FOURTH GRADE MATHEMATICS
UNIT 4 STANDARDS

Dear Parents,

As we shift to Common Core Standards, we want to make sure that you have an understanding of the mathematics your child will be learning this year. Below you will find the standards we will be learning in Unit Four. Each standard is in bold print and underlined and below it is an explanation with student examples. Your child is not learning math the way we did when we were in school, so hopefully this will assist you when you help your child at home. Please let your teacher know if you have any questions ☺
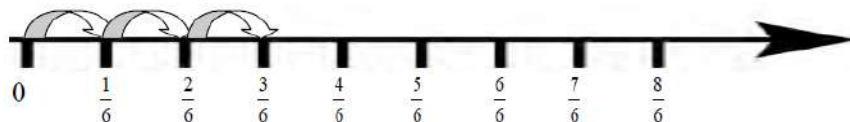
MCC.4.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

a. Understand a fraction *a/b* as a multiple of 1/b. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).*
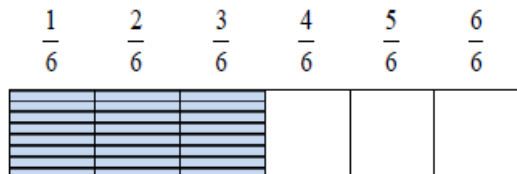
This standard builds on students' work of adding fractions and extending that work into multiplication.

Example: $\frac{3}{6} = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = 3 \times \frac{1}{6}$

Number line:

Area model:

b. Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)*

This standard extended the idea of multiplication as repeated addition. For example,

$3 \times \frac{2}{5} = \frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{6}{5} = 6 \times \frac{1}{5}.$

Students are expected to use and create visual fraction models to multiply a whole number by a fraction.
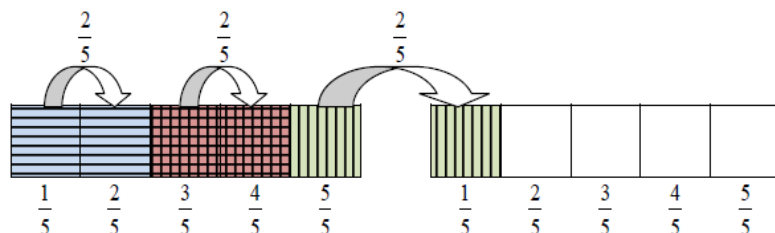
c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party,*

how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?

This standard calls for students to use visual fraction models to solve word problems related to multiplying a whole number by a fraction.
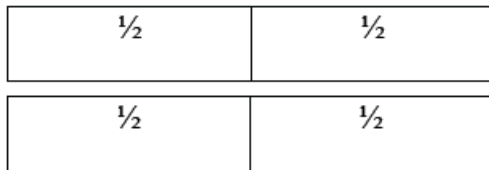Example:
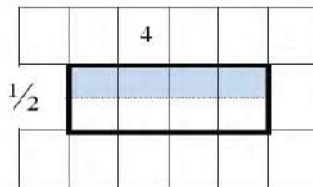In a relay race, each runner runs ½ of a lap. If there are 4 team members how long is the race?

Student 1 – Draws a number line showing 4 jumps of ½:
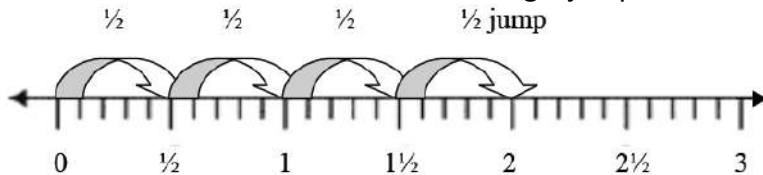
Student 2 – Draws an area model showing 4 pieces of ½ joined together to equal 2:

Student 3 – Draws an area model representing 4 × ½ on a grid, dividing one row into ½ to represent the multiplier:
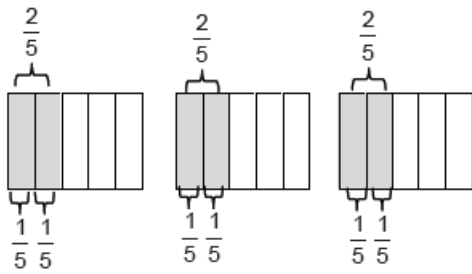

Example:
Heather bought 12 plums and ate $\frac{1}{3}$ of them. Paul bought 12 plums and ate $\frac{1}{4}$ of them. Which statement is true? Draw a model to explain your reasoning.
 a. Heather and Paul ate the same number of plums.
 b. Heather ate 4 plums and Paul ate 3 plums.
 c. Heather ate 3 plums and Paul ate 4 plums.
 d. Heather had 9 plums remaining.

Examples:
Students need many opportunities to work with problems in context to understand the connections between models and corresponding equations. Contexts involving a whole number times a fraction lend themselves to modeling and examining patterns.

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

$$\frac{2}{5} \qquad \frac{2}{5} \qquad \frac{2}{5}$$

$$\frac{1}{5}\ \frac{1}{5} \qquad \frac{1}{5}\ \frac{1}{5} \qquad \frac{1}{5}\ \frac{1}{5}$$

2. If each person at a party eats $\frac{3}{8}$ of a pound of roast beef, and there are 5 people at the party, how many pounds of roast beef are needed? Between what two whole numbers does your answer lie?

A student may build a fraction model to represent this problem:

3/8   3/8   3/8   3/8   3/8

3/8 + 3/8 + 3/8 + 3/8 + 3/8 = 15/8 = 1 7/8