

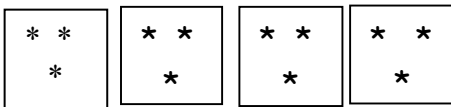
Multiplication Magic

Pictures and Models

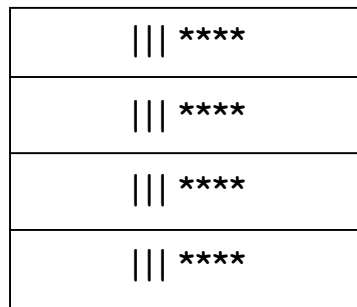
Seeing what is happening when you multiply can help with understanding.

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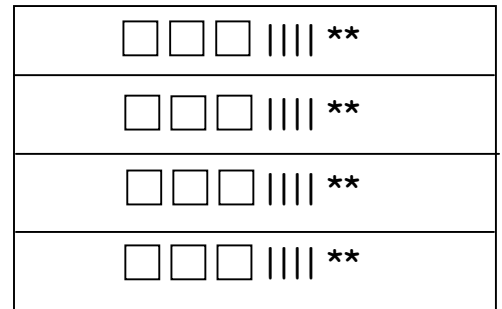
$4 \times 3 =$  four groups with three in each group



$4 \times 34 =$  four groups with thirty-four in each group



$4 \times 342 =$  four groups with 342 in each group

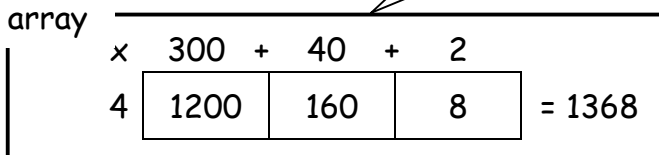


## Place Value Method

Take a large number, write it in expanded form, and then multiply each part.

$$\begin{array}{r} 342 = 300 + 40 + 2 \\ \times 4 = \quad \quad \quad \times 4 \\ \hline 1200 + 160 + 8 \\ = 1368 \end{array}$$

For some children, drawing an array makes it easier to understand.



## Traditional Algorithm

Place Value Method

$$\begin{array}{r} 342 \\ \times 4 \\ \hline 8 \quad (4 \times 2) \\ 160 \quad (4 \times 40) \\ + 1200 \quad (4 \times 300) \\ \hline 1368 \quad (\text{add}) \end{array}$$

Short-Cut Method

$$\begin{array}{r} 1 \\ 342 \\ \times 4 \\ \hline 1368 \end{array}$$

## Working With Decimals

When multiplying with decimals, all you need to do is count the number of decimal places there are in the problem, then move the decimal over that far in the answer.

For example, in  $3.42 \times 4$ , the decimal is two places over, so the answer would be 13.68.

If the problem were  $3.42 \times 0.4$ , the decimal is three places over (looking at both numbers), so the answer would be 1.368, or three places over.