Lesson Title: Pond Critter Hangouts

Grade 3

Content Standards: 3.NF.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line. B. Represent a fraction a/b (which may be greater than 1) on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.

3.NF.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size or the same point on a number line.

Materials: Each group will need: 1) a 24" laminated number line with beginning and endpoints marked, but no other partition markings. 2) a set of fraction pieces. I have wooden pieces of the correct length and number, but these could be easily made from laminated tagboard or construction paper. A set of pieces would consist of eight 3" (my pieces are all 1" wide, but that just happens to be what I have), six 4" pieces, four 6" pieces, three 8" pieces, and two 12" pieces (I use rulers). 3) a set of 13 pond animal pictures (attached). 4) a set of locations for 10 of the animals (example attached).

Shared experience and procedure: The story behind this experience is an extension of an earlier 3rd grade lesson called "Frogs and Ducks." The story is about a child who skips rocks trying to reach a target in the water. The child is able to control the number of skips and make all the skips in a throw the exact same length. For example, if the target is at "20" on the water, the target would be hit with 4 skips of 5, but would be missed with 3 skips of 7. In this activity, the skipper can also control the number and size (for any given throw the skip sizes are always identical in length) of the skips. The throws in this activity are all targeted at the "duck." The duck is located in the water at "1."

The task for the students is to find the locations of the 10 pond critters on the number line and to attach the picture of the animals at each location . They are all somewhere on the water between the "skipper" (who is at zero – the beginning of the number line) and the duck (who is at one – the end of the number line). Show students where to attach the skipper and the duck. The location or address of 10 of the remaining 11 critters is listed on the set of animal locations that the children are given. For example the location of the turtle might be listed as 3 of 8 skips. The students would then find the stick length (3") such that eight of them will exactly fill the distance from 0 to 1. After laying down eight 3" sticks on the number line, the students would then attach the turtle picture at the end of three of those sticks (skips). The students will continue positioning all the other animal pictures on the number line.

  After the locations and pictures of the 10 critters have been placed, ask the students to position the

11th critter. For example say to the students, "the water beetle is at 5 of 6 skips. Find the location of the water beetle and draw a picture and write about how you found its location on the 5 step lesson paper.

Possible picture: The picture may show a line from 0 to 1 (or skipper to duck). The distance between 0 and 1 should be filled with 6 equals sized stick pictures, jumps, or partitions. A count of 5 sticks starting at 0 may be marked. A picture of a water beetle may be drawn in at that location.

Possible people talk: We used trial and error to find out which stick size would work. We knew there were a lot of skips from 0 to 1 so we thought we should use a smaller stick. The fewer the skips, the larger they are. The number of skips affects the size of the skips. The different numbers mean different things.

Feature talk: skips, jumps, sticks, numbers (0-8), counting, animals, water beetle, skipper, duck, length, distance, water, rock, size of sticks, number of sticks, equal, location

Write a sentence using underlined words that tell how you found the water beetle:

Feature sentence: We found the water beetle by putting 6 equal sticks between 0 and 1 and then counting to the end of five sticks.

Symbolic language: I am expecting a substitution of the underlined words with pictures: a horizontal line marked with 0 and 1 filled with six sticks, and then counting off from 0 to 5 where a water beetle is placed. I am also looking for the use of a number with a single stick picture to represent 5 or 6 stick.

Reinthal 3/10/18

Extensions: Add a second whole (0-2) and make some locations exceed 1.

Make locations that are equivalent fractions

Search words: number line, fractions, numerator, denominator, third grade, equivalent fractions, improper fractions, mixed numbers
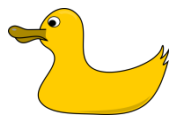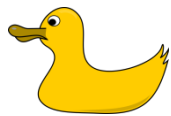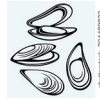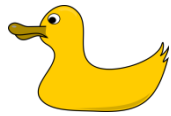
Animal hangouts:

frog 1 of 2 skips

dragonfly 3 of 8 skips

crawfish 1 of 3 skips

water beetle 7 of 8 skips

mosquito 1 of 4 skips

snake 2 of 3 skips

salamander 5 of 8 skips

turtle 1 of 6 skips

mussels 3 of 4 skips

goose 5 of 6 skips

horsefly 1 of 8 skips

duck 3 of 3 skips

skipper 0 of 8 skips