UNIT PLANNING TOOL

Planning Focus: <u>Geometry</u>   **Module(s)/Unit(s)** <u>Unit 5: Geometry & Measurement</u>

<u>CCSS.MATH.CONTENT.5.NBT.B.7</u>: Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

<u>CCSS.MATH.CONTENT.5.NF.B.3</u>: Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

<u>CCSS.MATH.CONTENT.5.NF.B.4</u> (4a, 4b): Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

<u>CCSS.MATH.CONTENT.5.NF.B.5</u> (5a, 5b): Interpret multiplication as scaling (resizing)

<u>CCSS.MATH.CONTENT.5.NF.B.6</u>: Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

<u>CCSS.MATH.CONTENT.5.NF.B.7</u> (7a, 7b, 7c): Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.

Mathematical Practices being emphasized: MP 1: Make sense of problems and persevere in solving them; MP 3: Construct viable arguments and critique the reasoning of others; MP 5: Use appropriate tools strategically

Essential Questions

How can we use models to help us multiply and divide decimals?

What are some patterns that occur when multiplying and dividing problems with decimals?

How can we describe how much someone gets in a fair-share situation if the fair share is between two whole numbers?

What does dividing a unit fraction by a whole number look like? • What does dividing a whole number by a unit fraction look like?

Key Concepts

Multiply a decimal by a whole number

Multiply and divide decimals

Fractions as division

Understand multiplication by a fraction

Multiply fractions to find area

Understand multiplication as scaling

Understand division with unit fractions

Solve word problems with fractions and decimals

Visual Models/ Algorithms/ Diagrams for Compendium

See attached Compendium

Pre and Post Assessments

1) Write the following decimals as fractions:
   a. 0.75.   b. 0.4

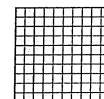2) Wolve the problem and show your work.
   2.7 + 3.4 =

Elena has 100 math problems to finish this week. She finishes $\frac{2}{10}$ of the problems on Monday and $\frac{25}{100}$ of the problems on Tuesday.

3) Shade the models to show the fraction of math problems that Elena finishes on Monday and Tuesday.
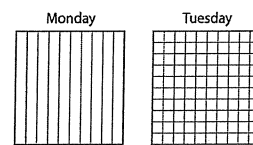
Monday   Tuesday

4) What fraction of the math problems for the week does Elena finish on Monday and Tuesday?

5) A farmer plants corn in his field. What fraction of his field does the farmer plant with corn as shown below.

6) Solve the problem. Show your work.

family eats $\frac{3}{8}$ of whole box of cereal each day. What fraction of the box of cereal does the family eat in 2 days?

Connections (Real World Applications)

Architects
Engineers
Pharmacists
Nurses
Financial Analysts
Data Analysts
Chefs
Accountants

Language Functions/Structures

Functions: Explain, Describe, Justify, Compare

The fraction _____ is the same as the decimal _____.

80 hundredths is equal to _____.

The product is _____ because _____.

_____ of _____ is _____.

_____ are parts of a whole.

When dividing decimals by whole numbers, you first _____.

_____ is _____ and _____ hundredths

Vocabulary

Decimal	factor	place value	product
Numerator	denominator	whole number	mixed number
Tenth	hundredth	thousandth	quotient
Divisor	equivalent fraction	unit fraction	decimal point

Focus and Motivation

Brain Pop videos - Decimals- https://www.youtube.com/watch?v=zLmKW9OZOnl
             Decimals & Fraction- https://www.youtube.com/watch?v=M7ZqJ2GeYEo

Literature – Fractions, Decimals, and Percents by David Atler
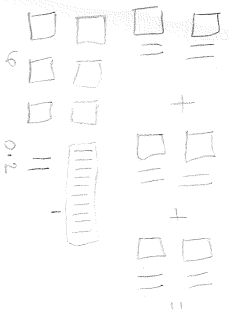   Sir Cumference gets Decima's point by Cindy Neuschwander

Hands – on - Using base ten blocks representing decimals in place of whole numbers

Songs – Multiplying Decimals Song by NUMBEROCK: https://www.youtube.com/watch?v=nHg4RVqQ12E

Multiplying Decimals

whole number × decimal

$3 \times 2.4 = 7.2$

□|| + □|| = □||
□|| + □|| = □|| 6
□|| + □|| =   0.2

area model

2	.4
6	1.2

3

Partial products

decimal × decimal

$.5 \times .3 = .15$

0.3
0.5

$\frac{5}{10}$ of $\frac{3}{10}$ $\frac{15}{100}$

$\frac{15}{100} = 0.15$

Dividing Decimals

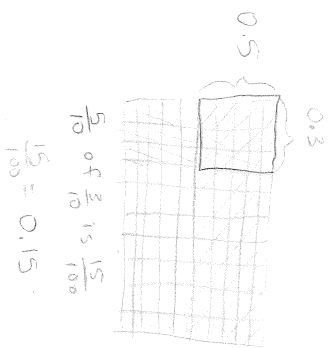___ has $1.20 to buy some ribbon. Each foot of ribbon costs 8¢. How many feet of ribbon can ___ buy?

15 ft

1.20
- .40
- .80
- .40

0.08) 0.40
- .40
- .40
     0
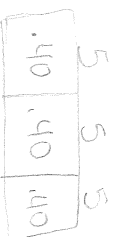
Decimals and Fractions

fraction × fraction

$\frac{2}{3} \times \frac{3}{4} = \frac{6}{12}$

0.5

3/12
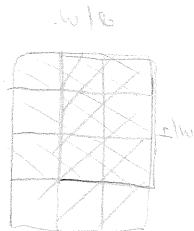
Multiplying Fractions

mixed number × mixed number

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

$3\frac{1}{2}$

$2\frac{1}{4}$

1 2 3
4 5 6
7 8 9
10 11 12

fraction ÷ whole number

Unit fraction ÷ whole number

___ has $\frac{1}{4}$ of a cake and wants to share it with 3 friends. How much will each of them get?

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

Each friend gets $\frac{1}{12}$ of the cake.
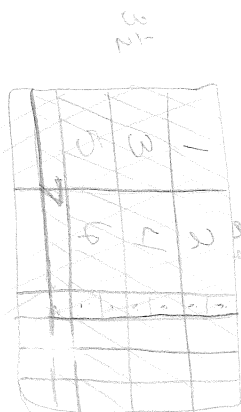
Dividing Fractions

whole number ÷ unit fraction

___ had 4 cakes. $\frac{1}{4}$ of a cake is a serving. How many servings of a cake does ___ have?

___ has ___ 12 servings of cake.

1 2 3
4 5 6
7 8 9
10 11 12

Mathematical Standards and Practices

What we know . . .

1. We will use appropriate tools when we multiply and divide decimals.

2. We will construct viable arguments to explain the product when we multiply fractions.

3. We will make sense of real-world multiplication and division fraction problems and persevere in solving them.

Inquiry) What we want to learn

1. We will use appropriate tools when we multiply and divide decimals.

2. We will construct viable arguments to explain the product when we multiply fractions.

3. We will make sense of real-world multiplication and division fraction problems and persevere in solving them.