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Title **Mathematics Curriculum Beliefs and Goals**

1. **Beliefs**

- 1.1 All students can learn mathematics.
- 1.2 Mathematics develops logical thinking and problem-solving skills which help students understand and function in the world around them.
- 1.3 Learning mathematics is an active, collaborative process that balances computation, procedures and problem solving, and provides support and challenge for all learners.
- 1.4 Mathematics curriculum must be coherent, focused and well articulated through the grades.
- 1.5 Technology is essential in teaching and learning mathematics.
- 1.6 Assessment supports the learning of mathematics and provides useful information to students, teachers, parents and the public.
- 1.7 On-going professional development is a key component of a strong mathematics program.
- 1.8 Quality mathematics education is enhanced through public and home support.

2. **Goals** (adapted with permission from *Principles and Standards of Mathematics*, National Council of Teachers of Mathematics, 2000)

- 2.1 Numbers and Operations – The student will be able to understand the following:
 - 2.1.1 Numbers, ways of representing numbers, relationships among numbers and number systems;
 - 2.1.2 Meanings of operations and how they relate to one another, and
 - 2.1.3 How to compute fluently and make reasonable estimates.
- 2.2 Algebra – The student will understand the following:
 - 2.2.1 Patterns, relations and functions;
 - 2.2.2 How to represent and analyze mathematical situations and structures using algebraic symbols;

- 2.2.3 How to use mathematical models to represent and understand quantitative relationships, and
- 2.2.4 How to analyze change in various contexts.
- 2.3 Geometry – The student will understand how to do the following:
 - 2.3.1 Analyze characteristics and properties of two- and three-dimensional geometric shapes, and develop mathematical arguments about geometric relationships;
 - 2.3.2 Specify locations and describe spatial relationships using coordinate geometry and other representational systems;
 - 2.3.3 Apply transformations and use symmetry to analyze mathematical situations, and
 - 2.3.4 Use visualization, spatial reasoning and geometric modeling to solve problems.
- 2.4 Measurement – The student will be able to do the following:
 - 2.4.1 Understand measurable attributes of objects and the units, systems and processes of measurement, and
 - 2.4.2 Apply appropriate techniques, tools and formulas to determine measurements.
- 2.5 Data Analysis and Probability – The student will be able to do the following:
 - 2.5.1 Formulate questions that can be addressed with data, and collect, organize and display relevant data to answer them;
 - 2.5.2 Select and use appropriate statistical methods to analyze data;
 - 2.5.3 Develop and evaluate inferences and predictions that are based on data, and
 - 2.5.4 Understand and apply basic concepts of probability.
- 2.6 Problem Solving – The student will be able to do the following:
 - 2.6.1 Build new mathematical knowledge through problem solving;
 - 2.6.2 Solve problems that arise in mathematics and in other contexts;
 - 2.6.3 Apply and adapt a variety of appropriate strategies to solve problems, and

2.6.4 Monitor and reflect on the process of mathematical problem solving.

2.7 Reasoning and Proof – The student will be able to do the following:

2.7.1 Recognize reasoning and proof as fundamental aspects of mathematics;

2.7.2 Make and investigate mathematical conjectures;

2.7.3 Develop and evaluate mathematical arguments and proofs, and

2.7.4 Select and use various types of reasoning and methods of proof.

2.8 Communication – The student will be able to do the following:

2.8.1 Organize and consolidate their mathematical thinking through communication;

2.8.2 Communicate their mathematical thinking coherently and clearly to peers, teachers and others;

2.8.3 Analyze and evaluate the mathematical thinking and strategies of others, and

2.8.4 Use the language of mathematics to express mathematical ideas precisely.

2.9 Connections – The student will be able to do the following:

2.9.1 Recognize and use connections among mathematical ideas;

2.9.2 Understand how mathematical ideas interconnect and build on one another to produce a coherent whole, and

2.9.3 Recognize and apply mathematics in contexts outside of mathematics.

2.10 Representation – The student will be able to do the following:

2.10.1 Create and use representations to organize, record and communicate mathematical ideas;

2.10.2 Select, apply and translate among mathematical representations to solve problems, and

2.10.3 Use representations to model and interpret physical, social and mathematical phenomena.

