed → Explain how parts of a system depend on each other → Identify ways that similar parts can be used for different purposes in different systems (e.g. birds use beaks to crack seeds, some for catching fish) <p>Inquiry:</p> <ul style="list-style-type: none"> → Explain how observations can lead to new knowledge and questions → Work with a group to make and follow a plan for a scientific investigation → Distinguish between observations and inferences → Use simple instruments to investigate (e.g. scales, thermometers) → Describe results referring to a graph or other data as evidence → Draw a conclusion from evidence → Communicate about investigation and observations <p>Solving Problems:</p> <ul style="list-style-type: none"> → Design a solution to a simple problem (e.g. design a tool to remove an object from a jar) → Select appropriate tools and materials to meet goal or solve a problem → Evaluate how well a selected tool solved the problem and revise if necessary <p>Physical Science</p> <p>Forces Make Things Work:</p> <ul style="list-style-type: none"> → Give an example of motion as a change in position over time → Identify the force that starts something moving or changes its speed or direction → Give examples to illustrate that a greater force makes an object move faster than a lesser force → Measure and compare distances moved by an object with a small or big push <p>Properties of Materials:</p> <ul style="list-style-type: none"> → List several properties of an object → Sort objects by function, shape, and materials they are composed of → Compare similar objects made of different materials (e.g. a plastic and metal spoon) → Compare two objects made of same material but of different shape (e.g. metal fork and metal spoon) → Predict what will happen to a small sample of water if put in freezer, or put in a pan and heated, or left in an open container overnight <p>Forms of Energy:</p> <ul style="list-style-type: none"> → Use the word energy to explain everyday activities (e.g. food gives people energy to play games) → Give examples of different forms of energy in everyday life → Explain how light, sound and motion are all energy <p>Earth and Space Science</p> <p>The Sun's Daily Motion:</p> <ul style="list-style-type: none"> → Mark the position of shadows cast by a stick over the course of a few hours → Infer how the sun has appeared to move → Explain how shadows could be used to tell time <p>Water and Weather:</p> <ul style="list-style-type: none"> → Show how water has shaped a local landform (e.g. river, valley, Puget Sound) → Describe where water can be found on earth as liquids and solids (e.g. morning dew, oceans, ice on North Pole, etc.) → Measure and record changes in weather using a rain gauge and thermometer → Interpret graphs of weather conditions to describe how weather changes from season to season

	<p>Life Science Life Cycles: → Describe the life cycle of a plant and animal</p> <p>Changes in Ecosystems: → Identify at least four ways that ecosystems support life (e.g. fresh water, oxygen etc.) → Explain consequences of rapid ecosystem changes (e.g. flooding, snowfall etc.) → Describe a change that humans are making in a particular ecosystem and predict how that change could harm or improve conditions for a plant or animal</p> <p>Variations of Inherited Characteristics: → Give examples of variations among individuals of the same kinds of plants and animals within a population (e.g. tall and short pine trees, black cats and white cats, people with blue or brown eyes, etc.) → Compare the offspring of a plant or animal with its parents → Predict how differences in characteristics might aid survival → Observe fossils and compare them to similar plants or animals that live today → Conclude from fossil evidence that once there were species on earth that no longer live (e.g. T-Rex, trilobites)</p>
	<p>Science 4th and 5th Grades</p> <p>Skills Systems: → Identify at least one of the subsystems of an object, plant or animal (e.g. an airplane contains subsystems for propulsion, landing, and control) → Describe what goes into a system and what comes out of a system (e.g. sugar, flour and eggs go into cookie dough and cookies come out) → Predict what might happen to a system if a part in one or more of its subsystems is missing, broken, mismatched or misconnected</p> <p>Inquiry: → Identify the questions being asked in an investigation and gather evidence that helps to answer the question → Given a research question, plan an investigation which may include observations, field studies, models, open-ended explorations, or controlled experiments → Gather, record and organize data in appropriate units, tables, graphs, or maps → Create a model to represent an event, system or process → Generate a conclusion from a scientific investigation and show how the conclusion is supported by evidence → Display findings of an investigation using visuals to represent the data accurately and meaningfully → Discuss differences in findings and conclusions reported by other students → Understand that records of observations must never be changed, even when observations do not match expectations.</p> <p>Different Technologies: → Describe ways that people use technology to meet needs and wants → Give examples of how people around the world use different materials or technology to solve the same problem → Define a problem and list criteria for a solution; research the problem to better understand the need; work with others to generate possible solutions → Use suitable tools, techniques and materials to make a drawing or build a model of the proposed design; test the solution; modify if necessary → Describe several careers that require people to apply their knowledge in science, technology, engineering and mathematics</p> <p>Physical Science Measurement of Force and Motion: → Use a spring scale to measure weights of several objects accurately → Explain that weight is a measure of the force of gravity → Record measurements in a table → Measure the time it takes two objects to travel the same distance and determine which is fastest</p>

States of Matter:

- Explain that a balloon expands because blowing air into it creates greater air pressure inside the balloon than outside
- Explain that dissolved substances have not disappeared and cite evidence to determine the substance is still there (e.g. sprinkle sugar on cereal, add milk, you can still taste the sugar)
- Predict that the weight of a sample of water will be nearly the same before and after it is frozen or melted and explain why

Heat, Light, Sound and Energy:

- Identify different forms of energy (e.g. heat, light, sound, motion, electricity) in a system
- Draw and label diagrams showing several ways that energy can be transferred (e.g. sound through air, electricity through a wire)
- Demonstrate how sound can be generated by vibrations
- Connect wires to produce a complete circuit involving a battery and at least one other electrical component (e.g. light a bulb, sound a buzzer); repair an electric circuit by completing a closed loop

Earth and Space Science**Earth in Space:**

- Give evidence to support the idea that Earth is spherical in shape (e.g. images from space, shadow on moon);
- Use a physical model to show that Earth's spin causes night and day

Formation of Earth Materials:

- Describe Earth materials and list their physical and chemical properties; explain how the properties of an Earth material make it useful for certain purposes, but not for others (e.g. rocks for building walls, but not for roofs)
- Give examples of human made materials, including those that are changed only a little (e.g. wood and stones for building) and those that are changed a lot (e.g. metal, ceramics, plastics)
- Give examples of physical processes of weathering of rock; describe erosion by water and wind and identify local examples
- Explain how soil forms from weathering of rock, decay of plants, transport by air and water, deposition of sediments in rivers and lakes; explain how erosion can form and deplete soil

Focus on Fossils: describe an event that could cause the formation of a given fossil

Life Science**Structures and Behaviors:**

- Sort plants and animals according to their structures (e.g. presence of hair, feathers or scales) and behaviors (e.g. grazing, hunting); list parts of an animal's body and describe how it helps the animal meet its basic needs
- Give examples of how plants and animals respond to their environment and their internal needs (e.g. plants wilt without water, animals seek food when they are hungry)

Food Webs:

- Identify the living and nonliving parts of an ecosystem
- Explain that plants make their own food, and that animals get food by eating plants and/or other animals
- Draw a simple food web given a list of three common organisms, identify the producers and consumers; compare roles of producers and consumers and decomposers in an ecosystem;
- Describe ways humans can harm and improve the health of ecosystems

Heredity and Adaptation:

- List reasons why some populations may not survive as well as others
- Explain that plants and animals inherit many characteristics from the parents; give examples to illustrate an inherited characteristic that would enable an organism to better survive and reproduce in a given ecosystem
- Compare and contrast fossils with one another and with living plants and animals to illustrate that fossils provide evidence that plant and animal species have changed over time

Science 6th, 7th and 8th Grades

Skills

Systems:

- Given a system, identify subsystems and a larger encompassing system
- Explain how the boundaries of a system can be drawn to fit the purpose of the study (e.g. to study insects, a system might be a forest, meadow in the forest, or a single tree)
- Give an example of how output of matter or energy from a system can become input for another system
- Given a description of a system, analyze and defend whether it is open or closed; measure the flow of matter into and out of an open system
- Given a social issue with science and technology components (e.g. global warming or overfishing) describe the issue from a systems point of view, highlighting how changes in one part of the system are likely to influence other parts

Inquiry:

- Plan and conduct a scientific investigation (e.g. field study, observation, experiment, model, or simulation)
- Propose a hypothesis; explain how the experiment will test the hypothesis
- Work with others to carry out the investigation and communicate results
- Use statistical procedures (e.g. median, mean, mode) to analyze data and make inferences about relationships
- Generate a scientific conclusion from an investigation using inferential logic and distinguish between results (e.g. evidence) and conclusions (e.g. explanation)
- Provide evidence to accept or reject the hypothesis, explain the relationship between two or more variables, and identify limitations of the investigation
- Reflect and self-evaluate; demonstrate ethical concerns and precautions about investigations involving animals, research in natural ecosystems, and studies that involve human subjects

Science, Technology, and Problem Solving:

- Describe how a technology has changed over time in response to societal challenges
- Give examples of how scientists have helped solve technological problems and how engineers have aided science
- Define a problem that can be solved by technological design; collaborate with others to research solutions, test the best solution by building a model and using it with intended audience, redesign if necessary and present the design using models or drawings
- Contrast the benefits of science and technology in industrialized and developing nations

Physical Science

Force and Motion:

- Measure the distance an object travels in a given interval of time and calculate average speed using $S = d/t$
- Illustrate the motion of an object using a graph or infer the motion from a graph of the object's position vs. time or speed vs. time;
- Determine if forces on an object are balanced or not and state evidence; given two different masses that receive the same unbalanced force, predict which will move more quickly

Atoms and Molecules:

- Use characteristic intrinsic properties such as density, boiling point, and melting point to identify an unknown substance
- Separate a mixture using differences in properties of the substances used to make the mixture
- Explain that all matter is made of atoms; demonstrate with a labeled diagram and explain the relationship between atoms, molecules, elements and compounds
- Describe how solids, liquids and gases behave when put into a container
- Apply concepts of conservation of mass to predict changes in mass before and after chemical reactions in open and closed containers

Interactions of Energy and Matter:

- List different forms of energy (e.g. thermal, light, chemical, electrical kinetic, sound)
- Use everyday examples of conduction, radiation, convection, mechanical, mixing to illustrate transfer of energy from warmer to cooler objects
- Explain how insulation slows transfer of heat energy based on atomic-molecular model of heat
- Describe how to demonstrate that visible light from the sun is made up of different colors
- Draw and label a diagram that shows how objects are seen by the eye
- Describe the transformation of energy in a battery within an electric circuit;
- Compare a light wave with a sound wave by noting that both have characteristic wavelengths and light can travel through a vacuum while sound can not

Earth and Space Science**The Solar System:**

- Use a physical model or diagram to explain moon phases as observed from earth; explain the cause of a moon eclipse
- Compare relative sizes and distances of the sun, moon, planets, other moons, asteroids and comets
- Create a model to explain system of night and day, phases and eclipses
- Create a model showing Earth's position in the solar system, the Milky Way, and other galaxies

Cycles in the Earth Systems:

- Describe composition and properties of the troposphere and stratosphere
- Explain the sun's role in the water cycle
- Sketch and label major layers of Earth with approximate thicknesses of the crust, core and mantle: diagram convection and movement of crustal plates in the mantle
- Describe causes of earthquakes, tsunami, faults, mountain building using local examples; explain how a given landform has been shaped by uplift, weathering and erosion
- Identify samples of igneous, sedimentary, metamorphic rocks, their properties, and evidence of how they were formed; explain the rock cycle

Evidence of Change:

- Describe observable Earth processes of sedimentation, movement of crustal plates
- Explain how rock layers and fossils can define age of landforms; describe why younger layers of sedimentary rocks are usually on top of older layers and hypothesize what geologic events caused blocks of rock layers to be tipped or older rock to be on top of younger rock
- List several ways that organisms have shaped landforms (e.g. coral island, limestone deposits, oil and coal)

Life Science**From Cells to Organisms:**

- Draw and describe observations made with a microscope of plant and animal cells
- Describe what cells do; relate structure of specialized cells to the cell function
- Explain relationship between tissues that make up individual organs and what the organs do
- Describe the components and function of digestive, circulatory, and respiratory systems in humans
- Use classification keys to identify organisms
- Evaluate how lifestyle choices and environments affect the human body

Flow of Energy Through Ecosystems:

- Define and give examples of various ecosystems
- Analyze the flow of energy in a local ecosystem and draw a labeled food web
- Explain photosynthesis
- Explain the roles of producers and consumers
- Predict consequences to an ecosystem if nonliving factors change or if one or more populations are removed
- Investigate a local environmental issue (e.g. define the problem, research causes, understand the underlying science, evaluate benefits and risks of various solutions)
- Identify resource uses that reduce capacity of ecosystems to support various populations

Inheritance, Variation and Adaptation:

- Note evidence of how biological evolution accounts for diversity of species on Earth today
- Explain that genes in the chromosomes of each cell nucleus contain information on how cells will grow and function
- Identify sexually and asexually reproducing plants and animals
- Predict the outcome of specific genetic crosses involving one characteristic (using principles of Mendelian genetics)

- Give example of a plant or animal adaptation that would confer a survival and reproductive advantage during a given environmental change
- Given an ecosystem, predict which organisms are most likely to disappear from the environment when the environment changes in specific ways

Reading and Writing Skills through Science

6th, 7th, 8th Grade Reading in Science and Technical Subjects

Key Ideas and Details

- Gather key ideas and details from a variety of texts and summarize content objectively
- Cite specific textual evidence to support analysis of science and technical texts
- Precisely follow directions for a multi-step science experiment

Craft and Structure

- Determine meanings for symbols, key terms, and other relevant words and phrases as used in a scientific or technical context
- Analyze author's purpose in providing explanations, describing a procedure, discussing an experiment in a text

Integration of Knowledge and Ideas

- Integrate information expressed in words with a visual (e.g. in a flow chart, diagram, model, graph, table)
- Distinguish between facts, reasoned judgments based on evidence, and speculation in a text
- Compare and contrast information gained from experiments and other sources with that found in a text on the same topic

Range of Reading and Level of Text Complexity

- Read and comprehend grade-level informational text independently

6th, 7th, 8th Grade Writing in History/Social Studies, Science, and Technical Subjects

Text Types and Purposes

- Write arguments focused on discipline specific content (support claims with logical reasoning and relevant, accurate data from credible sources, provide a conclusion that supports the argument)
- Write informative texts such as narration of historical events, scientific procedures, or technical processes (introduce a topic clearly, organize ideas and information into broader categories, include visuals and multimedia to aid comprehension, provide a conclusion)
- Write in a formal style; use precise language and vocabulary from the area of research

Production and Distribution of Writing

- Writing should be clear, coherent, well organized and developed, appropriate to task, purpose and audience
- Strengthen writing as needed by planning, revising, editing, rewriting
- Use technology to produce and publish writing

Research to Build and Present Knowledge

- Conduct short research projects to answer a question, gather information from several sources, use search terms effectively, assess sources for credibility and accuracy, quote or paraphrase data and conclusions of others, avoid plagiarism
- Cite sources, include a bibliography

Range of Writing

- Write to research, compose, reflect, revise
- Write for a variety of discipline-specific tasks, purposes and audiences