High Leverage Concepts Grades 6-8

ALL LEARNERS NETWORK
Math for every student.

Proportional Reasoning		Expressions & Equations		Linear Relationships
Grade Six	**Grade Seven**	**Grade Seven**	**Grade Eight**	**Grade Eight**
Use models to compare ratios, and solve problems including those involving unit rates	**Solves proportional reasoning problems using a model and relationship of multiplication and division** *(The cross products algorithm does **not** qualify as demonstrating understanding.)*	**Operate with signed numbers and create equivalent expressions**	**Solve equations for unknowns which may include signed numbers.**	**Understand linear relationships using tables, and/or graphs, and/or equations.** **Make connections among representations of linear relationships.**
Models for Instruction				
Concrete models (i.e. tiles) Diagrams Percent bar	Tape diagrams Double number line Geometric figures	2 sided chips Floats and Anchors Algebra Tiles Number Lines	Algebra Tiles Hangar Diagrams Pan Balances Inverse Operations	Graphing on a coordinate plane - including technology (Desmos, GeoGebra)
Critical Strategies				
Look for and identify multiplicative relationships in tables and diagrams. Focus on the meaning of the quantities in a situation.		Zero pairs are useful tools when working with signed numbers	Use inverse operations for solving problems	Find the linear rate of change between two quantities/x and y.
Meaning				
Students show an understanding of ratios and rates including unit rates involving whole numbers or fractions. They identify equivalent ratios and use unit rates to solve problems. They can demonstrate this understanding using models and expressions.	Students will extend the basic understanding of ratios using proportions (a/c=b/d). This means applying proportions to topics including percentages, similarity, scaling, conversion, etc. This work builds on, and extends, the work in proportional reasoning from Grade 6.	Students will begin to build their understanding of simplifying expressions with models. Students will show understanding of all four basic operations with integers	Students will continue to use models to extend their understanding of equivalent expressions into solving one variable equations. Using models will support conceptual understanding of solving algebraic equations and allow students to move into solving equations where there are infinite solutions, no solutions and non-integer solutions.	Students show their understanding of linear relationships by representing them in four ways: verbal, tables, graphs, and equations.