

Multiplication: Partial Products Algorithm

In this algorithm, we break apart the numbers by place value to find parts of the product. We add them back together to get the final product. This algorithm begins in the **ones** place.

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Multiplication: Traditional Algorithm

This is a digit--based algorithm. It is useful for multiplying large numbers. We begin in the ones place and proceed to multiply each digit. We combine products of each place value.

$$\begin{array}{r} 48 \\ \times 32 \\ \hline 96 \longleftarrow (2 \times 8) + (2 \times 40) \\ + 1440 \longleftarrow (30 \times 8) + (30 \times 40) \\ \hline 1,536 \end{array}$$

Division*

5th grade students continue to develop an understanding of division with larger numbers. One approach is to take groups of numbers, usually “friendly numbers” out.

Consider this:

We have 252 buttons to put in 4 boxes. How many buttons can we put in each box? ($252 \div 4$)

We can put 50 in each box ($4 \times 50 = 200$)

We can put 10 in each box ($4 \times 10 = 40$)

We can put 3 in each box ($4 \times 3 = 12$)

$$\begin{array}{r} 63 \\ \underline{252} \end{array}$$

So, we can put 63 buttons in each box.

$$252 \div 4 = 63$$

Another approach is to break apart the dividend into “friendly numbers.” Consider $252 \div 4$. We could break 252 into (240 + 12) and divide each by 4.

$$240 \div 4 = 60$$

$$60 + 3 = 63$$

$$12 \div 4 = 3$$

$$\text{So, } 252 \div 4 = 63$$

We may also consider Think Multiplication to work with division. Consider $932 \div 45$.

We can think of “What times 45 equals 932?”

We might think $45 \times 10 = 450$, so...

$$45 \times 20 = 900$$

20 groups of 45 is 900. We have 32 leftover but that is not enough for another group.

$932 \div 45 = 20$ with 32 leftover.

* The long division algorithm is introduced in grade 6 after students develop deep understanding of grouping and division.

Developing Computational Fluency

Grade 5



K-5 Mathematics
Monroe Public Schools

This brochure highlights some of the methods for developing computational fluency. For more information about computation and elementary mathematics visit <http://www.monroeps.org>