



partial products

a mental math
strategy unit for
double-digit
multiplication



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ABOUT THIS RESOURCE

Partial Products is a mental math strategy for double digit multiplication. It can be used as a replacement for the commonly-used "long multiplication." The primary reason for teaching this strategy (as with all mental math strategies) is that it will improve your students' understanding of number.

Rather than memorizing a series of sometimes confusing steps as in long multiplication, students will use their knowledge of place value and what the numbers really mean.

If you would still like to teach your students the process of long multiplication, I would recommend doing so after they have had extensive practice with partial products and are performing equations easily and efficiently.

This strategy unit provides all of the resources that you will need for teaching the partial products strategy. Section 1 deals with 2-digit by 1-digit multiplication. Section 2 teaches 2-digit by 2-digit multiplication and may or may not be applicable to your grade level. If 2-digit by 2-digit multiplication is not part of your curriculum, you may choose to use the resources in Section 2 as enrichment for some students.

What's included?

This strategy unit includes all of the resources that you will need for teaching the partial products strategy. It includes:



introductory activities where students will review the skills of expanded notation, arrays, and representing numbers; these skills will be important later on for learning the partial products strategy

a post-unit reflection; ideal for student portfolios



engaging activity sheets that will guide students through a step-by-step process of learning the partial products strategy; these are ideal for independent or partner work, or to use with a document camera



using area to multiply

Did you know that using area can help you calculate the product of two factors? Look at this!

25×5

Step 1: Let's use base 10 blocks to represent each factor. We will put the '25' going across and the '5' going down.

Step 2: Now we fill in the area.

Now it's your turn! Solve each equation using the method from the previous page.

$48 \times 3 = _ + _ = _$ $54 \times 4 = _ + _ = _$
 $81 \times 7 = _ + _ = _$ $69 \times 7 = _ + _ = _$
 $12 \times 8 = _ + _ = _$ $23 \times 3 = _ + _ = _$
 $34 \times 2 = _ + _ = _$ $17 \times 9 = _ + _ = _$
 $27 \times 4 = _ + _ = _$ $19 \times 6 = _ + _ = _$
 $65 \times 4 = _ + _ = _$ $76 \times 4 = _ + _ = _$
 $90 \times 8 = _ + _ = _$ $24 \times 8 = _ + _ = _$

Make up your own 2-digit by 1-digit equation and solve it using _____

let's get poppin!

Use the vertical method that you learned on the previous page to solve the equation inside each popcorn kernel.

82×5
 53×4
 19×8
 25×6
 71×8

partial products cut-and-paste

Use any of the partial products methods that you have learned to find the product of each equation. Cut and paste the correct product beside each equation.

$65 \times 3 =$ _____
 $29 \times 7 =$ _____
 $34 \times 4 =$ _____
 $_ \times _ =$ _____

problem solving

Each zebra has four legs. If there are 36 zebras, how many legs do they have altogether?

Use the partial products strategy to solve this problem.

Draw a base 10 diagram or write an equation to solve this problem.

Explain why you should use multiplication to solve this problem.

What is the answer to the problem? Write it in a sentence.

a variety of hands-on activities, games and center activities to use as reinforcement once the partial products strategy has been learned



For more **mental math** resources, including strategy units for addition and subtraction, please visit the link below:

<http://www.teacherspayteachers.com/Store/Shelley-Gray/?&breadcrumb=1&category=3217>