

## Overview of PK-12 Mathematics **STANDARDS** and Grade Band **LEARNING PRIORITIES**

PK-2	3-5	6-8	9-12
<b>CONCEPTS AND CONNECTIONS IN NUMBER AND ALGEBRA</b>			
<p><b><u>Foundations of Number and Number Sense</u></b> <i>(Number and Algebra)</i></p> <ol style="list-style-type: none"> <li>Develop understanding of numbers by counting and working with spatial patterns, and use numbers to represent quantities</li> <li>Develop number relationships, including comparisons, relation to one and two more or one and two less, relation to five and ten, and part-whole concepts</li> </ol>	<p><b><u>Number and Operation Sense with Whole Numbers and Decimals</u></b> <i>(Number, Operations, and Algebra)</i></p> <ol style="list-style-type: none"> <li>Develop understanding of base-ten concepts and equivalent representations, extend the base-ten numeration system to decimal numbers, and reason with multiplicative relationships</li> <li>Model and solve problem in context, develop and justify estimation and computation strategies, and be flexible in choosing strategies to find solutions</li> <li>Use algebraic reasoning to make conjectures about relations, properties, and operations, and determine rules to describe functional relationships</li> </ol>	<p><b><u>Numeric and Algebraic Reasoning</u></b> <i>(Number and Algebra)</i></p> <ol style="list-style-type: none"> <li>Represent and communicate with real numbers when solving mathematical, real world, and non-routine problems</li> <li>Compute fluently and make reasonable estimates using rational numbers.</li> <li>Understand and use ratios, proportions, and proportional reasoning</li> <li>Understand patterns, relations, and functions and their connections within and outside of mathematics</li> <li>Model and solve mathematical problems in a variety of meaningful contexts using algebraic expressions, equations, and inequalities</li> </ol>	<p><b><u>Algebraic Reasoning</u></b> <i>(Algebra, Number Operations, Data Analysis)</i></p> <ol style="list-style-type: none"> <li>Reason, communicate, and compute with numeric and algebraic expressions and equations</li> <li>Understand functions and their representations, properties, and applications</li> <li>Understand, recognize, and justify solutions to problems from given algebraic applications</li> <li>Interpret and create algebraic models to make predictions and evaluate decisions</li> </ol>
<p><b><u>Foundations of Operation Sense</u></b> <i>(Number, Operations and Algebra)</i></p> <ol style="list-style-type: none"> <li>Explore operations of addition, subtraction, multiplication, and division through solving story problems, and develop computational strategies based on number relationships for addition and subtraction</li> <li>Develop foundational ideas of algebraic reasoning through solving problems in context and demonstrate initial understandings of equality and properties and relationships of operations</li> </ol>	<p><b><u>Number and Operation Sense with Fractions</u></b> <i>(Number, Operations, and Algebra)</i></p> <ol style="list-style-type: none"> <li>Develop understanding of the uses of fractions and the quantities they represent, and use models, benchmarks, and equivalent forms to compare and judge the size of fractions</li> <li>Develop meanings for operations with fractions in everyday situations, and develop, use, and evaluate strategies to estimate computations and to model and solve problems involving fractions</li> </ol>		
<b>CONCEPTS AND CONNECTIONS IN GEOMETRY AND MEASUREMENT</b>			
<p><b><u>Foundations of Shape, Size, and Spatial Sense</u></b> <i>(Geometry, Measurement, and Number)</i></p> <ol style="list-style-type: none"> <li>Develop spatial visualization and reasoning to interpret and describe the physical world with geometric ideas</li> <li>Recognize measurable attributes of everyday objects, understand unit concepts and the process of measurement, and develop strategies to estimate and measure the size of objects</li> </ol>	<p><b><u>Shape, Size, and Spatial Sense</u></b> <i>(Geometry, Measurement, and Number)</i></p> <ol style="list-style-type: none"> <li>Visualize, describe, and reason about classes of shapes and investigate problems involving shapes, transformations, and spatial relationships</li> <li>Develop understanding of measurement concepts and attributes, and use and evaluate strategies to estimate and make measurements of familiar objects and aspects of our physical world</li> </ol>	<p><b><u>Geometric Reasoning</u></b> <i>(Geometry, Measurement, and Algebra)</i></p> <ol style="list-style-type: none"> <li>Communicate an understanding of geometric attributes and relationships</li> <li>Use visualization, spatial reasoning, and geometric modeling to connect geometric representations to algebraic relationships</li> <li>Understand measurable attributes, processes, systems and units of measurement and use appropriate tools and techniques to work with both direct and indirect measurement</li> </ol>	<p><b><u>Geometric Reasoning</u></b> <i>(Geometry, Measurement, and Algebra)</i></p> <ol style="list-style-type: none"> <li>Select, apply and understand measuring tools and procedures</li> <li>Recognize attributes and properties of common geometric figures, and the relationships between them</li> <li>Understand the representation of geometric facts, figures, and transformations on a coordinate plane</li> <li>Understand the representation and application of geometric models to real-world situations</li> </ol>
<b>CONCEPTS AND CONNECTIONS IN DATA ANALYSIS AND PROBABILITY</b>			
<p><b><u>Exploring Data</u></b> <i>(Data Analysis and Number)</i></p> <ol style="list-style-type: none"> <li>Explore questions about everyday experiences that can be answered with data, collect and organize data, and analyze the quantities as they relate to the context of the questions</li> </ol>	<p><b><u>Exploring and Describing Variability in Data</u></b> <i>(Data Analysis and Number)</i></p> <ol style="list-style-type: none"> <li>Formulate questions that anticipate variability of data in contextual situations, analyze and compare characteristics of data sets, and draw and justify conclusions in relation to the context</li> </ol>	<p><b><u>Quantitative Reasoning</u></b> <i>(Data Analysis,, Statistics, and Probability)</i></p> <ol style="list-style-type: none"> <li>Formulate questions and design statistical investigations that can be answered by data collection and analysis</li> <li>Collect and display data with a variety of representations, justifying the appropriateness of methods used</li> <li>Analyze data from organized displays and numerical descriptors; interpret information, make predictions, and draw conclusions with supporting arguments</li> <li>Use a variety of counting techniques, experiments, and simulations to determine probabilities of events</li> </ol>	<p><b><u>Data Driven Reasoning</u></b> <i>(Algebra, Data Analysis, Probability)</i></p> <ol style="list-style-type: none"> <li>Organize, display, and compare both quantitative and qualitative data to make, justify, and summarize conjectures</li> <li>Develop, analyze, and justify inferences based on data</li> <li>Evaluate and derive models based on data to analyze and predict outcomes</li> </ol>