

**Model with Mathematics.**

\*Model problem situations symbolically, graphically, tabularly, and contextually.

\*Form expressions, equations, or inequalities from real world contexts and connect symbolic and graphical representations.

\*Solve systems of linear equations and compare properties of functions provided in different forms.

\*Use scatterplots to represent data and describe associations between variables.

\*Connect and explain the connections between the

 different representations.

 \*Use all representations as appropriate to a

 problem context

 **Look for and**

 **express regularity in**

 **repeated reasoning**.

\*Use repeated reasoning to understand algorithms

and make generalizations about patterns.

\*Use iterative processes to determine more precise rational approximations for irrational numbers.

\*Solve and model problems. They notice that the slope of a line and rate of change are the same value.

\*Flexibly make connections between covariance, rates, and representations showing the relationships between quantities.

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

\*Routinely seek patterns or structures to model and solve problems.

\*Apply properties to generate equivalent expressions and solve equations.

\*Examine patterns in tables and graphs to generate equations and describe relationships.

\*Experimentally verify the effects of transformations and describe them in terms of congruence and similarity.

**Use appropriate tools**

**strategically.**

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

\*Translate a set of data given in tabular form to a graphical representation to compare it to another data set.

\*Draw pictures, use applets, or write equations to show the relationships between the angles created by a transversal.

**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 the number system, functions, geometric figures, and data displays.

**Construct viable**

**arguments**

**and critique the reasoning of others.**

\*Construct arguments using verbal or written explanations accompanied by expressions, equations, inequalities, models, and graphs, tables, and other data displays (i.e. box plots, dot plots, histograms, etc.).

\*Refine their mathematical communication skills through mathematical discussions in which they critically evaluate their own thinking and the thinking of other students.

\*Pose questions like, “How did you get that?”, “Why is that true?”, “Does that always work?”

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

**Reason abstractly and quantitatively.**

\*Represent a wide variety of real world contexts through the use of real numbers and variables in mathematical expressions, equations, and inequalities.

\*Examine patterns in data and assess the degree of linearity of functions.

\*Contextualize to understand the meaning of the number or variable as related to the problem.

\*Decontextualize to manipulate symbolic representations by applying properties of operations.

**Make sense of problems**

**and persevere in solving them.**

\*Solve real world problems through the application of algebraic and geometric concepts.

\*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?”

**Grade 8**

**Grade Level Emphasis**

**PA Core Standards**

**Standards for Mathematical Practice**

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**MP 2**

**MP 8**

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**MP 1**

**MP 7**

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**MP 6**

**MP 4**