

Numbers 0-10 but with Different Lengths

Lesson Goal:

Students can find 5 (middle on various sized number lines)

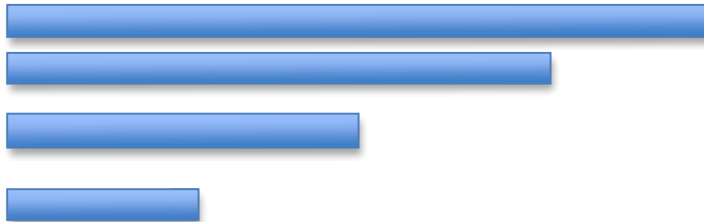
Students understand that as a number line gets smaller, the intervals get smaller.

Concepts:

- Counting (ordinality)
- Number recognition
- Sequencing
- Proportional Reasoning
- Magnitude
- Conservation of length

Materials:

- 4 number lines made from sentence strips of varying size (full, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{4}$) with 0 and 10 labeled on either end
- 4 clothes pegs with 5 printed on them



Activation: Whole Group

Show a number line (full sentence strip size) with 0 and 10 labeled.

Where does 5 go on this number line? How do you know? Use terms middle and halfway.

Next show the $\frac{3}{4}$ length number line. What do you notice about this number line?

(shorter/smaller but still starts at 0 and ends at 10)

Where does 5 go on this number line? How do you know? What do you notice when we compare the two number lines and the placement of 5?

Continue to the $\frac{1}{2}$ and $\frac{1}{4}$ number line (be sure to remove each number line as you go)

Place all 4 number lines on the whiteboard one under the other, lined up at 0.

Why are the clothes pegs in different places?

Move 5 peg on $\frac{3}{4}$ line to directly below the 5 peg on full number line. Would this be a good spot for 5 on this number line? Why not? (it is not in the middle of the new number line)

Lesson: In pairs

Give each pair two number lines ($\frac{1}{2}$ and $\frac{1}{4}$ length sentence strip) 0 and 10 are marked on number lines. Each pair gets two pegs with 5 on them. Please place the 5 on your number lines. The full and $\frac{3}{4}$ number lines are left on the board for students to refer to as they complete the task.

When pairs think they have placed their 5 pegs appropriately, have students share with class.

What do we notice about the spacing (intervals) between 0-5 or 5-10 as the length of the number line changes?

Variations: Different number lines for different groups: 1-10, 0-20, 0-30 what is the middle?

Key Questions:

- Where does 5 go on a number line when the number line itself gets longer or shorter?
- Where is the middle?
- What do you notice that is different in these number lines?
- What do you notice about spacing?

[put video photo from Juli's class here]