

Lesson 3: Partial Products in Algorithms

Standards Alignments

Addressing 5.OA.A.2
Building Towards 5.NBT.B.5

Teacher-facing Learning Goals

- Multiply a three-digit number and a two-digit number.
- Represent a partial products algorithm.

Student-facing Learning Goals

- Let's find partial products.

Lesson Purpose

The purpose of this lesson is for students to multiply multi-digit whole numbers using partial products.

In previous lessons, students multiplied three-digit numbers and two-digit numbers, using strategies based on place value and the properties of operations. Students used diagrams to illustrate and explain their partial products calculations.

In this lesson, students move from diagrams to an algorithm that records partial products which they used in an earlier course when multiplying a two-digit number and a two-digit number. Students relate partial product expressions to diagrams and then analyze a systematic way to record partial products. This work sets students up to learn the standard algorithm in the next lesson.

Access for:

Students with Disabilities

- Action and Expression (Activity 2)

English Learners

- MLR8 (Activity 1)

Instructional Routines

Which One Doesn't Belong? (Warm-up)

Materials to Copy

- Partial Product Expressions (groups of 2): Activity 1

Lesson Timeline

Warm-up	10 min
Activity 1	20 min
Activity 2	15 min
Lesson Synthesis	10 min
Cool-down	5 min

Teacher Reflection Question

In a future lesson, students will learn how to use the standard algorithm for multiplication to multiply multi-digit numbers. How do the diagrams and expressions used in today's lesson support this work?

Cool-down (to be completed at the end of the lesson)

🕒 5 min

Using Partial Products

Standards Alignments

Building Towards 5.NBT.B.5

Student-facing Task Statement

Find the value of 415×43 using partial products.

Student Responses

Sample response:

$$\begin{array}{r}
 \begin{array}{r}
 415 \\
 \times 43 \\
 \hline
 1245 \\
 1660 \\
 \hline
 17845
 \end{array} \\
 + \\
 \hline
 17845
 \end{array}$$