

ing and teaching. They experience being part of a mathematics community that explores and enjoys genuine mathematical thinking.

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Clothesline Math—Hanging Math Out to Dry

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At home, people usually think of clotheslines as a place to hang wet, wrinkly clothes out to dry. In classrooms, teachers have used clotheslines as decorative pieces for showcasing student work. Recently, however, teachers have been using the clothesline as a dynamic routine for their mathematics classes. With just a piece of string and a few cards, the clothesline can help develop number sense and conceptual understanding for all kinds of topics across the elementary grade levels. The clothesline is simple and effective, engaging and enriching, and, best of all, it is “low tech!”

The clothesline becomes an interactive open number line (a number line with no given benchmarks) and helps students with bigger ideas, such as magnitude, proportional reasoning, and equality. Through the clothesline students:

- ✓ develop their number sense by investigating number relationships, conservation, cardinality, subitizing, quantity, and operations
- ✓ piece together where numbers, fractions,

and decimals belong in a broader scope

- ✓ make connections to different representations whether pictorially or numerically.

More importantly, it gives teachers and students the opportunity for discussion.

Kindergarten

The concept of a number line is not mentioned in the standards until 2nd grade. However, we determined that this tool would give kindergarten a solid foundation with number sense. since counting and cardinality are important standards in the kindergarten mathematics curriculum. Students work on early numerical knowledge with number sequence, one-to-one correspondence, cardinality, and subitizing. By using the clothesline as a number line, students count, compare, sequence, and get a broader vision of how numbers work. It is imperative to have students discuss what they found and why they placed their cards in a certain spot. Teachers want to know what their students are thinking (SMP3: construct a viable argument). Kindergarten teachers can

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also continue this thinking of magnitude with topics such as weight, length, or height. Using picture numbers, ten frames, dot cards, tally marks, or dominoes can be engaging for students to interpret (*Figure 1*).



Figure 1

First and Second Grades

First and second grade teachers have a variety of topics to use with the clothesline. At these grades, students now use base ten blocks and expanded forms, as well as money and time. When using a clothesline with money, there are many skills happening all at once. Students first have to identify the coin and its value, practice their addition skills with one-digit and two-digit numbers (if there is more than one coin), compare and order the numbers, show equality with some of the coins (for example, 1 dime is the same as 2 nickels and that is the same as 10 pennies), and realize what happens when you have more than 100 cents (*Figure 2*). That is an extraordinary amount of thinking with one activity.

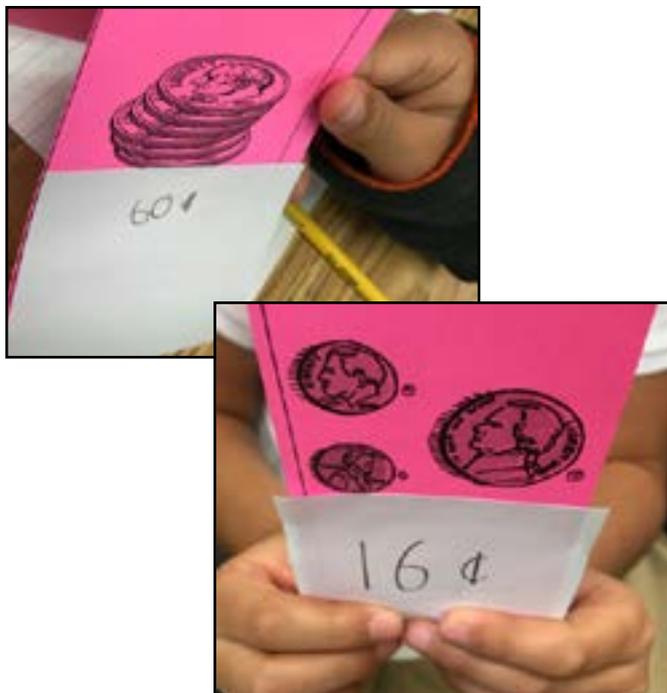


Figure 2

Grades 3–6

With upper elementary (grades 3–6), students become versed in fractions. The clothesline is effective in having students determine the relationships between fractions, decimals, and percents. Giving students the blank clothesline and a few benchmark fractions, such as $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$, encourages a valuable and eye-opening conversation. From there, students can start working with equivalent fractions, improper fractions, and mixed numbers (*Figure 3*).



Figure 3

Starting in fourth grade, students are introduced to the idea of a decimal in relation to a fraction. And in fifth grade, they understand place value in regard to decimals. Asking students to put decimals in order on an open number line helps them see the “big picture” in how decimals relate to one another, rather than just comparing two decimals. Using the clothesline as a number line for decimals can help students understand where .01 is in comparison to .1. Students comprehend that 0.31 is equivalent to 0.310.

Conclusion

Clothesline mathematics is a game changer for elementary classrooms. This tool has become our go-to routine for making sense of numbers and concepts throughout the elementary mathematics curriculum. Our students are building their capacity to think flexibly, efficiently, and accurately about numbers. The clothesline sets a strong foundation with big mathematical ideas in kindergarten through second grade. In addition, the clothesline helps third through sixth grade students make connections between fractions, decimals, and eventually percent. Who knew that there could be so much mathematical thinking from string and paper?

You can follow more clothesline adventures on the blog themindofanaprilfool.com/clothesline. 📌