Parent Guide

Grade Four Science Curriculum

Diocese of Cleveland

Below is a list of the skills your child will be taught in Grade Four.

As parents, you are encouraged to support the work of your child's teacher in helping your child acquire each of these skills.

Capacities of the Literate Individual	
	They demonstrate independence.
	They build strong content knowledge.
	They respond to the varying demands of audience, task, purpose.
	They comprehend as well as critique.
	They value evidence.
	They use technology and digital media strategically and capably.
	They come to understand other perspectives and cultures.
Scientific Process and Inquiry	
Scientific Inquiry and Application (Ohio Revised Science Standards and Model Curriculum)	
	Observe and ask questions about the natural environment.
	Plan and conduct simple investigations.
	Employ simple equipment and tools to gather data and extend the senses.
	Use appropriate mathematics with data to construct reasonable explanations.
	Communicate about observations, investigations and explanations.
	Review and ask questions about the observations and explanations of others.
Scientific Process (Diocesan Curriculum)	
	Describe the scientific process in experiments and observations and define the steps (state the problem, gather information, hypothesis, procedure, experiment, and conclusion).
	Use prior knowledge to develop a simple hypothesis.
	Explain the importance of keeping conditions the same in an experiment.
	Analyze a series of events or simple daily or seasonal cycles, describe the patterns and infer the next likely occurrence.
	Communicate findings to others through variety of methods (written, oral, or graphic representation).
Scientific Interpretation (Diocesan Curriculum)	
	Distinguish similarities and differences and interpret tables and graphs produced by self/others.
	Use carefully recorded data and/or repeated trials to understand investigations/observations.
	Communicate scientific findings through a variety of methods.
	Evaluate explanations with others to provide opportunities to question and examine evidence and suggest alternative explanations.
Scientific Tools and Safety (Diocesan Curriculum)	
	Identify and apply specific science safety procedures.
	Develop, design and conduct safe investigations or experiments to answer questions.
	Select the appropriate tools to measure and record metric and U.S. customary units (length, weight, volume, temperature and area).
Ethical Practices Reflecting Catholic Social Justice Teaching (Diocesan Curriculum)	
	Interact with living things and the environment in ways that promote respect.
	Explain why keeping records of observations and investigations is important.
	Discuss ways in which using the solution to a problem might affect other people and the environment.
	Find out more information about various careers in science.

Ethical Practices Reflecting Catholic Social Justice Teaching (Continued)	
	Illustrate that in science it is helpful to work as a team and to share findings with others.
	Explain how technology from different sources has improved human lives.
	Investigate how technology and inventions change to meet people's needs and wants.
	Use technology with gratitude and responsibility to enhance human life.
Earth and Space Science – Earth's Surface	
	Earth's surface has specific characteristics and landforms that can be identified.
	a. About 70 percent of the Earth's surface is covered with water and most of that is the ocean.
	b. Only a small portion of the Earth's water is freshwater, which is found in rivers, lakes and ground water.
	c.. Earth's surface can change due to erosion and deposition of soil, rock or sediment.
	d.. Catastrophic events such as flooding, volcanoes and earthquakes can create landforms.
	Weathering causes changes to the Earth's surface.
	a. Rocks change shape, size and/or form due to water or ice movement, freeze and thaw, wind, plant growth, gases in the air, pollution and catastrophic events such as earthquakes, mass wasting, flooding and volcanic activity.
	Erosion and deposition cause changes to the Earth's surface.
	a. Water, wind and ice physically remove and carry (erosion) rock, soil and sediment and deposit the material in a new location.
	b. Gravitational force affects movements of water, rock and soil.
Life Science – Earth's Living History	
	Changes in an organism's environment are sometimes beneficial to its survival and sometimes harmful.
	a. Ecosystems can change gradually or dramatically.
	b. When the environment changes, some plants and animals survive and reproduce and others die or move to new locations.
	c. An animal's patterns of behavior are related to the environment.
	Fossils can be compared to one another and to present-day organisms according to their similarities and differences.
	a. The concept of biodiversity is expanded to include different classification schemes based upon shared internal and external characteristics of organisms.
	b. Most types of organisms that have lived on Earth no longer exist.
	c. Fossils provide a point of comparison between the types of organisms that lived long ago and those existing today.
Physical Science – Electricity, Heat, and Matter	
	The total amount of matter is constant when it undergoes a change.
	a. When an object is broken into smaller pieces, when a solid is dissolved in a liquid or when matter changes state (solid, liquid, gas), the total amount of matter remains constant.
	Energy can be transformed from one form to another or can be transferred from one location to another.
	a. Energy transfers from hot objects to cold objects as heat, resulting in a temperature change.
	b. Electric circuits require a complete loop of conducting materials through which an electrical energy can be transferred.
	c. Electrical energy in circuits can be transformed to other forms of energy, including light, heat, sound and motion.
	d. Electricity and magnetism are closely related.
Literacy in Science & Technical Subjects – Reading Informational Text	
	Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
	Determine the main idea of a text and explain how it is supported by key details; summarize the text.
	Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
	Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.
	Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.

	Literacy in Science & Technical Subjects – Reading Informational Text (continued)
	Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.
	Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.
	By the end of year, read and comprehend informational texts, including science and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.
	Literacy in Science & Technical Subjects – Writing
	Write opinion pieces on topics or texts, supporting a point of view with reasons and information.
	Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose.
	Provide reasons that are supported by facts and details.
	Link opinion and reasons using words and phrases.
	Provide a concluding statement or section related to the opinion presented.
	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
	Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.
	Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
	Link ideas within categories of information using words and phrases (e.g., another, for example, also, because).
	Use precise language and domain-specific vocabulary to inform about or explain the topic.
	Provide a concluding statement or section related to the information or explanation presented.
	Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.
	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.
	With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.
	Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.
	Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally.
	Use dialogue and description to develop experiences and events or show the responses of characters to situations.
	Use a variety of transitional words and phrases to manage the sequence of events.
	Use concrete words and phrases and sensory details to convey experiences and events precisely.
	Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.
	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.
	With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.
	Conduct short research projects that build knowledge through investigation of different aspects of a topic.
	Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.
	Draw evidence from literary or informational texts to support analysis, reflection, and research.
	Apply grade 4 Reading standards to informational texts (e.g., "Explain how an author uses reasons and evidence to support particular points in a text").
	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Literacy in Science & Technical Subjects – Speaking and Listening	
	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
	Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.
	Follow agreed-upon rules for discussions and carry out assigned roles.
	Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.
	Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.
	Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.
	Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
	Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.
	Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion); use formal English when appropriate to task and situation.

Notes:

National Governors Association Center for Best Practices, Council of Chief State School Officers. *Common Core State Standards.* National Governors Association Center for Best Practices, Council of Chief State School Officers, Washington, D.C., 2010.