

Types of Fractions

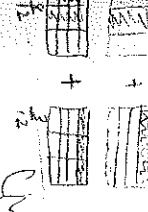
proper fraction →  $\frac{8}{9}$  improper fraction →  $\frac{9}{3}$

mixed number →  $2\frac{2}{3}$

**Addition**

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

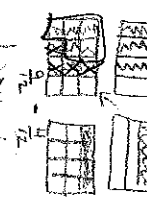
$\frac{2}{3} + \frac{1}{4} = \frac{11}{12}$



**Subtraction**

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

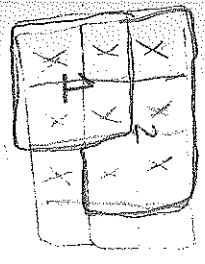
$\frac{3}{4} - \frac{1}{3} = \frac{5}{12}$



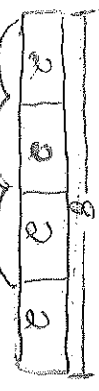
**Multiplication**

sticks, each one of a candy bar.

$\frac{3}{4} \times \frac{2}{4} = \frac{6}{16}$



$\frac{3}{4} \times 8 = 6$



Standards and Mathematical Practices

We will multiply and divide fractions by modeling with mathematics.

We will find the area of a rectangle with fractional sides by tiling square units and using the appropriate tools strategically.

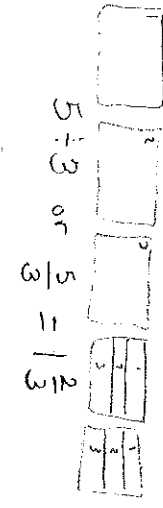
We will solve real world problems involving multiplication of fractions and mixed numbers by making sense of problems and persevere in solving them.

**Fractions** — part of a whole or set

$\frac{3}{9} = 3 \div 9$  or  $9 \sqrt{3}$

Example!

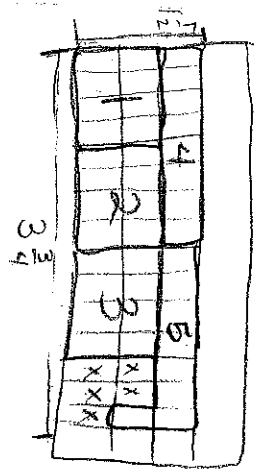
Sharing 5 brownies equally. How much does each person get?



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

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?

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

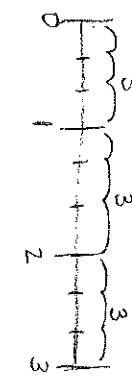
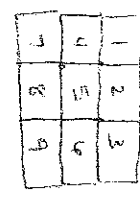


Key  $\square = 1$  unit

what # part of a #  
 $3, 4, 2, 9, 12, 7, 3$

**Division**

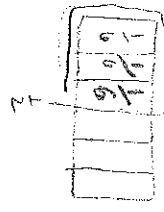
$3 \div \frac{1}{3} = 9$



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.



What we know about fractions

Inquiry

What we want to know about fractions

**UNIT PLANNING TOOL** ① Make sense of problem and persevere in solving

**Unit 10: Multiply & Divide fractions**

**CCSSM:**

- 5.NF.3 Interpret a fraction as  $\div \frac{a}{b} = a \div b$
- 5.NF.4a Interpret the product  $(\frac{a}{b}) \times q$  as parts of a partition of 'q' into 'b' equal parts
- 5.NF.4b Find the area of a rectangle w/ fractional lengths by tiling w/ unit squares
- 5.NF.5a Compare size of product to the size of one factor on the basis of size of other factor
- 5.NF.5b Explain why mult. a number by a fract.  $> 1$  results in product  $>$  than given #  
why mult. a  $< 1$  results in product smaller than 1
- 5.NF.6 Solve real word problems w/ fractions and whole #s
- 5.NF.7a divide unit fraction  $\times$  whole number
- 5.NF.7b divide whole # by unit fraction
- 5.NF.7c - solve real word problems w/ division

- Math Practices being emphasized:**
- ② Reason abstractly & quantitatively
  - ③ Model with mathematics
  - ⑤ use appropriate tools & strategically

**Essential Questions**

What strategies can be used to multiply and divide fractions?

**Pre and Post Assessments**

Pre: p. 240 My Math Assessment Masters

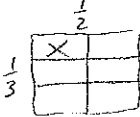
Post: Chapter Test p. 252-253 My Math Assessment Masters.

**Key Concepts**

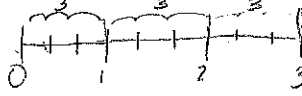
Understanding of fractions (part of a whole)  
 Multiply & divide fractions conceptually  
 understand how to use models to show work.  
 Solve real-life problems w/ fractions

**Visual Models of Concepts**

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

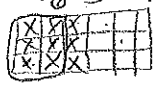


$\frac{1}{3} \div \frac{1}{3} = 1$

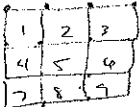


$3 \div \frac{1}{3} = 9$

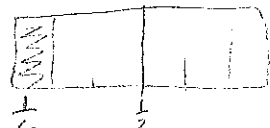
$\frac{3}{6} \times 3 = 1 \frac{3}{6}$



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



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



$\frac{1}{6}$        $\frac{1}{2}$

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

1 2 3  
4 5 6  
7 8 9

□ = whole

**Algorithms/Diagrams**

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

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

$3 \frac{1}{2} \times \frac{1}{4}$   
 $\frac{7}{2} \times \frac{1}{4} = \frac{7}{8}$

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

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

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

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

**Connections (Real World Applications)**

Chefs in restaurants - cooking, baking using recipes  
 - sharing wholes of something w/ friends

Language Functions/Structures

To multiply  $\frac{3}{4} \times \frac{2}{3}$  you divide the whole # into — parts based on the numerator then you count — parts of each whole based on the numerator.

The product of — x — is — because ....

|          |          |                   |                   |
|----------|----------|-------------------|-------------------|
| division | multiply | <u>Vocabulary</u> | numerator         |
| divide   | product  |                   | denominator       |
| quotient | fraction |                   | Mixed number      |
| dividend | tiling   |                   | improper fraction |
| divisor  | area     |                   |                   |

Focus and Motivation

Bram pop - multiplication  
and division of fractions

[www.brampop.com](http://www.brampop.com)

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

I have, who has, .... activity