High School

MY CHILD'S LEARNING:

a Parent's Guide to the Iowa Core

This guide provides an overview of what your child will learn in high school as directed by the Iowa Core, our statewide academic standards. The guide focuses on key concepts and skills in mathematics, literacy, science, social studies and 21st Century skills. In addition, the Iowa Core builds a strong foundation for success in other subjects the student studies throughout the school year. If your child meets the expectations outlined in the Iowa Core, he or she will be well prepared for success after graduation.

Why are 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. They 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.

High standards help teachers and parents work together to ensure students succeed. They guide parents and teachers to know when students need extra assistance or when they need more challenge in the classroom. They also help your child develop critical-thinking skills that will prepare him or her for college and career.

IOWA DEPARTMENT OF EDUCATION

Iowa CORE

Content adapted from the National PTA's *Parent's Guide to Student Success.*

How are the standards organized?

Some of the Iowa Core standards are arranged grade-by-grade, while others are grouped into a span of grade levels. In all cases, the standards set appropriate expectations for what students need to learn, but not how to teach.

- Literacy and mathematics: These standards are arranged grade-by-grade for kindergarten through 8th grade. For high school, literacy standards are arranged by grade span (9-10 and 11-12) and math standards are arranged by subject, such as algebra and geometry.
- Science, social studies, and 21st century skills: These standards are arranged in grade spans of K-2, 3-5, 6-8, and 9-12.

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Mathematics

Your child will study mathematics across a broad spectrum, from pure mathematics to real-world applications. Numerical skill and quantitative reasoning remain crucial as students move forward with algebra. Algebra, functions and geometry are important not only as mathematical subjects, but also because they are the language of technical subjects and the sciences. In a data-rich world, statistics and probability offer powerful ways of drawing conclusions from data and dealing with uncertainty. Mathematics will be used to creatively analyze a real-world situation, which is sometimes called "mathematical modeling." There are six major content areas: Number and Quantity; Algebra; Functions; Modeling; Geometry; and Statistics and Probability.

Examples of Your Child's Work at School:

NUMBER AND QUANTITY

- Work with rational and irrational numbers that include rational exponents (e.g., rewriting $(5^3)^{1/2}$ as $5\sqrt{5}$).
- Solve problems with a wide range of units and solve problems by thinking about units (e.g., "The Trans-Alaska Pipeline System is 800 miles long and cost $8 billion to build. Divide one of these numbers by the other. What is the meaning of the answer?"; "Greenland has a population of 56,700 and a land area of 2,175,600 square kilometers. By what factor is the population density of the United States, 80 persons per square mile, larger than the population density of Greenland?").

ALGEBRA

- Solve real-world and mathematical problems by writing and solving nonlinear equations, such as quadratic equations ($ax^2 + bx + c = 0$).
- Interpret algebraic expressions and transform them purposefully to solve problems (e.g., while solving a problem about a loan with interest rate r and principal P, see the expression P(1+r)n as a product of P with a factor not depending on P).

FUNCTIONS

- Analyze functions algebraically and graphically, and work with functions presented in different forms (e.g., if given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum).
- Work with function families and understand their behavior (such as linear, quadratic and exponential functions).

MODELING

- Analyze real-world situations by using mathematics to understand the situation better and optimize, troubleshoot or make an informed decision (e.g., estimate water and food needs in a disaster area, or use volume formulas and graphs to find an optimal size for an industrial package).

GEOMETRY

- Prove theorems about triangles and other figures (e.g., the angles in a triangle add to 180^o).
- Solve applied problems that involve trigonometry of right triangles.
- Use coordinates and equations to describe geometric properties algebraically (e.g., write the equation for a circle with given center and radius using Pythagorean Theorem).

STATISTICS AND PROBABILITY

- Make inferences and justify conclusions from sample surveys, experiments and observational studies.
- Work with probability and use ideas from probability in everyday situations (e.g., compare the chance that a person who smokes will develop lung cancer to the chance that a person who develops lung cancer smokes).

How to Help Your Child at Home:

- Please refer to the examples as identified within each of the six major content areas above.

English Language Arts & Literacy

To become ready for college and career, high school students work independently and confidently to learn to evaluate intricate arguments and surmount the challenges posed by complex written materials. Students expand their literary and cultural knowledge and better understand references and images by reading literature and literary nonfiction of increasing sophistication. They also develop the flexibility, concentration, and fluency to produce high-quality first drafts of writing under tight deadlines. They are able to revisit and make improvements to a piece of writing over multiple drafts if needed. High school students master the essential "rules" of standard written and spoken English and resolve usage issues by consulting style and usage guides. By writing and participating in a variety of conversations, they assert and defend claims and show their knowledge of a subject by using appropriate examples and evidence.

Examples of Your Child's Work at School:

READING

- Understand more from, and make fuller use of, written materials that include using a wider range of evidence to support an analysis.
- Make more connections about how complex ideas interact and develop within a book, essay or article.
- Evaluate arguments and specific claims; assess whether the reasoning is valid and the evidence is sufficient; and detect inconsistencies and ambiguities when appropriate.
- Analyze the meaning of foundational U.S. documents (the Declaration of Independence, the Preamble to the Constitution, the Bill of Rights).

WRITING

- Make an argument that is logical, well-reasoned and supported by evidence.
- Write a literary analysis, report or summary that develops a central idea and a coherent focus, and is well-supported with relevant examples, facts and details.
- Conduct several research projects that address different aspects of the same topic by using more complex books, articles and other sources.

SPEAKING AND LISTENING

- Respond thoughtfully to diverse perspectives; synthesize comments, claims and evidence made on all sides of an issue; and resolve contradictions when possible.
- Share research, findings and evidence clearly and concisely.
- Make strategic use of digital media (animations, video, websites, podcasts) to enhance interest in, and understanding of, findings.

LANGUAGE

- Determine or clarify the meaning of words and phrases by using multiple strategies such as using context, Greek and Latin roots (bene as in benefactor or benevolent), patterns of words (conceive, conception, conceivable), and consulting specialized reference materials (dictionary, glossary, thesaurus).
- Interpret figures of speech (hyperbole, paradox) in context and analyze their role in the written materials.

How to Help Your Child at Home:

- Talk to your child's teacher regularly and ensure that the teacher and your child have a good relationship.
- Set high expectations for your child's learning. Look up college requirements for English language arts/literacy at the college of your child's choice. Make sure he or she is taking any necessary courses in this area.
- Help your child make connections between English language arts/literacy and college and career readiness.

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Science

Students are able to develop sophistication in their understanding of science content. They understand that experiments are guided by questions and are performed to test ideas. The methods used for investigation vary depending upon the content area and the question being asked.

Examples of Your Child's Work at School:

- Actively participate in scientific investigations using the cognitive and manipulative skills associated with the formation of scientific explanations. (Science Inquiry)
- Students move among three domains of thought: the macroscopic world (observable phenomenon), the microscopic world (molecules, atoms and subatomic particles), and the symbolic world (chemical formulas, equations and symbols). (Physical Science)
- Students incorporate more abstract knowledge, such as the structure and function of DNA, and more comprehensive theories. (Life Science)
- Students focus on matter, energy, crustal dynamics, cycles, geochemical processes and the expanded time scales necessary to understand events in the Earth's system. (Earth and Space)

How to Help Your Child at Home:

- Encourage the application of concepts that are being learned in school to real-world situations. (e.g., Where are Newton's three laws in action? What chemistry applications are found in the home?).
- Explore new places and opportunities as a family. Model lifelong learning.
- Analyze science-related current events.
- Use science process skills to analyze information and make informed decisions. Talk through this process as decisions are made.

Social Studies

In 9th through 12th grade, students will learn more about the specific disciplines within social studies (civics, behavioral sciences, history, economics and geography). Students also will learn more about themselves and others to begin to understand how to engage in the greater world. At the 9th through 12th grade level, the Iowa Core essential skills and concepts in social studies are generally addressed within discipline-specific courses.

Examples of Your Child's Work at School:

- Predict the impact that specific social issues might have on an individual and society.
- Analyze the relationship between supply and demand and how these concepts influence individual consumer decisions.
- Explain how human and physical geography can influence historical patterns and current developments.
- Understand multiple perspectives and historical accounts when crafting an argument from primary source material.
- Engage in conversations about important political topics in order to take part in important local, state and national discussions.

How to Help Your Child at Home:

- Encourage your child to read every day, and especially seek out rich non-fiction materials related to social studies.
- Discuss current issues and how these issues relate to history, geography, civics, economics, and behavioral sciences.
- Ask your child what he or she is learning in social studies and encourage your child to apply his or her understandings to important issues in the greater community.
- Encourage your child to participate in programs such as National History Day, We the People, mock trial, etc., to help him or her apply classroom learning to the world outside of school.

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21st Century Skills

In 9th through 12th grade, students continue to expand their knowledge of fitness and nutrition concepts by developing and monitoring personal fitness plans. They will explore public health policies, national and global financial issues, and evaluate how their families and communities are affected. Students will participate in the community through service projects, job-shadowing or being a mentor/mentee. Some will participate in work-study programs. Your child will study 21st Century skill concepts in discipline-specific coursework, such as anatomy and physiology, family and consumer science courses, or science, technology, engineering and math (STEM) courses.

Examples of Your Child's Work at School:

- Evaluate the impact of media, technology, research and medical advances on health.
- Identify and analyze a national issue, and propose a response from Congress that would be in the public interest.
- Apply technology to curriculum-specific tasks.(e.g., use geospatial tools to map and analyze real-world issues).
- Demonstrate efficient use of time that includes the ability to segment tasks, make appropriate estimates of time, build timelines and prioritize tasks/steps.
- Compare and contrast offers of credit cards and instant loan and introductory offers, including low-rate introductory, fixed-rate and start-up fees.

How to Help Your Child at Home:

- Help your teen find books with health content (fiction and nonfiction) from www.ala.org/yalsa/booklists/bbya; encourage and discuss daily reading and discussion of the content.
- Help your child access such books as *If Money Could Shout* (a graphic novel with cause-effect consequences of decision-making) by Paul Nourigat and *Inventions of the Future: Technology You Never Knew Existed* by Charlie Hartman.
- Visit www.practicalmoneyskillsforlife.com.
- Introduce your teen to processes such as registering to vote; buying auto, health or life insurance; volunteering; or applying for a job through discussion and/or participation.

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