

FLORIDA'S BENCHMARKS FOR EXCELLENT STUDENT THINKING STANDARDS

Mathematics for College Algebra

The Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards for Mathematics are the state's mathematical standards that pave the way for Florida students to receive a world-class education and prepare them for a successful future.

Education leaders from across the state came together to develop Florida's B.E.S.T. Standards for Mathematics. These standards and benchmarks are goals that students are expected to achieve by the end of the school year. A standard is an overarching criterion for a grade level or grade band. A benchmark is a specific expectation or skill for the grade level or grade band that falls within a standard. The B.E.S.T. Standards are designed to ensure that ALL students reach their greatest potential.

THESE STANDARDS WERE WRITTEN TO:

Provide clarity on the grade-level expectations for educators, parents and students.

Allow students flexibility to solve problems using a method/strategy of their choice.

Allow for student discovery (i.e., exploration) of strategies rather than the teaching, naming and assessing of each strategy individually.

Preparing your student for success begins in Kindergarten and continues as your child progresses through each mathematics course. This guide will support parents, guardians and families with students in Math for College Algebra by helping them:

- **LEARN** about the B.E.S.T. Standards for Mathematics and why they matter for your student.
- **UNDERSTAND** important educational (academic) words that you will see in your student's grade-level standards and benchmarks.
- **TALK** with your student's teacher about what they will be learning in the classroom.
- **LOCATE** activities and resources to support your student's learning in practical ways at home.



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Learn About the Math for College Algebra Standards

This table describes the areas of emphasis within Math for College Algebra and provides examples of specific expectations within each area of emphasis. The purpose of the areas of emphasis is not to provide detailed guidance for specific units of learning and instruction, but rather provide insight on major mathematical topics that will be covered within the mathematics course.

Area of Emphasis	Examples
Developing fluency with the Laws of Exponents with numerical and algebraic expressions.	Generate equivalent expressions involving rational and radical exponents and the properties of logarithms and exponents.
Extending arithmetic operations with algebraic expressions to include rational and polynomial expressions.	- Given a mathematical or real-world context, add, subtract, multiply and divide rational expressions. - Given a mathematical or real-world context, add, subtract, multiply and divide polynomial expressions.
Solving one-variable exponential, logarithmic, radical and rational equations, and interpreting the viability of solutions in real-world contexts.	- After solving, determine if solutions are viable in terms of the context and identify any extraneous solutions. - After solving, determine whether solutions satisfy constraints in terms of the context.
Modeling with and applying linear, quadratic, absolute value, exponential, logarithmic and piecewise functions and systems of linear equations and inequalities.	- Represent and graph mathematical and real-world problems that are modeled with these functions. - Interpret key features and determine constraints in terms of the context.
Extending knowledge of functions to include inverse and composition.	- Determine whether an inverse function exists by analyzing tables, graphs and equations. - Represent the inverse of a function algebraically, graphically or in a table. Use composition of functions to verify that one function is the inverse of the other.

B.E.S.T. Instructional Guide for Mathematics

The B.E.S.T. Instructional Guide for Mathematics (B1G-M) is intended to assist educators with planning for student learning and instruction aligned to Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards. This guide is designed to aid high-quality instruction through the identification of components that support the learning and teaching of the B.E.S.T. Mathematics Standards and Benchmarks. The B1G-M can be utilized by parents, guardians and families to support learning at home through the Instructional Strategies section.

This document is posted on the B.E.S.T. Standards for Mathematics webpage (<https://www.fldoe.org/academics/standards/subject-areas/math-science/mathematics/bestmath.shtml>) of the Florida Department of Education's website and will continue to undergo edits as needed.



Mathematical Words to Know and Use in Math for College Algebra

Absolute Value	Coordinate Plane	Exponential Function	Inverse Function	Quadratic Function	Set-builder Notation
Algorithm	Dilation	Expression	Linear Expression	Range	Slope
Base	Domain	Function	Linear Function	Rate of Change	Transformation
Base of an Exponent	Equation	Function Notation	Piecewise Function	Rational Expression	Translation
Composition of Functions	Exponent (exponential form)	Inequality	Polynomial	Rational Number	x -intercept
Compound Inequality		Intercept	Quadratic Expression	Reflection	y -intercept

Definitions for these terms can be found in the glossary of the standards book accessed at [K-12 Mathematics Glossary](#).

Support Learning at Home

You can encourage learning mathematics at home in ways that are fun for you and your student. Try these ideas after school, on weekends and during the summer:

- ✓ Have your student help you sort the laundry into different groups. For example, put all the pants in one pile, shirts in another pile and socks in a third pile. Talk about what the items in each pile have in common.
- ✓ Plan a trip to the movies with a specific budget. Before going, have your student research the price for three types of snacks. Then, have them figure out the possible number of each type of snack they can purchase.
- ✓ Research with your student how logarithmic functions can be applied in the real world.
- ✓ Have your child practice inputting the functions found in the table below in a graphing utility, handheld or online. Create a chart for each function to include the name, function notation and visual of the graph. Have your student identify the maximum or minimum values. As an extra step, have them place a negative sign (–) in front of the expression in the function. Ask them what they notice.

Linear $f(x) = x$	Square root $f(x) = \sqrt{x}$	Exponential $f(x) = b^x$, use $b > 1$
Quadratic $f(x) = x^2$	Cube root $f(x) = \sqrt[3]{x}$	Logarithmic $f(x) = \log_b x$, use $b > 1$
Cubic $f(x) = x^3$	Absolute value $f(x) = x $	Reciprocal $f(x) = \frac{1}{x}$

- ✓ Have your student select a recipe where there is an ingredient that can be replaced with another recipe. Every time they see that ingredient in the selected recipe, have them replace it with a recipe for that ingredient. Discuss with your student how the substituted recipe may change the original recipe. Make connections between this discussion and the composition of functions.
- ✓ Have your student write the directions to their nearest friend's house. Then write another set of directions starting from the friend's house and returning home. Ask your student how they came up with directions to get home from their friend's home. Make connections between this discussion and the inverse of functions.



Talk with Your Student's Teacher

Remember, you are your student's first teacher. Think about a parent-teacher conference as a "team meeting" in which you will discover the special contributions each of you bring to your student's success. Here are some questions you could ask to prompt discussions:

Which skills or topics is my student working on? Which have they mastered? How can I support them at home?

In the area of mathematics, what are my student's strengths? How are those strengths supported during instruction? Where is my student struggling and how can I help?

Can my student show you that they understand what they are learning about through manipulatives, drawing, talking and writing? If not, what challenges are they facing?

What topics in connection to science and social studies is my student learning about through math?

What behaviors should I see when my student is doing math? Can I see an example of the type of problems my student is given? How can I support them at home?



Mathematical Thinking and Reasoning Standards (MTRs)

Florida students are expected to engage with mathematics through the Mathematical Thinking and Reasoning Standards (MTRs). These standards are written in clear language so all stakeholders can understand them and teachers can assist students to use them as self-monitoring tools. The MTRs promote deeper learning and understanding of mathematics. By understanding the MTRs, parents, guardians and families can support the development of these skills at home.

MA.K12.MTR.1.1 Actively participate in effortful learning both individually and collectively.	MA.K12.MTR.2.1 Demonstrate understanding by representing problems in multiple ways.	
MA.K12.MTR.3.1 Complete tasks with mathematical fluency.	MA.K12.MTR.4.1 Engage in discussions that reflect on the mathematical thinking of self and others.	
MA.K12.MTR.5.1 Use patterns and structure to connect mathematical concepts.	MA.K12.MTR.6.1 Assess the reasonableness of solutions.	MA.K12.MTR.7.1 Apply mathematics to real-world contexts.

Your student will develop the above skills (MTRs) throughout their education and during their life. These skills will help maintain positive relationships through effective communication, collaboration, conflict resolution and problem solving.

Below are some ways you can help develop mathematical thinking and reasoning skills for your mathematics student:

- ✓ Encourage your student to ask questions when they do not understand what is being asked of them.
- ✓ Ask your student to estimate before determining a solution to the task at hand.
- ✓ Identify a problem and create a plan to tackle it in smaller steps that are more manageable.
- ✓ Try activities like a scavenger hunt or a puzzle.

By helping to develop your student's mathematical thinking and reasoning skills, you will prepare them to become a confident, independent and successful individual.

