Name_______________________________________ **Grade**_____________ **Teacher**________________________

1. Two children are sharing 5 candy bars. If the children share the candy bars equally, how much can each child have? Picture: Answer: ______________________________	2. Four children are sharing 3 candy bars. If the children share the candy bars equally, how much can each child have? Picture: Answer: ______________________________
3. Joelle needs 1 pound of cheese to make a pan of lasagna. He has $\frac{5}{8}$ pound of cheese. How much more cheese does he need to have a whole pound of cheese? Answer: ______________________________ Use words or pictures to explain your answer.	4. Nathan has $\frac{3}{8}$ of a pan of brownies. Amber has $\frac{3}{4}$ of a pan of brownies. Draw a picture: Use words to explain who has more and why.

DeAnn Huinker & Judy Winn, University of Wisconsin-Milwaukee
Leah Schlichtholz, Frelesha LeFlore, & Jennifer O'Neil, Milwaukee Public Schools

5. Pretend that all these fractions refer to a length of ribbon. Circle each fraction below that is less than one-half of the ribbon.

$\frac{3}{10}$ $\frac{1}{7}$ $\frac{8}{3}$

$\frac{25}{50}$ $\frac{11}{12}$ $\frac{31}{67}$

Describe the strategy you used to make your decisions.

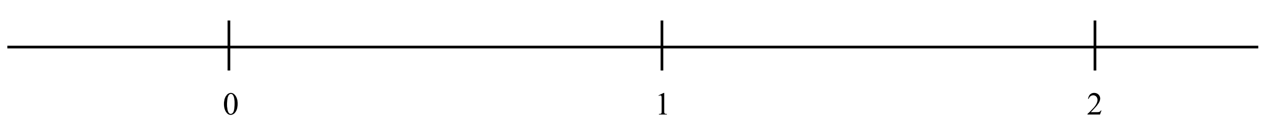
6. Jamese had 2 full-size subway sandwiches. Then she let her brother eat $\frac{1}{4}$ of one sandwich. How much did Jamese have now?

Draw a picture:

Explain how to figure out the answer.

What is the answer?______________________

7. On the number line, show where $\frac{1}{3}$, $\frac{1}{2}$, and $\frac{1}{4}$ are located.



National Council of Teachers of Mathematics
NCTM Annual Meeting, April 2012

DeAnn Huinker & Judy Winn, University of Wisconsin-Milwaukee
Leah Schlichtholz, Frelesha LeFlore, & Jennifer O'Neil, Milwaukee Public Schools

Instructional Guide for Initial Fraction Ideas

This checklist was designed to guide instruction for developing initial fraction ideas. Students who have a solid foundation of fraction ideas should possess these conceptions and skills and be able to demonstrate their understanding using appropriate fraction language and visual models.

Partition Set of Objects, No Remainder

__________ Fair shares a group of discrete objects that result in no remainder (e.g., 12 objects shared among 4 children).

__________ Describes the shares and justifies why they are fair.

Partition Set of Objects, Halves

__________ Fair shares a group of objects (at least 5 whole objects) that result in partitioning at least one whole object into halves (e.g., 7 objects shared among 2 children).

__________ Partitions an object into 2 halves that shows two "equal" portions.

__________ Describes the shares and justifies why they are fair, may or may not use the fraction word "halves" but rather says that each child each got the same.

__________ Uses the term "halves" to describe a fair share among two people.

__________ Explains and demonstrates how 2 halves comprise one whole object; can count the halves, "1 half, 2 halves" and state that two halves make one whole object.

__________ Explains and demonstrates how 4 halves comprise two whole objects; can count the halves, "1 half, 2 halves, 3 halves, 4 halves" and state that 4 halves make two whole objects.

Partition Set of Objects, Fourths

__________ Fair shares a group of objects (at least 5 whole objects) that result in partitioning an object into fourths (e.g., 9 objects shared among 4 children).

__________ Partitions an object into 4 fourths that shows four "equal" portions.

__________ Describes the shares and justifies why they are fair, may or may not use the fraction word "fourths" but rather says each child got the same.

__________ Uses the term "fourths" to describe a fair share among four people.

__________ Explains and demonstrates how 4 fourths comprise one whole object; can count the fourths, "1 fourth, 2 fourths, 3 fourths, 4 fourths" and state that 4 fourths make one whole object.

__________ Explains and demonstrates how 8 fourths comprise two whole objects; can count by fourths, "1 fourth, 2 fourths, 3 fourths, … 8 fourths" and state that 8 fourths make two whole objects.

Equivalence of Fractions

__________ Explains using fraction language and demonstrates that 1-half represents the same amount as 2-fourths.

__________ Explains using fraction language and demonstrates that 2-halves represent the same amount as 4-fourths.

Emerging Ideas to Note, Language-Concept Ideas

__________ Equal: Explains multiple meanings of the term "equal." For example, 34=30+4 or 28+27=40+15=55 in which equal refers to equality—the "same amount" is shown on both sides of the equal sign; whereas with fractions, equal refers to equivalent amounts—same amount of area or the same distance.

__________ Inverse Idea: When we have the same sized whole, can explain that fourths are smaller than halves, because fourths means that the whole is partitioned into more fair shares so each is smaller than halves which is only two shares. Similarly, eighths are smaller than fourths when the whole is the same size.

Diagrams to Represent Fractions

___________ Maintains same-sized wholes when working with multiple wholes.

___________ Carefully partitions wholes into equal-sized partitions for non-square rectangles, circles, and squares, and can explain how the partitions show equal shares.

___________ Names the fractional amount (i.e., unit fraction) represented by each partition, can count the partitions using fraction language, and can express how many equal-sized partitions comprise a whole (e.g., 4 fourths make one whole).

___________ Shades diagrams to show unit fractions and explains the relationship of the part to the whole using fraction language and fair share language (e.g., one fourth or one equal share, not 1 out of 4).

___________ Shades diagrams to show non-unit fractions and explains the relationship of the part to the whole using fraction language and fair share language (e.g., 3 fair shares, 3 shares of size one-fourth, three fourths).

___________ Demonstrates a partitioning strategy for fourths: Shows and explains how to partition a diagram into fourths by subdividing halves and can explain the relationship of halves to fourths.

___________ Demonstrates a partitioning strategy for eighths: Shows and explains how to partition a diagram into eighths by beginning with halves and then subdividing into fourths and then into eighths, and can explain the relationship of fourths to eighths.

___________ Recognizes that equal shares of identical wholes need not have the same shape and can explain how they comprise the same amount (e.g., vertical cuts only compared to vertical and horizontal cuts).

Symbols to Represent Fractions

___________ Demonstrates and explains how fraction symbols for *unit fractions* relate to *concrete objects* and clearly expresses how the top number and the bottom number relate to the objects using fraction and fair share language (e.g., 1/4 means you are measuring out one share of four equal shares).

___________ Demonstrates and explains how fraction symbols for *unit fractions* relate to *diagrams* using fraction and fair share language, with emphasis on how the top number in a fraction symbol is the measured amount which is the part shaded not the residual amount.

___________ Demonstrates and explains how fraction symbols for *non-unit fractions* relate to *concrete objects* using fraction and fair share language, with emphasis on the measured versus residual amount, for non-unit fractions less than one whole, equal to one whole, and greater than one whole.

___________ Demonstrates and explains how fraction symbols for *non-unit fractions* relate to *diagrams* using fraction and fair share language, with emphasis on the measured versus residual amount, for non-unit fractions less than one whole, equal to one whole, and greater than one whole.

___________ Explains the meaning of fraction symbols for unit and non-unit fractions using fraction and fair share language (e.g., 5/4 means 5 shares each of size one-fourth, five-fourths).

___________ Explains how fraction symbols with a larger number on top represent quantities that are greater than one whole and how they can be rewritten as a mixed number, using fraction and fair share language (e.g., 7/4 means 7 shares each of size one-fourth and since four-fourths make one whole this can be written as 1 whole and 3/4 or 1 3/4).

DeAnn Huinker & Judy Winn, University of Wisconsin-Milwaukee
huinker@uwm.edu, jwinn@uwm.edu (version 04.22.12)