

## MATH BACKGROUND – GRADE 7

This chart correlates the Math Background Notes in *MathLinks: Core 2<sup>nd</sup> Edition Grade 7* to adult-level explanations of more complex grade-level concepts (column 1) and concepts beyond 7<sup>th</sup> grade that are important in 8<sup>th</sup> grade and high school (columns 2-7). Ted Gamelin, Professor Emeritus UCLA Department of Mathematics, also organized these notes into broad topics of importance to mathematics. Some of his classifications are listed in columns 8-12. All Math Backgrounds are written so that teachers can improve their own knowledge of the subject.

Unit	Math Background Grade 7	Complex Grade 7 Concept	Adult explanations and examples of concepts important to Grade 8 and the high school domains						Adult explanations that provide insight into the mathematics				
			Grade 8	Number and Quantity	Algebra	Functions	Geometry	Statistics & Probability	History of Mathematics	Evolution and Multiplicity of Definitions	Clarifying Definitions	Theorems, Proofs, and Logical Reasoning	Operations and Variables
1	Origins of Probability							x	x				
1	Dependent and Independent Events		x					x					
1	What is Randomness	x	x					x					
1	A Clever Trick	x	x		x								
2	Percent as a Number and Percent of a Number	x									x		
2	Simple vs. Compound Interest	x			x	x					x		
3	Ratios are Everywhere			x	x	x	x						
3	Ratio, Rate, Unit Rate, and Value	x	x		x						x		
3	Geometric Interpretation of Equivalent Ratios	x	x				x				x		
3	Equivalent Ratios and Proportional Relationships	x	x				x				x		
3	Reasoning and Proof: Why Cross-Multiplication Works for Equations of the form $a/b = c/d$	x	x		x		x					x	
3	How Much Detail is Needed in Proof?	x	x		x		x					x	
4	Interpreting the Minus Sign	x	x		x								x
5	Why Does $(-1)(-1) = 1$ ?	x	x									x	
5	Derivation of Sign Rules for Multiplication	x	x									x	
5	Division Defined in Terms of Multiplication	x			x						x		
5	Why is Division of Zero Undefined?	x	x			x						x	
5	order of operations	x	x		x								x

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## Continued

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8	Why Does a Circle Have 360 Degrees?				x	x			x				
8/9	Different Definitions for Quadrilaterals						x			x			
8/9	Polyhedra						x				x		
9	The Number Pi						x		x				
9	When is a Proof a Proof?				x		x					x	
9	Polygons						x				x		
9	Base, Altitude, and Height						x			x			
9	Notation Clarification “ <i>B</i> ” vs “ <i>b</i> ”						x						
10	“The Quartile” or “In the Quartile”							x		x			
10	Mark-Recapture							x					
10	Mean Absolute Deviation (MAD)							x		x			
10	Sampling							x					