



NCEA Math Lesson Plan

Grade: 3

Subject: Mathematics

Domain:

Fractions

Standard Number(s) and Description:

3.NF.2 Represent a fraction $\frac{1}{b}$ on a number line diagram by defining the interval from 1 as the whole and partitioning it into b equal parts. Recognize that each part has $\frac{1}{b}$ and that the endpoint of the part based at 0 locates the number $\frac{1}{b}$ on the number line.

Represent a fraction $\frac{a}{b}$ on a number line diagram by marking off a lengths $\frac{1}{b}$ from 0.

Recognize that the resulting interval has a size $\frac{a}{b}$ and that its endpoint locates the number $\frac{a}{b}$ on the number line.

*Grade 3 expectations in this domain are limited to factors with denominators 2, 3, 4, 6, and 8.

Vocabulary to be Highlighted:

Unit fraction, numerator, denominator, equal parts, whole, partitioning, number line, end point, ruler

Mathematical Practices (#):

4. Model with mathematics.

5. Use appropriate tools strategically.

6. Attend to precision.

Essential Questions:

Why express quantities, measurements, and number relationships in different ways?

Given two representations, how are they the same/different; show me the numbers in each?

Why is this the appropriate tool for this situation?

Is your method correct? If not, how can you fix it?

Is your method efficient? Is there a more efficient way to complete your solution?

Materials/Tools (include technology):

Masking tape

Sentence strips with number lines (all the same length, with endpoints of 0 and 1) – 6 per student

Ruler

Document camera or Smart board (optional)

String

Mustard seeds

Soil

Pots

Wood dowel to secure ruler in pot

Connections to Other Math Domains:

3.MD.4 Generate measurement data by measuring length using rulers marked with halves and fourths of an inch. Show the data making a line plot, where the horizontal scale is marked off in appropriate units-whole numbers, halves, or quarters.

Connections to Other Subject Areas: Science: Plant mustard seeds and record daily growth to the nearest fraction ($\frac{1}{2}$ or $\frac{1}{4}$) of an inch.
Catholic Identity Component: Taking care of God's creation Parable of the Mustard Seed (Matthew 13:31-32)
Resources (attachments):
Activities/Timeline: 1. Ask students to draw different models of the following with a partner: $\frac{1}{2}$; $\frac{1}{4}$; $\frac{1}{3}$. Share as a whole class several examples under the document camera or Smart Board. 2. Place 8 feet of masking tape on the floor marked with starting line of zero and a finish line of 1. Have volunteers jump (standing long jump) and have them estimate if the student jumped $\frac{1}{2}$, $\frac{1}{3}$, or $\frac{1}{4}$ of the distance. Ask if the previous fraction models lend themselves to this situation and why or why not (no). Ask how we can determine if person A jumped $\frac{1}{2}$; $\frac{1}{3}$; or $\frac{1}{4}$ of the distance. Have students discuss various methods. (Teacher can guide students towards using string to fold the distance into unit fractions) 3. Compare this to a number line model (hold up sentence strips with number line model marked only with 0 and 1 (endpoints)). 4. Pass out premade number line models marked only with endpoints (6 per student: one for each fraction and one showing one whole). Model folding and labeling $\frac{1}{2}$ and $\frac{1}{3}$, reviewing fraction vocabulary with emphasis on "equal partitioning." Have students explore folding $\frac{1}{4}$, $\frac{1}{6}$, and $\frac{1}{8}$. Students label fractions after they can verify with a partner that the partitions are accurate. 5. Teacher challenges student partners to find $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{8}$ of an inch on a ruler with a partner. 6. Students search through desk supplies to find objects of those lengths. 7. This lesson will lead to another integrated lesson of religion, math, and science. After reading the parable of the mustard seed, students will plant mustard seeds in groups. They will generate measurement data of the growth of their plant over time. They can record the date when the plant's height is $\frac{1}{4}$ inch and $\frac{1}{2}$ inch tall. They can continue recording to record the height of the plant to the nearest $\frac{1}{4}$ or $\frac{1}{2}$ inch. (3MD.4)
Formative Assessment (what to look for, how/when to look): Observe students as they fold and label fractions on number lines. Observe students as they use rulers to measure and record objects' length in fractions of an inch. Observe students as they measure and record plant height in fractions of an inch.
Summative Assessment: As an exit ticket: On a blank number line, students can label $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$. If possible, students can also label $\frac{1}{6}$ and $\frac{1}{8}$.