LONG MULTIPLICATION

Long multiplication is a method used for multiplying larger numbers. It requires knowledge of the multiplication table for single digits.

A MULTIPLICATION TABLES FOR MULTIPLES OF 10

Proposition **Multiplication Table for Multiples of 10**

The multiplication table for multiples of 10 is the same as the regular table, but with a zero added at the end:

$$
\begin{array}{ll}
3 \times 1 = 3 & 3 \times 10 = 30 \\
3 \times 2 = 6 & 3 \times 20 = 60 \\
3 \times 3 = 9 & 3 \times 30 = 90 \\
3 \times 4 = 12 & 3 \times 40 = 120 \\
3 \times 5 = 15 & 3 \times 50 = 150 \\
3 \times 6 = 18 & 3 \times 60 = 180 \\
3 \times 7 = 21 & 3 \times 70 = 210 \\
3 \times 8 = 24 & 3 \times 80 = 240 \\
3 \times 9 = 27 & 3 \times 90 = 270
\end{array}
$$

B LONG MULTIPLICATION BY ONE-DIGIT NUMBERS

Method **Long Multiplication by One-Digit Numbers**

- **Set up column multiplication:** Align the digits by their place value (ones, tens, etc.):

$$
\begin{array}{r}
3\,4 \\
\times \quad 2 \\
\hline
\end{array}
$$

- **Multiply the ones place:** Multiply the ones digit of the top number by the one-digit multiplier:

$$
\begin{array}{r}
3\,4 \\
\times \quad 2 \\
\hline
8 \quad 4 \times 2 = 8
\end{array}
$$

- **Multiply the tens place:** Multiply the tens digit of the top number by the one-digit multiplier:

$$
\begin{array}{r}
3\,4 \\
\times \quad 2 \\
\hline
8 \quad 4 \times 2 = 8 \\
6\,0 \quad 30 \times 2 = 60
\end{array}
$$

- **Add the results:** Sum the partial results to find the final product:

$$
\begin{array}{r}
3\,4 \\
\times \quad 2 \\
\hline
8 \quad 4 \times 2 = 8 \\
+ \; 6\,0 \quad 30 \times 2 = 60 \\
\hline
6\,8 \quad 8 + 60 = 68
\end{array}
$$