

Perform operations with multi-digit whole numbers and with decimals to hundredths (Standards 5.NBT.5–7).

Standard 5.NBT.5 Fluently multiply multi-digit whole numbers using the standard algorithm.

Key Elements:

Students should have a meaningful knowledge of other strategies for multiplying numbers in the base ten system. The standard algorithm should be the final method taught. Use of the standard algorithms can be viewed as the culmination of a long progression of reasoning about quantities, the base-ten system, and the properties of operations.

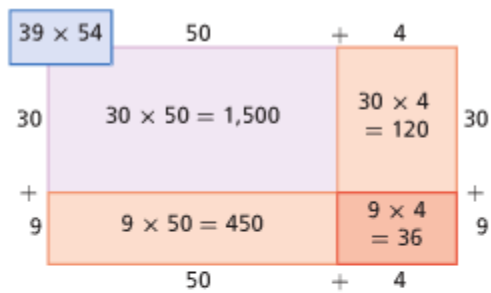
When you multiply by 10 the number get 10 times as big. The digits shift one place to the right. When you multiply by 100, the number gets 100 as big. The digits shift 2 places to the right.

When using the standard algorithm, the students have learned to “carry” the digit in the tens place over to the number to the left. The students should also know that they are not just placing a digit into the tenths place, but they are adding the value. They are not just carrying a 2, but they are adding a value of 20, or 2 tens (therefore a 2 in the tens place)

4th grade uses area model, less focus is placed on standard algorithm. Students should recognize the connection between the two models. For example, when adding the values from the columns of the area model, each column total adds up to the same value as the partial products in the standard algorithm. Using the area model below, $(120 + 36) = 156$ which is also a partial product when multiplying using the standard algorithm.

Area Model

Standard Algorithm



$$\begin{array}{r}
 30 \times 50 = 1,500 \\
 30 \times 4 = 120 \\
 9 \times 50 = 450 \\
 9 \times 4 = + 36 \\
 \hline
 2,106
 \end{array}$$

$$\begin{array}{r}
 2 \\
 2 \\
 67 \\
 \times 43 \\
 \hline
 201 \\
 2,680 \\
 \hline
 2,881
 \end{array}$$