8th Grade Family Guide

What is the purpose of this family guide?

This guide was made to help families understand the Iowa Academic Standards and to show what students will learn by the end of eighth grade. It provides information about the key ideas and skills teachers will introduce in mathematics, English Language Arts/Reading and science. It also includes possible examples of what students will be asked to do in class, how to help your student at home, questions you can ask your student and questions families can ask the teacher.

This guide was also designed to help families understand how they can work with teachers to support the learning of their eighth grader. When teachers and families work together to help students master Iowa's Academic Standards, students can develop the skills they will need for success in school and life. If you have questions about this information or if your student needs extra help, please contact the teacher.

Why are Iowa's Academic Standards Important?

Academic standards are important because they help ensure that all students, no matter where they live or what school they attend, are prepared for success in college and the workforce. The standards help set clear and consistent expectations for what students should know and be able to do from kindergarten through 12th grade.

Standards are a set of goals, not a curriculum, so decisions about teaching remain with local schools. They guide families and teachers to know when students need extra assistance or when they need more of a challenge in the classroom. They also help your student develop critical-thinking skills in preparation for college and career.

English/Language Arts

To prepare for bigger challenges in high school, students this year must grapple with major works of fiction and nonfiction that extend across cultures and centuries. As they work to understand precisely what an author or speaker is saying, students also must learn to question an author or speaker's assumptions and assess the accuracy of the claims. They also must be able to report findings from their own research and analysis of sources in a clear manner.

What might students be learning in their classroom in connection to the standards?

- Students will ask and answer questions about stories and texts read independently and summarize what happened in what was read; analyze how a text makes connections or distinctions between ideas, characters, or events; and cite specific evidence to show how they know.
- Students will determine or clarify the meaning of unknown words, synonyms, antonyms and figures of speech (irony, puns) based on how they are used in context.
- Students will make and justify a claim or argument in writing or discussion, supporting claims with precise and relevant evidence from credible sources.
- Students will show something new they have learned from a text or about a topic. This can be in any form – speaking and conversation, letters, journals, stories, diagrams, reports, or essays – and should include sufficient additional detail that fits the form they have chosen.
- Students will write in response to text, including an introduction and thesis statement; examples that are linked, logically ordered and grouped; a conclusion; and mostly accurate spelling, capitalization and punctuation.

What might my student be learning in their classroom?

- Your student will analyze where materials about the same topic disagree on matters of fact, interpretation or point of view.
- Your student will learn how authors support their ideas through word choice, sentence and paragraph structure and other methods.
- Your student will build writing around strong central ideas or points of view; support the ideas with sound reasoning and evidence, precise word choices, smooth transitions and different sentence structures.
- Your student will analyze the purpose of information presented in diverse media (e.g., print, TV, web) and evaluate its social, political or commercial motives.
- Your student will use strong, active verbs to create a clear picture for the reader (e.g., walk, skip, meander, lurch, limp).
- Your student will interpret figures of speech (e.g., irony, puns) and develop a large vocabulary of general academic words and phrases.

What can I do to support my student at home?

- Make time in everyone's busy schedule for family discussions about things happening around the world. Weekends can be a chance for everyone to catch up.
- Visit the campus of a local college with your teen. Begin talking about college early. What does he or she expect from college? What high school courses will your student need to pass to prepare for college?
- Keep books and magazines around the house that your student will enjoy reading and learning from.

What questions can I ask my student about the learning happening at school?

- Tell me about the plot development of the book you are reading.
- What is the (claim, evidence, reasoning) the writer has given for that (opinion, information)?
- Show me how you are reading this text closely in order to use the most important evidence for your answers.
- What is a word that is similar to the word you just used that might expand upon or more clearly state what you are saying?
- What is the meaning of this (idiom, pun, other figures of speech)?
- What are you writing about in school? Consider ideas to help your student improve the writing with stronger word choice, organization, strong transitions, strong sentence structure, etc.

What questions can I ask my student's teacher?

- How would you prefer me to respond if my student is struggling in class?
- What are the most important and complex ideas my student needs to understand by the end of the year?
- What one thing should I help my student improve and work on?
- Is there technology you'd recommend that can help support my student's learning?
- How is my student succeeding with communicating in class while speaking or writing? How can I offer support?

Mathematics

Eighth grade is a pivotal year in mathematics, as students deepen their understanding of algebraic thinking and begin exploring more advanced concepts such as linear equations, functions and geometry. This year builds the foundation for success in high school mathematics, including Algebra and Geometry. Your support and encouragement at home are key to helping your student feel confident and capable in these new challenges.

What might students be learning in their classroom in connection to the standards?

- **Linear Equations and Systems**: Solving linear equations and systems of equations with multiple methods, such as graphing, substitution and elimination.
- **Functions:** Understanding functions as relationships between inputs and outputs and interpreting graphs.
- **The Number System:** Working with irrational numbers and approximating square roots.
- **Geometry:** Understanding congruence and similarity through transformations, solving problems involving the Pythagorean Theorem and working with volume of cylinders, cones and spheres.
- **Statistics and Probability:** Analyzing scatter plots, interpreting patterns of association and using data to make predictions.

What might my student be learning in their classroom?

- Solving multi-step equations and understanding how they represent real-world situations.
- Exploring linear relationships and graphing them to make connections between equations and visual representations.
- Investigating geometric transformations, such as rotations, translations, reflections and dilations.
- Applying the Pythagorean Theorem to solve real-world and mathematical problems.
- Analyzing and interpreting data to understand trends and make predictions.

What can I do to support my student at home?

- Encourage your student to explain how they solved math problems and share their thinking.
- Use everyday scenarios, like budgeting or comparing rates, to reinforce concepts of linear equations and systems.
- Explore geometric concepts through hands-on activities, like measuring objects or drawing transformations.
- Discuss examples of data and trends in news articles or sports statistics to connect math to real life.
- Practice estimating and approximating square roots together to reinforce their understanding of irrational numbers.

What questions can I ask my student about the learning happening at school?

- What kinds of problems are you solving with linear equations?
- Can you explain a function you worked with in class today?
- What have you learned about transformations in geometry?
- How does the Pythagorean Theorem help solve problems?
- What kind of data or graphs have you been analyzing in class?

What questions can I ask my students' teacher?

- How is my student doing with solving equations and understanding functions?
- What are the most important skills they need to master for high school math?
- Are there specific tools or activities to help them with geometry or statistics?
- How can I support their problem-solving skills and confidence in math?

Science

The Iowa Academic Standards for Science empower teachers to provide all students in eighth grade with engaging science instruction that emphasizes data analysis and interpretation, critical thinking, problem solving and interdisciplinary connections—all while maintaining high expectations for academic achievement.

The science standards work in harmony with English/Language Arts and mathematics standards, allowing classroom instruction to better reflect real-world problem-solving, which often draws on multiple disciplines. Additionally, these standards aim to ensure all students have access to an equitable, high-quality science education.

What might students be learning in their classroom in connection to the standards?

The Iowa Academic Standards for Science incorporate the most current research and developments in modern science. To prepare students to think critically, analyze information and solve complex problems, the standards are structured to allow students—starting in elementary school and continuing through high school—to build on prior knowledge and skills. Key concepts are revisited and deepened over time, helping students strengthen their understanding of connections across scientific disciplines. Parents should be aware that while some content may seem familiar, the way it is taught may differ from their own school experience.

During the late elementary and middle school years, many students begin to form preferences and interests that shape their educational paths. More than any other stage, these formative years are critical for determining whether a student will pursue an interest in STEM. A strong foundation in science education, paired with encouragement from parents, can help students develop a sense of themselves as scientific thinkers—curious, analytical and capable problem-solvers. This self-perception not only supports future success in STEM fields but also fosters essential skills that will benefit them in any career they choose.

What might my student be learning in their classroom?

Each year, students are expected to show increased ability to connect knowledge across the physical sciences, life sciences, Earth and space sciences and engineering design. In eighth grade your student will continue developing these connections by exploring concepts and skills such as understanding relationships between objects, planning and conducting investigations and constructing explanations.

The Iowa Academic Standards for Science are set in a grade-specific sequence that integrates all of the science disciplines into every year. In order for students to fully make sense of a phenomena, they often need to draw on ideas from chemistry, biology and earth science all at once. By sequencing standards in an integrated manner, teachers are encouraged to use various relevant concepts when planning their lessons, promoting student efforts at sensemaking that draw on all of their experiences.

What can I do to support my student at home?

Parents play a vital role in supporting their student's science learning at home, especially when aligned with the Iowa Academic Standards for Science. The vision in the standards emphasizes three-dimensional learning, which integrates disciplinary core ideas (what scientists know), science and engineering practices (what scientists do) and crosscutting concepts (how scientists think). At home, parents can nurture curiosity by encouraging students to ask questions about the world around them and helping them explore possible answers through observation, discussion and hands-on investigation. Everyday activities—like cooking, gardening, fixing things, or observing weather patterns—can be opportunities to engage in these practices in meaningful, relevant ways.

Sensemaking is another key element of effective science learning, and parents can support it by prompting their students to explain their thinking, connect new ideas to their prior knowledge and revise their understanding as they gather more evidence. Rather than giving immediate answers, parents can ask open-ended questions like, "What do you think is happening here?" or "What makes you say that?" This helps students build confidence in using reasoning and evidence to make sense of phenomena. By creating a supportive environment that values questioning, exploration and reflection, parents help reinforce the goals of three-dimensional science education and foster deeper, long-lasting scientific understanding.

What questions can I ask my student about the learning happening at school?

- How do atoms combine, interact and transform to create the world around us and what evidence can we observe to make sense of these microscopic processes?
- How are the traits of a species passed along within a population due to their environment?
- How do our choices in creating and using materials affect our planet's health and what evidence-based solutions can we develop to balance human needs with environmental sustainability?

What questions can I ask my student's teacher?

- What kinds of phenomena is my student going to be making sense of this year?
- How is my student going to be engaging with the practices of science?