

Multiplication and Division with Decimals

(using long multiplication and long
division)



National Center and State Collaborative

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Words and Math

- Before you begin instruction, you may need to review the different ways the operation of multiplication and division is referred to in word problems
- Multiplication
 - Multiplied by, times, product, groups of
- Division
 - Divided by, quotient, divided into

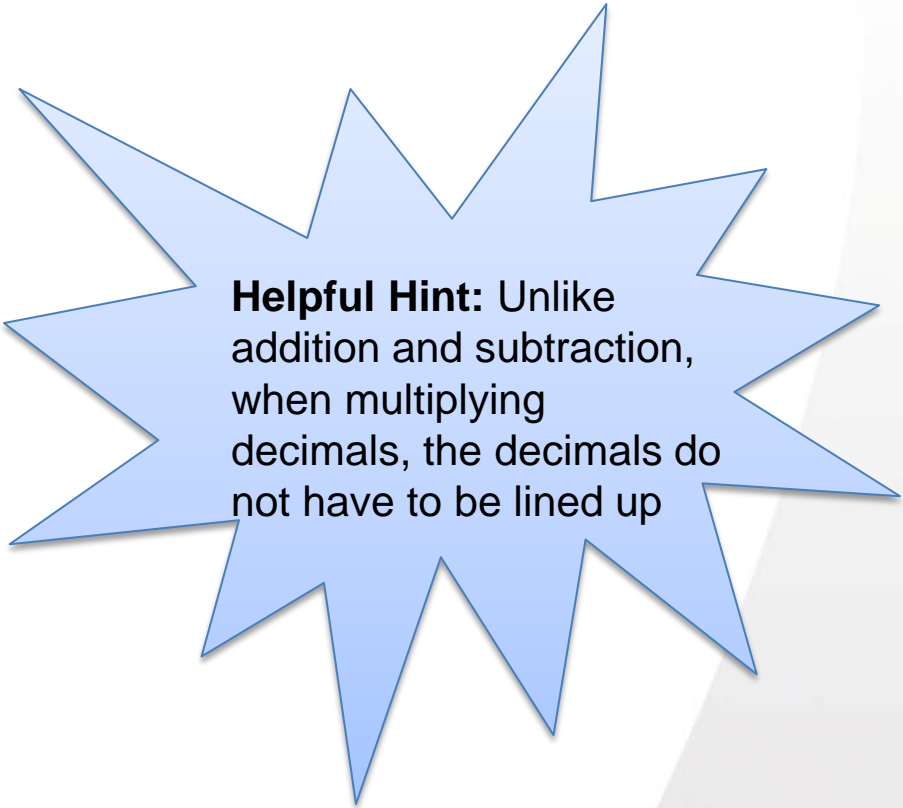
Multiplying decimals: An example

$$\begin{array}{r} 25.99 \\ \times \underline{.5} \\ \hline 12.995 \end{array}$$

Step 1: multiply each number by 5

Step 2: count total number of decimal places (3)

Step 3: place decimal



Helpful Hint: Unlike addition and subtraction, when multiplying decimals, the decimals do not have to be lined up

Multiplying decimals: Another example

Step 1: multiply each number by 7

$$\begin{array}{r} 5.43 \\ \times 3.7 \\ \hline 3801 \\ 16290 \\ \hline 29.091 \end{array}$$

Step 2: multiply each number by 3 (don't forget the place marker)

Step 3: add the two products together

Step 4: place decimal

Dividing decimals: An example

Step 1: 6 divided by 56 is 9 which equals 54

Step 2: 56 minus 43 equals 2, bring down the 3 from the problem

$$\begin{array}{r} 9.39 \\ 6 \overline{)56.34} \\ \underline{-54} \\ 23 \\ \underline{-18} \\ 54 \\ \underline{-54} \\ 0 \end{array}$$

Step 4: place decimal according to how many decimal places there were in the problem (2)

Step 3: continue long division

Ideas for application

- Use word problems related to shopping
 - Example: A student purchases some items and the sales tax is .08. Have students figure out the total purchase price by multiplying the subtotal by the sales tax and adding both numbers together.

Making connections

- Multiplying and dividing decimals address the following 4th and 5th grade Core Content Connectors
 - 4.NO.1p1 Read, write, or select decimals to the hundredths place
 - 5.NO.1b1 Read, write, or select a decimal to the hundredths place
 - 5.NO.1b2 Read, write, or select a decimal to the thousandths place
 - 5.NO.2c1 Solve 1 step problems using decimals