



Grade 5 Math Enrichment - Unit 1 - Where's the Magic: Puzzles and Logic

Unit Focus

Problem solving and mathematical reasoning are important part of mathematics for middle school students. In this unit students will investigate and analyze the logic and math behind puzzles by making conjectures, collecting evidence and forming arguments. They will look for patterns in their work and create clear explanations for their solutions. They will learn to justify what they do and communicate their results using the language of mathematics. Throughout the unit, students will work and communicate with their peers to solve problems. Students will be encouraged to take risks and learn from mistakes and explore alternative strategies.

For the culminating activity students will create a presentation to demonstrate, and then mathematically explain, a self working trick.

Stage 1: Desired Results - Key Understandings

Standard(s)	Transfer	
Common Core Mathematics: 6 - Make sense of problems and persevere in solving them. (CCSS.MATH.MP.1) - Construct viable arguments and critique the reasoning of others. (CCSS.MATH.MP.3) - Look for and make use of structure. (CCSS.MATH.MP.7) - Look for and express regularity in repeated reasoning. (CCSS.MATH.MP.8) Madison Public Schools Profile of a Graduate - Analyzing: Examining information/data/ evidence from multiple sources to identify possible underlying assumptions, patterns, and relationships in order to make inferences. (POG.1.2) - Product Creation: Effectively use a medium to communicate important information. (POG.3.2)	<i>Students will be able to independently use their learning to...</i> T1 Initiate a plan using a variety of methods/strategies appropriately, execute it, and evaluate the reasonableness and accuracy of the solution. T2 Construct viable arguments using clear and appropriate mathematical language and critique the reasoning of others. T3 Identify and generalize patterns and structure in numbers, expressions, data and objects.	
	Meaning	
	Understanding(s)	Essential Question(s)
	<i>Students will understand that...</i> U1 Effective problem solvers work to make sense of the problem before trying to solve it. U2 Mathematicians overcome obstacles by employing strategies and learn from success and failure. U3 Mathematicians can describe patterns, relations, and/or functions to access strategies to solve problems.	<i>Students will keep considering...</i> Q1 What makes a good math "trick"? Q2 How do I decide if my answer makes sense and if not, what do I do? Q3 How can understanding a pattern help me? Q4 What can I do when I am stuck?
	Acquisition of Knowledge and Skill	
	Knowledge	Skill(s)
	<i>Students will know...</i> K1 Students will know that hidden mathematical patterns can be found underneath seemingly random or inexplicable events and that by analyzing these patterns future events can be predicted. K2 Students will know that some puzzles and problems can be solved using deductive reasoning.	<i>Students will be skilled at...</i> S1 Students will be skilled at working backwards to solve a problem. S2 Students will be skilled at using charts to solve problems.