FLORIDA'S BENCHMARKS FOR EXCELLENT STUDENT THINKING STANDARDS

Parent Guide for Algebra 1-B

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:

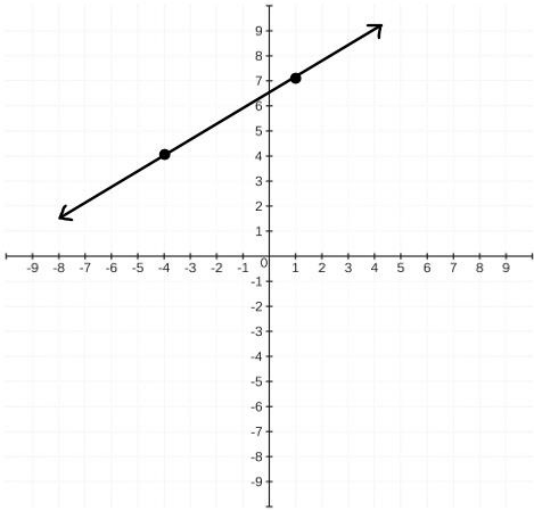
Provide clarity on the grade-level expectations for educators, parents and students.

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 Algebra 1-B 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.**



Learn About the Algebra 1-B Standards
This table describes the areas of emphasis within Algebra 1-B 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
Performing operations with polynomials and radicals, and extending the Laws of Exponents to include rational exponents.	• Add, subtract, multiply, and divide polynomial expressions. • Add, subtract, multiply, and divide radical expressions. • Convert between expressions with rational and radical exponents. • Apply the Laws of Exponents to exponents in the form $\frac{a}{b}$.
Extending understanding of functions to quadratic and exponential functions and using them to model and analyze real-world relationships.	• Write a quadratic function to model a mathematical or real-world scenario. • Write an exponential function to model a mathematical or real-world scenario. • Evaluate quadratic and exponential functions for a given input and interpret the output in a real-world context.
Solving quadratic equations in one variable.	• Solve quadratic equations using methods such as factoring techniques, taking square roots, the quadratic formula, and completing the square.
Building functions, identifying their key features and representing them in various ways.	• Identify and compare key features of linear, quadratic, and exponential functions such as domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. • Represent and recognize quadratic and exponential functions from written descriptions, equations, graphs, and tables of values. • Use inequality and set builder notations when representing domain and range.

For specific examples and an inclusive list of skills, visit the B1G-M using the link below.

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.stml) of the Florida Department of Education's website and will continue to undergo edits as needed.

Educational Words to Know and Use in Algebra 1-B

Base	Exponent	Function Notation	Polynomial	Rational Number	x-intercept
Coefficient	Exponential	Inequality	Quadratic Equation	Real Numbers	y-intercept
Coordinate Plane	Exponential Function	Intercept	Quadratic Function	Slope	
Domain	Function	Monomial	Range	Transformation	

Definitions for these terms can be found in the glossary of the standards book which can be accessed using the following link: 6-12 Mathematics Glossary.

Helpful Formulas for Algebra 1-B

Forms of Quadratic Functions		
$f(x) = ax^2 + bx + c$ (Standard Form)	$f(x) = a(x-h)^2 + k$ (Vertex Form)	$f(x) = a(x-p)(x-q)$ (Factored Form)
Forms of Exponential Functions		
$f(x) = ab^x$	$f(x) = a(1 \pm r)^x$ Where r is the rate of growth or decay	
Quadratic Formula		
$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$, where $ax^2 + bx + c = 0$ and $a \neq 0$		
Interest Formulas		
$A = P(1 + rt)$	Simple Interest where: $P = principal$, $r = rate$, $t = time$	$A = P\left(1 + \frac{r}{n}\right)^{nt}$ Compound Interest where: $P = principal$, $r = rate$, $n = number\ of\ times\ compounded\ per\ unit\ of\ time$

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:

- ✓ Ask your student if they would rather receive \$40 a week for a year or receive \$1 the first week and doubling the amount every week for a year. How does this relate to linear and exponential functions?
- ✓ Be on the lookout for quadratic functions. When at a park/playground, discuss how shooting a basketball or hitting a golf ball creates a parabola.
- ✓ Discover perfect squares with your student. Provide your student with a multiplication chart up to 12. Have them highlight all of the products that are formed by the same 2 factors. What do you notice?
- ✓ Have your child practice inputting the parent 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.

Linear $f(x) = x$	Square root $f(x) = \sqrt{x}$	Exponential (growth) $f(x) = 2^x$
Quadratic $f(x) = x^2$	Cube root $f(x) = \sqrt[3]{x}$	Exponential (decay) $f(x) = \left(\frac{1}{2}\right)^x$
Cubic $f(x) = x^3$	Absolute value $f(x) = \lvert x \rvert$	

- ✓ At a family gathering, provide a list of entrees and sides. Survey the family members on their choice of entrée and side and record the data in an appropriate data display. Determine if there seems to be a correlation between the entrée and side chosen.

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.