# Thirteen Rules that Expire

1. When you multiply a number by 10 just add a zero to the end of the number.

2. Use keywords to solve word problems.

3. You can't take a bigger number from a smaller number

4. Addition and multiplication make numbers bigger.

5. Subtraction and division make numbers smaller.

6. You always divide the larger number by the smaller number.

7. Two negatives make a positive.

8. Multiply everything inside the parentheses by the number outside the parentheses.

9. Improper fractions should always be written as a mixed number.

10. The number you say first in counting is always less than the number that comes next.

11. The longer the number, the larger the number.

12. Please Excuse My Dear Aunt Sally.

13. The equal sign means find the answer or write the answer.

Karp, K., Bush, S. B., & Dougherty, B. (2014) 13 rules that expire. *Teaching Children Mathematics*. 21(1) 18-25.

# Expired Mathematical Language

| What is stated | What should be stated |
|---|---|
| Using the words *borrowing* or *carrying* when subtracting or adding, respectively | Use *trading* or *regrouping* to indicate the actual action of trading or exchanging one place value unit for another unit. |
| Using the phrase ___ *out of* __ to describe a fraction (For example, *one out of seven* to describe $\frac{1}{7}$.) | Use the fraction and the attribute. (For example, $\frac{1}{7}$ of the length of the string.) The *out of* language often causes students to think a part is being subtracted from the whole amount (Philipp, Cabral, and Schappelle, 2005). |
| Using the words *reducing fractions* | Use *simplifying* fractions. The language *reducing* gives students the incorrect impression that the fraction is getting smaller or being reduced in size. |
| Asking how shapes are *similar* when children are comparing a set of shapes | Ask, *How are these shapes the same? How are the shapes different?* By using the word *similar* in these situations, there can be eventual confusion with the mathematical meaning of *similar* that will be introduced in middle school relating to geometric figures. |
| Reading the = as *makes* (For example, 2 + 2 *makes* 4 for 2 + 2 = 4.) | Read the equation 2 + 2 = 4 as 2 + 2 *equals* or *is the same as* 4. The language *make* encourages the misconception that the equal sign is an action or an operation rather than representing a relationship. |
| Indicating that a number divides *evenly* into another number | Say that a number divides another number *a whole number of times* or it divides *without a remainder*. |
| *Plugging* a number into an expression or equation | Use *substitute* values for an unknown. |
| Using *top number* and *bottom number* to describe the numerator and denominator of a fraction, respectively | A fraction should be seen as one number, not two separate numbers. Use the words *numerator* and *denominator* when discussing the different parts of a fraction. |

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