



# North Dakota Academic Content Standards What Parents Need to Know

This guide provides an overview of what your child will learn by the end of high school in Math. It focuses on the key knowledge and skills your child will learn in this subject, which will build a strong foundation for success in the other subjects he or she studies throughout the school year. By the end of high school, your child will learn and refine the skills that will be necessary for success in career-training programs, community colleges, universities, and ultimately the workforce.

## What are the North Dakota Academic Standards?

The North Dakota Academic Standards, were analyzed, annotated, and approved by North Dakota teachers and community leaders, and are based on the Common Core State Standards. The North Dakota Academic Standards set clear and consistent expectations for students, parents, and teachers on the knowledge and skills our students will learn in school. If your child meets the expectations outlined in these standards, he or she should be well prepared for college or a career beyond high school.

Setting standards for what students should know at the end of each year is important because it helps ensure that when students are ready to move to the next

## HIGH SCHOOL MATH

grade level or when they might be falling behind, allows schools and parents to help students catch up rather than give up. The North Dakota Academic Standards provide an important first step — a clear roadmap for learning for teachers, parents, and students. Having clearly defined goals helps families and teachers work together to ensure that students succeed.

In addition to setting academic goals, the North Dakota Academic Standards emphasize the ability to collaborate and communicate effectively. These skills will help your child gain the critical thinking and problem-solving skills that are valuable in life, both in relationships and in the workplace.

## What is my child learning this year?

Numerical skill and quantitative reasoning remain crucial even as students move forward with algebra. Algebra, functions, and geometry are important not only as mathematical subjects in themselves but also because they are the language of technical subjects and the sciences. Also in a data-rich world, statistics and probability offer powerful ways of drawing conclusions from data and dealing with uncertainty. The high school standards also emphasize using mathematics creatively to analyze real-world situations — an activity sometimes called “mathematical modeling.”

The following is a sample of what your child will be learning this year. Use this list with your child’s teacher to set goals and identify when your child needs help or a greater challenge. You can also talk to your child’s teacher about how you can supplement your child’s learning at home.



## Number and Quantity

- Work with rational and irrational numbers, including work with rational exponents (e.g., rewriting  $(5^3)^{1/2}$  as  $5^{3/2}$ ).
- Solve problems with a wide range of units and solve problems by thinking about units.

## 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., in solving a problem about a loan with interest rate  $r$  and principal  $P$ , seeing 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., 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 using mathematics to understand the situation better and optimize, troubleshoot, or make an informed decision (e.g., estimating water and food needs in a disaster area, or using volume formulas and graphs to find an optimal size for an industrial package).

## Geometry

- Prove theorems about triangles and other figures (e.g., that the angles in a triangle add to 180°).
- Use coordinates and equations to describe geometric properties algebraically.
- 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., comparing the chance that a person who smokes will develop lung cancer to the chance that a person who develops lung cancer smokes).

## Help Your Child Learn at Home

As your children get older, it is critical to continue to stay engaged in their education. You can stay engaged by asking questions and ensuring your student is completing his work on time. Here are some examples of questions to ask your child's teacher or counselors:

1. Is my child attending class regularly and on time?
2. Can I see examples of her work?
3. Is my student on track to complete this class successfully?
4. Is my student making sufficient progress toward her academic goals?
5. Is my student on track to graduate prepared for college and career?

## What resources are available to help my child?

**Be A Learning Hero**—Contains helpful tips for families and resources in math and English language arts that can be used at home to support students.

» [www.bealearninghero.org/](http://www.bealearninghero.org/)

**Great Schools Videos:** Watch grade-level and content-specific videos of learning in action.

» [www.greatschools.org/gk/milestones](http://www.greatschools.org/gk/milestones)

**Scholastic Parent Page**—Offers book recommendations, homework help, and more to make learning fun.

» [www.scholastic.com/parents](http://www.scholastic.com/parents)

**Parent Toolkit** – This toolkit will help you navigate your child's journey from pre-kindergarten through high school. It is designed to help you track and support progress at each stage

» [www.parenttoolkit.com](http://www.parenttoolkit.com)

**North Dakota Academic Content Standards** – North Dakota's Academic Content Standards are available in English and Math as well as other subject areas.

» [www.nd.gov/dpi/students-parents/standards/](http://www.nd.gov/dpi/students-parents/standards/)