

Investigating Hops (fits when students are thinking about intervals)

Lesson Goal:

Investigating hops (spacing of intervals and the physical-ness of the spacing)

When the number line changes length, but the start and end numbers stay the same, then the spacing (or intervals) change size

Concepts:

- Equality
- Magnitude
- Sequencing
- Number knowledge

Materials:

- Make two number lines either using existing lines on gym floor or masking tape. One of the number lines is exactly one-half in length of the other.
- The unit interval of both number lines is 0-10. The intervals are defined using ticks labeled with numbers on the two number lines.
- 2 number lines with one exactly half the length of the other drawn on paper, bunnies/frogs on popsicle sticks used to 'hop/jump' on the number lines
- 2 empty number lines with one exactly half the size of the other, markers/pencils, bunny/frog on popsicle sticks

Activation: Whole Group

Children are instructed to 'hop' each of the intervals on both number lines and to then discuss what was different about those hops and whether the size of their hops changed.

Variation: Teachers can choose whether or not to provide students with the ticks or numbers.

In partners, provide students with 2 number lines (on paper/Bristol board) where the second one is exactly half the length of the first. The unit interval for both number lines is 0 to 10. The teacher can choose to label these number lines with ticks and numbers as needed. Students will jump out the intervals with the bunny/frog on a popsicle stick. Students will also jump out the intervals with their finger.

Discuss with students the size of 'hops' along these number lines from 0 to 10. How big are the hops on the first number line? Are the hops the same size on the second number line? What happens to the hops on the shorter number line? Why does that happen?

Lesson: Independent (Note: this could be a separate lesson)

Provide two empty number lines with one exactly half the length of the other. Both number lines have the unit interval of 0-10. Offer students MANY copies of these number lines so that the students can practice their hops and evaluate whether their hops are of equal length and well positioned on the line (e.g., If I need 10 hops are there 10 hops and are they spaced out evenly? If not, I can try again.)

Have students mark their own intervals (use finger at first to feel out hops, when ready use pencil) and numbers on the number lines and perform hops from the start to end point. Have students explain what happens to the hops depending on the length of the number line to assess understanding of changing interval sizes.

Variation:

Provide students with 2 number lines of the same length. One of them as a unit interval of 0-10. The other has a unit interval of 0-20. Ask the students to hop across the number lines using their popsicle stick characters. What happens to the hops depending on the unit interval?

Key Questions:

What is different about the intervals on this line compared to the other one?

When a number line is longer, what do you notice about the hops? Why?

When a number line is shorter, what do you notice about the hops? Why?

[insert video from Juli's gym class]

