

 **Attend to precision.**

\*Continue to refine their mathematical communication skills by using clear and precise language in their discussions with others and in their own reasoning.

\*Use appropriate terminology when referring to expressions, fractions, geometric figures, and coordinate grids.

\*Specify units of measure and state the meaning of the symbols they choose. For instance, when figuring out the volume of a rectangular prism they record their answers in cubic units.

**Construct viable**

**arguments**

**and critique the reasoning of others.**

\*Construct arguments using concrete referents, such as objects, pictures, and drawings.

\*Explain calculations based upon models and properties of operations and rules that generate patterns.

\*Demonstrate and explain the relationship between volume and multiplication.

\*Refine their mathematical communication skills as they participate in mathematical discussions involving questions like, “How did you get that?” and “Why is that true?”

\*Explain their thinking to others and respond to others’ thinking.

 **Look for and**

 **express regularity in**

 **repeated reasoning**.

\*Use repeated reasoning to understand algorithms and make generalizations about patterns.

\*Connect place value and their prior work with operations to understand algorithms to fluently multiply multi-digit numbers.

\*Perform all operations with decimals to hundredths.

\*Explore operations with fractions with visual models and begin to formulate generalizations.

**Look for and make use of structure.**

\*Look closely to discover a pattern or structure.

\*Use properties of operations as strategies to add, subtract, multiply and divide with whole numbers, fractions, and decimals.

\*Examine numerical patterns and relate them to a rule or a graphical representation.

**Use appropriate tools**

**strategically.**

\*Consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful.

\*Use unit cubes to fill a rectangular prism and then use a ruler to measure the dimensions.

\*Use graph paper to accurately create graphs.

\*Solve problems or make predictions from real world data.

**Model with Mathematics.**

\*Experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, making a chart, list, or graph, creating equations, etc.

\*Need opportunities to connect the different representations and explain the connections.

\*Use all of these representations as needed.

\*Evaluate their results in the context of the situation and whether the results make sense.

\*Evaluate the utility of models to determine

which models are most useful and

efficient to solve problems.

**Reason abstractly and quantitatively.**

\*Recognize that a number represents a specific quantity.

\*Connect quantities to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of quantities.

\*Extend this understanding from whole numbers to their work with fractions and decimals.

\*Write simple expressions that record calculations with numbers, and represent or round numbers

using place value concepts.

**Grade 5**

**Grade Level Emphasis**

**PA Core Standards**

**Standards for Mathematical Practice**

***Tool Developed by***

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**Make sense of problems**

**and persevere in solving them.**

\*Solve problems by applying their understanding of operations with whole numbers, decimals, and fractions including mixed numbers.

\*Solve problems related to volume and measurement conversions.

\*Seek the meaning of a problem and look for efficient ways to represent and solve it.

\*Check their thinking by asking themselves, “What is the most efficient way to solve the

 problem,?” “Does this make sense,?”

 and “Can I solve the problem in a

 different way?”

**MP 2**

**MP 8**

**MP 3**

**MP 1**

**MP 7**

**MP 5**

**MP 6**

**MP 4**