Number Sense Routines Guide

Purposes for Number Sense Routines:

- Preview new concepts.
- Review concepts that have been previously explored.
- Practice concepts that continue to be fragile.
- Be independent of the daily launch, explore and summarize or it may set the stage for the next learning experience.

Why take time to do these types of routines:

- Develop fluency in basic computational skills, basic mathematical concepts, and the ability to use mathematical reasoning to solve mathematical problems.
- Recognize and solve routine problems readily and find ways to reach a solution or goal when no routine path is apparent.
- Communicate precisely about quantities, logical relationships, and unknown values through the uses of signs, symbols, models, graphs, and mathematical terms.
- Develop an appreciation for the beauty and power of mathematics
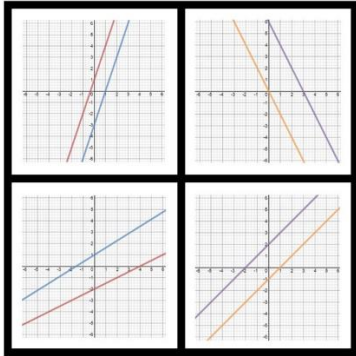
Required Fluencies by Grade Level

According to the Common Core State Standards

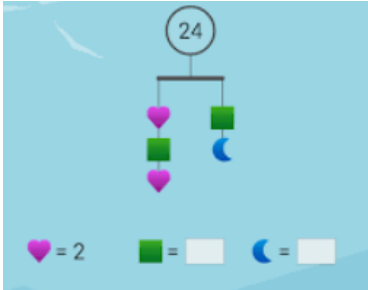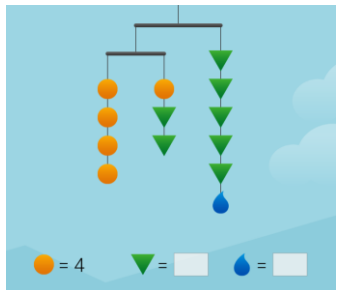| Grade	Standard	Required Fluency
3	3.OA.7 3.NBT.2	Multiply/divide within 100 (know single-digit products from memory) Add/subtract within 1000
4	4.NBT.4	Add/subtract within 1,000,000
5	5.NBT.5	Multi-digit multiplication
6	6.NS.2,3	Multi-digit division Multi-digit decimal operations
7	7.NS.1,2 7.EE.3 7.EE.4	Rational number arithmetic Solve multi-step problems Solve one-variable equations
8	8.EE.7	Solve simple 2x2 systems by inspection

Concepts of Equality (True/False Statements)

What is a True/False Routine?	Examples:	What is the learning?
In this routine, the teacher poses an equation with two expressions on either side. The Ss determine whether the equation is true or false. Ss are expected to reason and justify their conjecture. Tasks guiding questions to elicit Ss' thinking and understanding.	$2 + 7 = 5 + 2 + 2$ $5 \times 24 = 6 \times 23$ $x + x + y + y = 2xy$	This routine has the potential to engage Ss in reasoning and analyzing. When Ts design specific sets of problems they can encourage Ss to explore properties of numbers and operations. These flexible routines engage Ss in considering the meaning of equality and developing relational thinking. True/False routines provide a context in which Ss develop understanding of the equal sign to mean "the same as." By providing opportunities for Ss to develop understanding of equality and strategies for thinking relationally, we can support their development of algebraic reasoning from an early age and continue to make the connections in Algebra.

Which One Doesn't Belong (WODB)

What is WODB?	**Examples:**	**Website:**
Thought-provoking puzzles for math teachers and students alike. There are no answers provided as there are many different, correct ways of choosing which one doesn't belong.	$y = 4x$ $y = x + 7$ $y = -2x + 4$ $y = 3x - 1$	http://wodb.ca

SolveMe Mobiles

What are SolveMe Mobiles?	**Examples:**	**Website:**
SolveMe Mobiles are designed to support algebraic reasoning in a fun and interactive format. These colorful puzzles help algebra and pre-algebra students as well as puzzle-lovers of all ages establish and strengthen the logic of solving equations for unknown values.		https://solveme.edc.org