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| **COMMON CORE FOR MATHEMATICS, K-12** | | |
| **Common Core Standard** | **Overarching Understanding** | **Overarching Question** |
| *Make sense of problems and persevere in solving them.* | * Mathematicians analyze givens, constraints, and relationships in order to make sense of and solve problems. | * How do I use the language of math (i.e. symbols, words) to make sense of/solve a problem? * What do I already know? What do I still need to find out? How do I get there? What do I do when I get stuck? |
| *Reason abstractly and quantitatively.* | * Math is a language of patterns and relationships that can be generalized to a range of given situations and problems. | * How do we use symbolic representations to apply and extend patterns and relationships? * What mathematical symbols, language and materials should we use to communicate with others about numbers and number relationships? * Why generalize a relationship/pattern? |
| *Construct viable arguments and critique the reasoning of others.* | * Mathematicians make conjectures and build a logical progression of statements to explore the truth of their conjectures. * The soundness of a mathematical argument is grounded in the application and articulation of theorems, postulates, rules and/or properties that led to the given conclusion. * Mathematicians examine and critique arguments of others to determine validity. | * What makes a mathematical argument/conjecture/ true? * How do I construct an effective (mathematical) argument? * How do I develop a conjecture/rule (to represent this pattern, situation, context)? * How do I prove something? * Is the argument valid? |
| *Model with mathematics.* | * Mathematical models can be used to interpret and predict the behavior of real world phenomena being clear about the limitations of that model. * Mathematicians create models to interpret and predict the behavior of real world phenomena being clear about the limitations of that model. * Recognizing the predictable patterns in mathematics allows the creation of functional relationships. | * What do we use in addition to mathematical modeling to accurately predict results? * To what extent can we model and analyze change? * How reliable are predictions? * When does the model work (or not work)? * What makes a pattern? How do I find it? How do I show it? Does it always work? * How do I create a mathematical model? |
| *Use appropriate tools strategically.* | * Mathematicians use a variety of tools to analyze and solve problems and explore concepts. * Estimating the answer to a problem helps mathematicians predict and evaluate the reasonableness of a solution. | * What is an effective tool/technology to solve the problem or understand the concept? * Does my answer/solution make sense? |
| *Attend to precision.* | * Clear and precise notation enables effective communication and comprehension. * Level of accuracy is determined based on the context/situation. | * How do I show my math thinking? * How do I effectively represent quantities and relationships through mathematical notation? * How accurate do I need to be? What’s at stake? |
| *Look for and make use of structure.* | * Recognizing the predictable patterns in mathematics allows the creation of functional relationships. * Mathematical structures can be interchangeable while preserving the relationship (i.e. part to whole, substitution). | * What makes a pattern? How do I find it? How do I show it? Does it always work? * What is the best/most effective way to represent this number, concept, or relationship? |
| Look for and express regularity in repeated reasoning. | * Mathematicians make conjectures looking for both general methods (for abstractions) and shortcuts (for efficiency). | * What is a faster/more efficient way to do this? * What is the best way to get an accurate answer? * How do I know which way is best? * Why generalize a relationship/pattern? |