Scaffolding Task: Double Number Line Decimals

STANDARDS FOR MATHEMATICAL CONTENT

MCC4.NF.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of the comparisons with the symbols >, =, or <, and justify the conclusions, e.g. by using a visual model.

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

BACKGROUND KNOWLEDGE

A double number line is a visual model that can be used in a variety of ways. In this task, students will create a double number line that can be used to compare tenths and hundredths. The top line will show tenths while the bottom line shows hundredths. Students can compare decimals with tenths and hundredths using the double number line as they are still gaining the foundation of being able to move easily between tenths and hundredths. Students have had experiences working with a number line during the previous task, Decimal Fraction Number Line. You may have to model for them how to create a Double Number Line if this is their first experience using one.

The discussion of the strategies that students use to place the decimals on the number lines is the most important part of this lesson. As students work, rotate through and ask them to explain their thinking and justify their thinking using the number line and the visual models.

Task:
Create a decimal square that shows each of the decimals on the decimal cards. Place the decimal cards with the modeled decimal square on a double number line, showing tenths across the top and hundredths along the bottom. Be prepared to justify and explain how you ordered the decimals.

FORMATIVE ASSESSMENT QUESTIONS

- How did you know where to place the decimals on the number lines?
- When comparing two decimals, how do you know which is the greater decimal?

- Explain, using the decimal squares you created, how you know one decimal is greater than another.
- Did you notice any patterns in the models or in the decimals as you placed them on the number line?
- What do you notice about the relationship between the tenths and hundredths?
- Were students able to use the visual models to justify the way they ordered the decimals?
- How did students show connections between tenths and hundredths?

DIFFERENTIATION

Extension

- For students who are ready to explore into the thousands, have them add a third line and make a triple number line, placing additional decimals that go to the thousandth place on that number line.

Intervention

- Have students place just the decimal squares they create in line according to size, mixing tenths and hundredths. Have them use this to create a number line and then match the decimals with the decimal squares. (Having them vertically line up the pictures may help them to see which squares have more hundredths shaded in.)

Double Number Line Decimal Cards

0.1	0.7	0.3	0.5	0.6
0.8	0.2	1.0	0.9	0.4
0.0	0.0	1.0	0.23	0.56
0.45	0.46	0.99	0.60	0.34
0.29	0.40	0.75	0.50	0.11
0.10	0.86	0.89	0.79	0.80