

Grade 3 ∴ Quarter 1 ∴ Earth and Space Sciences ∴ Weather and Climate

What Your Child Will Learn in Third Grade Science Quarter 1

A strong foundation in science, technology, engineering, and mathematics (STEM) will put your child on the road to success in school and beyond. Important critical-thinking skills will cultivate the great thinkers and innovators of tomorrow and promote better-educated citizens. *Next Generation Science Standards (NGSS)*- developed by teachers, scientists, and leaders in science and science education from around the country - focus on the big ideas in science and emphasize the common practices that scientists use every day. During each quarter of Third Grade, your child will participate in a unit of scientific and engineering instruction, through an inquiry-based approach. NSTA (2014). *Next Generation Science Standards, Parent Q & A: Fostering Science Learning to Last a Lifetime*.

Essential Learning throughout the unit:

- Scientists record patterns of the weather across different times and areas in order to make predictions about future weather that may occur.
- Your child will represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.
- Climate describes a range of typical weather conditions in a given area.
- Your child will obtain and combine information to describe climates in different regions of the world.
- A variety of natural hazards result from natural processes. Humans can take steps to reduce their impacts.
- Your child will make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

National Research Council. (2012). *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*. pp120-130

Vocabulary:

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|-----------------|-----------------|--------------|---------------|
| • weather | • hazard | • Fahrenheit | • thermometer |
| • climate | • bar graph | • Celsius | • anemometer |
| • meteorologist | • pictograph | • polar | • rain gauge |
| • temperature | • precipitation | • tropical | • wind vane |
| • benefit | • disadvantage | • temperate | |

Resources for Home (optional):

- <http://www.weatherwizkids.com/> A weather website for children, designed by a meteorologist
- Create a home weather station, and together track daily weather data
- Regularly watch and discuss television weather reports, or access online forecasts
- NSTA “Science Resources for Parents”: <http://www.nsta.org/parents/>
- NSTA “Tips for Busy Parents”: <http://www.nsta.org/sciencematters/tips.aspx>
- NSTA “Help Your Child Explore Science”: <http://www.nsta.org/parents/explore.aspx>

Materials to be collected:

Everyday items will often be used to support students’ scientific investigations. In this unit, we will require a large number of:

- plastic grocery bags
- empty paper towel rolls

If possible, please send in these items with your child during the start of the quarter.

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The eight *Scientific and Engineering Practices* describe the behaviors and habits of mind that are necessary to make students' knowledge of content more meaningful. The term "practices," instead of a term such as "skills," is used to stress that engaging in scientific inquiry and engineering design requires coordination both of knowledge and skill simultaneously. Acquiring skills in these practices supports a better understanding of how scientific knowledge is produced and how engineering solutions are developed. Such understanding will help students become more critical consumers of scientific information.

Practice	What This "Looks Like" for a Third Grade Student
Asking Questions (Scientist) and Defining Problems (Engineer)	• Ask questions about what would happen if a variable is changed. • Identify testable and non-testable questions • Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect
Developing and using Models	• Build and revise simple models to represent, describe, or predict events and design solutions.
Planning and Carrying Out Investigations	• Design and conduct investigations collaboratively that control variables and provide evidence, in the form of observations and/or data, to support explanations or design solutions. • Evaluate appropriate methods and/or tools for collecting data.
Analyze and Interpret Data	• Participate in quantitative approaches to collecting data and conduct multiple trials of qualitative observations, in order to make sense of phenomena, as well as evaluate and refine design solutions.
Use Mathematics and Computational Thinking	• Decide if qualitative or quantitative data are best to determine whether a proposed object or tool meets criteria for success. • Create and/or use graphs and/or charts generated from simple algorithms to compare alternative solutions to an engineering problem.
Constructing Explanations (Scientist) and Designing Solutions (Engineer)	• Identify and use appropriate evidence (e.g., measurements, observations, patterns) to construct or support an explanation or design a solution to a problem. • Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.
Engaging in Argument from Evidence	• Construct, compare, and refine arguments based on an evaluation of the evidence and data presented • Respectfully provide and receive critiques from peers by citing relevant evidence and posing specific questions.
Obtaining, Evaluating, and Communicating Information	• Evaluate the merit and accuracy of ideas and methods. • Read and comprehend grade-appropriate complex texts and/or other reliable media in order to obtain and combine information from books and/or other reliable media to form written and/or oral explanations of phenomena or solutions to a design problem.

Source: *NGSS Appendix F (2013) – Science and Engineering Practices in the NGSS*