LAFAYETTE
Grade 6, Module 2, Topic B
parish school system

## $6^{\text {th }}$ Grade Math

## Module 2: Arithmetic Operations Including Division of Fractions

## Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math (© 2013 Common Core, Inc.) that is also posted as the Engage New York material being taught in the classroom. In Module 2 of Eureka Math (Engage New York), students will complete their understanding of the four operations (addition, subtraction, multiplication and division) through the study of division of whole numbers, division by fractions and operations on multi-digit decimals.


## Focus Area Topic B:

Multi-digit Decimal Operations - Adding, Subtracting and Multiplying

## Words to Know:

Addend - a number that is added to another.
Minuend - a quantity or number from which another is to be subtracted.
Subtrahend - a quantity or number to be subtracted from another

Sum - the result of adding two or more numbers
Difference - the result of subtracting one number from another

Distributive Property - property of numbers which is used to multiply a single term and two or more terms inside a set of parentheses
Students begin this topic by relating what they know about mixed numbers from the last lesson in Topic A. They will discover that finding the sums and differences of large mixed numbers can be more efficiently determined by first converting to a decimal and then solving. Through the use of the distributive property, students will tackle decimal multiplication. Students' understanding of place value will help them determine decimal placement in products. This will also help the students to recognize that the size of the product is relative to each factor.

## Focus Area Topic B:

Multi-digit Decimal Operations
Adding,Subtractingand Multiplying

## Adding and Subtracting Decimals

## Example Problem and Solution

Ben has $2 \frac{1}{2}$ boxes of cookies. His friend gave him $1 \frac{3}{4}$ more boxes. How many boxes does Ben have altogether?

This problem can be tackled several ways. First we can estimate. Estimation can be used to get an approximate answer to verify that your answer is correct or as we say reasonable.
$2 \frac{1}{10}$ can round to 2 and $1 \frac{3}{4}$ rounds to 2 .

$$
2+2=4
$$

We could also give each mixed number the same denominator and solve.

$$
\begin{aligned}
& 2 \frac{1 \times 2}{10 \times 2}=2 \frac{2}{20} \\
&+1 \frac{3 \times 5}{4 \times 5}=1 \frac{15}{20} \\
& 3 \frac{17}{20}
\end{aligned}
$$

The answer appears reasonable because it is so close to our estimate.

An easier way to solve this problem would be to convert the fractions to decimals. We do this by dividing the numerator by the denominator.
$1 \div 10=.1 \quad 3 \div 4=.75$ so we have $2.1+1.75$.
We line up the decimal points and add, adding 0s for placeholders when necessary.

$$
\begin{array}{r}
2.10 \\
+\quad 1.75 \\
\hline 3.85 \text { boxes }
\end{array}
$$

Ben has 3.85 boxes altogether.

## Example Problem and Solution

Jenny wants to walk $2 \frac{1}{2}$ miles. So far she has walked $1 \frac{1}{4}$ miles. How many more miles does she have left to walk?
$\frac{1}{2}=.5 \quad \frac{1}{4}=.25 \quad 2.50$
$\frac{-1.25}{1.25}$ miles left to walk

## Focus Area Topic B:

Multi-digit Decimal Operations - Adding, Subtracting and Multiplying


## Multiplying Decimals

## Example Problem and Solution

Solve $400 \times 4.5$ using the standard multiplication of decimals algorithm.

$$
\begin{array}{r}
400 \\
\times \quad 4.5 \\
\hline 2000 \\
\hline 16000 \\
\hline 1800.0
\end{array}
$$

Using this method, students must be careful to multiply correctly, line up place values correctly and then move the decimal the correct numbers of places.

## Example Problem and Solution

Solve $400 \times 4.5$ using partial products and the distributive property.

Separate 4.5 into an addition expression with two addends, 4 and 0.5. The problem will now be:

$$
400 \times(4+0.5)
$$

When the distributive property is applied, the problem will be:

$$
\begin{aligned}
& 400(4)+400(0.5) \\
& 1600+200=1800 .
\end{aligned}
$$

This example is the same as the one above but most of the calculations in this example can be completed mentally.

## Example Problem and Solution

Solve $200 \times 17.6$ using partial products and the distributive property.
$200(17+.6)=200(17)+200(.6)$
$3400+120=3,520$.

## Focus Area Topic B:

## Multi-digit Decimal Operations - Adding, Subtracting and Multiplying

## Example Problem and Solution

Use partial products and the distributive property to calculate the area of the rectangular patio shown below.

$200 \times 50=10,000 ; 200 \times .25=50$
$10,000+50=10,050$
The area of the patio is 10,050 square feet.

## Example Problem and Solution

Paint costs $\$ 19.95$ for a gallon. Frank needs 14.75 gallons to complete a painting project. How much will it cost Frank for this painting project? Remember to round to the nearest penny.

| 19.95 | 19.95 |
| :---: | :---: |
| $\frac{x \quad 14}{7980}$ | $\frac{x .75}{9975}$ |
| $\frac{19950}{279.30}$ | $\underline{139650}$ |

$19.95 \times 14=279.30$ $19.95 \times .75=14.9625$
$279.30+14.9625=294.2625 \ldots$ rounded to the nearest penny is $\$ 294.26$

The paint will cost Frank $\$ 294.26$.


