AIM4S³ ™ September 16, 2014

UNIT PLANNING TOOL

Unit ____: fractions

CCSSM: 5.NF.1 Add + subtract fractions w/unlike denominators
5.NF.2 - Solve word problems involving addition and subtraction
5.NF.3 Interpret a fraction as $\frac{a}{b} = a \div b$
5.NF.4a Interpret the product $(\frac{a}{b}) \times q$ as part of a partition of q into b equal parts
4b Find the area of a rectangle w/fractional lengths by tiling squares units.
5a Compare size of product to the size of one factor on the basis of size of other factor
5b Explain why mult. a number by a fraction >1 results in product > than given # and why mult a # <1 results in a product smaller than 1

Math Practices being emphasized:
Make sense of problem and persevere
Reason abstractly & quantitatively
Model w/ mathematics
use appropriate tools strategically

Essential Questions

- How can a model help us make sense of a problem?
- How can we describe how much someone gets in a fair-share situation if a fair share is between two whole numbers?
- what strategies can we use for + or − fractions with different denominators?

Pre and Post Assessments

Pre: Solve fractions in 2 different ways

Post. Return to pretest problems after lesson to reflect and finish solving

Key Concepts

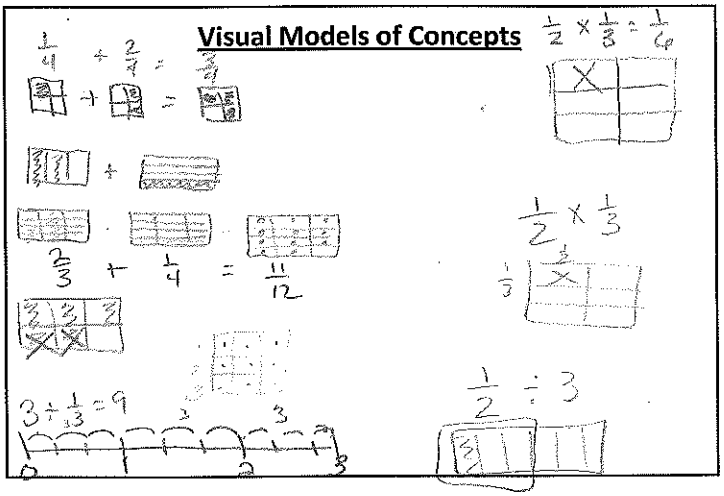
understanding of fractions (part of a whole)

Conceptually add, subtract, multiply and divide fractions.

understand how to use models

solve real life problems with fractions

Visual Models of Concepts



Algorithms/Diagrams

$9 \times \frac{1}{3}$

$\frac{9}{1} \times \frac{1}{3} = \frac{9}{3}$ or 3

$4 \div \frac{1}{3}$

$\frac{4}{1} \times \frac{3}{1} = 12$

$\frac{3}{5} \times \frac{5}{6} = \frac{15}{30} \div \frac{15}{15} = \frac{1}{2}$

$\frac{1}{3} \div 4$

$\frac{1}{3} \times \frac{1}{4} = \frac{1}{12}$

$3\frac{1}{2} \times 1\frac{1}{4}$

$\frac{7}{2} \times \frac{5}{4} = \frac{35}{8} = 4\frac{3}{8}$

$\frac{2}{4} + \frac{1}{2} =$

$\frac{2}{4} + \frac{2}{4} = \frac{4}{4} = 1$

Connections (Real World Applications)

Chefs in restaurants - cooking baking

Using recipes

-Sharing wholes of something with friends

- dividing wholes into smaller portions -

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Language Functions/Structures

To multiply 3 x $\frac{2}{3}$ you divide the whole # into ___ parts based on the numerator, then you count ___ parts of each whole based on the numerator

The product of $\frac{2}{3}$ x $\frac{1}{6}$ is _____ because . . .

I know the common denominator of $\frac{2}{3} + \frac{1}{8}$ is ___ because . . . .

Vocabulary

add
subtract
multiply
product
factor
division
divide
quotient
dividend
divisor
fraction
tiling
area
square units
partial
numerator
denominator
mixed number
improper fraction

Focus and Motivation

Equivalent fractions – folding activity

Brainpop - Add and Subtract fractions
Multiply and divide fractions
www.brainpop.com

Listen and Respond: Inchworm and A Half
by Elinor J. Pinczes

I have, who has . . . . activity

Types of fractions

proper fraction: $\frac{1}{3}$ ← numerator → ← denominator → improper fraction $\frac{8}{2}$

mixed number: $3\frac{2}{3}$ (whole; 2 – numerator; 3 – denominator)

Fractions – part of a whole or set

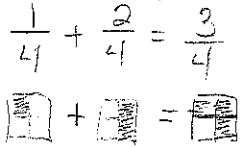
$3,426.273$

$\frac{000}{3}$

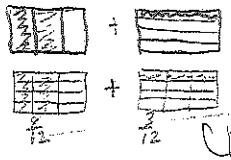
$\frac{3}{9} = 3 \div 9$ or $9\overline{)3}$

Addition

$\frac{1}{4} + \frac{2}{4} = \frac{3}{4}$

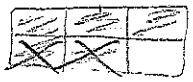


$\frac{2}{3} + \frac{1}{4} = \frac{11}{12}$

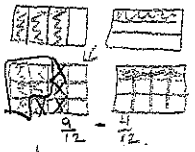


Subtraction

$\frac{5}{6} - \frac{2}{6} = \frac{3}{4}$



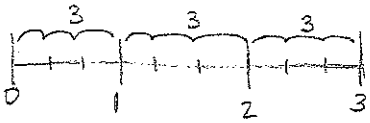
$\frac{3}{4} - \frac{1}{3} = \frac{5}{12}$



Division

▭ = 1 whole

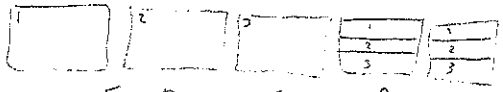
$3 \div \frac{1}{3} = 9$



Example:

and

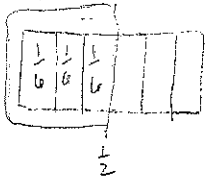
are sharing 5 brownies equally. How much does each person get?



$5 \div 3$ or $\frac{5}{3} = 1\frac{2}{3}$

If you have $\frac{1}{2}$ of a cake and you divide it by 3 people, each person gets how much cake?

$\frac{1}{2} \div 3 = \frac{1}{6}$

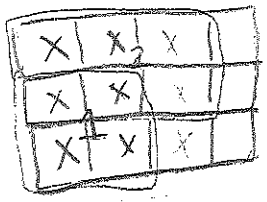


Each person gets $\frac{1}{6}$ of the cake.

Multiplication

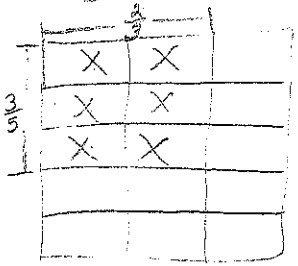
3 students each ate $\frac{3}{4}$ of a candy bar.

$3 \times \frac{3}{4} = \frac{9}{4}$ or $2\frac{1}{4}$



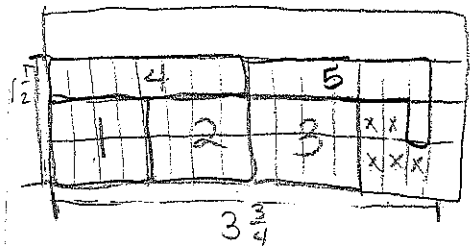
part of a part

$\frac{2}{3} \times \frac{3}{5} = \frac{6}{15}$



▭ bought $1\frac{1}{2}$ pounds of grapes. He also bought bananas that are $3\frac{3}{4}$ times the weight of the grapes. How much did the bananas weigh?

$1\frac{1}{2} \times 3\frac{3}{4} = 5\frac{5}{8}$



Key ▭ = 1 unit

$\frac{3}{4} \times 8 = 6$ (of)

What we know about fractions

Inquiring

What we want to know about fractions

Standards and Mathematical Practices

1. We will add, subtract, multiply, and divide fractions by modeling with mathematics
2. We will find the area of a rectangle with fractional sides by tiling square units and using the appropriate tools strategically.
3. We will solve real world problems involving multiplication of fractions and mixed numbers by making sense of problems and persevere in solving them.