

Twelve Middle Grades Rules that Expire

1. The mnemonic KFC – Keep Flip Change when learning how to divide fractions.
2. When you factor, you need to use a factor rainbow.
3. The absolute value is just the number.
4. The expression 3^3 is equivalent to $3 + 3 + 3$.
5. Please Excuse My Dear Aunt Sally (PEMDAS) for order of operations.
6. A solution to an equation must be in the form $x = \square$
7. The “Butterfly Method” for Cross Multiplication to see which fraction is greater.
8. The most you can have is 100 percent of something.
9. Two negatives make a positive.
10. Use keywords to solve word problems.
11. A variable represents a specific unknown.
12. FOIL- First, Outer, Inner, Last

Expired Mathematical Language and Notation

What is stated/notated	Alternative appropriate statements or notations
Using the notation $8 + 4 = 12 + 5 = 17 + 3 = 20$ to symbolize a series of addition problems	Stringing together a series of additions (or other computations) cannot be connected with equal signs as the components are unequal.
Using a diagonal bar in fraction notation.	This notation becomes problematic with polynomials and for learners who often read the handwritten diagonal as a 1 use a horizontal bar - instead of $\frac{1}{2}$, write $\frac{1}{2}$.
Getting <i>rid</i> of the fraction or decimal.	Students create an equivalent equation by multiplying or dividing and are not doing away with the fraction or decimal point at all.
Using <i>rounding</i> to mean the same as <i>estimating</i> . Using the word <i>guess</i> to mean the same as <i>estimate</i> .	Rounding is one strategy to produce a computational estimate – but it is not synonymous with an estimate.
Using the word <i>point</i> to read a decimal. Such as “three point four” for 3.4.	Instead, read a decimal as a fraction, 3.4 is “three and four tenths.” This will make converting decimals into fractions an easier task.
<i>Reducing</i> fractions	Using the term reducing may cause students to think the fraction value is getting smaller. Instead, use simplifying fractions or write the fraction in simplest form or lowest terms.
<i>Plugging</i> in a value for a variable	Plugging is not a mathematical term. Instead students should substitute a value.
Fractions have a <i>top</i> and <i>bottom</i> number	The words top and bottom have no mathematical meaning and may incorrectly imply that a fraction consists of more than one number.

Karp, K., Bush, S. B. & Dougherty, B. (2015) 12 math rules that expire in the middle grades. *Mathematics Teaching in the Middle School*. 21(4), 208-215.

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