

Column Arithmetic Widget Proofs

Addition carry rows and subtraction borrow superscripts across whole numbers, decimals, zeros, and longer examples.

Column addition

no carry

$$\begin{array}{r}
 \text{Hundreds} \quad \text{Tens} \quad \text{Units} \\
 3 \quad 1 \quad 6 \\
 + \quad \quad 3 \quad 2 \\
 \hline
 3 \quad 4 \quad 8
 \end{array}$$

single carry row

$$\begin{array}{r}
 \text{Hundreds} \quad \text{Tens} \quad \text{Units} \\
 7 \quad 5 \quad 8 \\
 + \quad 3 \quad 2 \quad 7 \\
 \hline
 10 \quad 8 \quad 5 \\
 \hline
 1
 \end{array}$$

carry into hundreds

$$\begin{array}{r}
 \text{Hundreds} \quad \text{Tens} \quad \text{Units} \\
 4 \quad 5 \quad 2 \\
 + \quad 3 \quad 7 \quad 7 \\
 \hline
 8 \quad 2 \quad 9 \\
 \hline
 1
 \end{array}$$

decimal carry

$$\begin{array}{r}
 \text{Tens} \quad \text{Units} \quad \text{Tenths} \\
 1 \quad 2 \quad . \quad 3 \\
 + \quad \quad 1 \quad . \quad 9 \\
 \hline
 1 \quad 4 \quad . \quad 2 \\
 \hline
 1
 \end{array}$$

decimal with zeros

$$\begin{array}{r}
 \text{Tens} \quad \text{Units} \quad \text{Tenths} \quad \text{Hundredths} \\
 2 \quad 5 \quad . \quad 0 \quad 8 \\
 + \quad \quad 4 \quad . \quad 9 \quad 2 \\
 \hline
 3 \quad 0 \quad . \quad 0 \quad 0 \\
 \hline
 1 \quad 1 \quad . \quad 1
 \end{array}$$

longer whole number

$$\begin{array}{r}
 \text{Thousands} \quad \text{Hundreds} \quad \text{Tens} \quad \text{Units} \\
 9 \quad 8 \quad 7 \quad 6 \\
 + \quad 5 \quad 4 \quad 3 \quad 2 \\
 \hline
 15 \quad 3 \quad 0 \quad 8 \\
 \hline
 1 \quad 1
 \end{array}$$

Column subtraction

no borrow

$$\begin{array}{r}
 \text{Hundreds} \quad \text{Tens} \quad \text{Units} \\
 3 \quad 6 \quad 5 \\
 - \quad \quad 4 \quad 2 \\
 \hline
 3 \quad 2 \quad 3
 \end{array}$$

one borrow

$$\begin{array}{r}
 \text{Hundreds} \quad \text{Tens} \quad \text{Units} \\
 7 \quad 5 \quad 3 \\
 - \quad 3 \quad 2 \quad 6 \\
 \hline
 4 \quad 2 \quad 7
 \end{array}$$

borrow across zero

$$\begin{array}{r}
 \text{Thousands} \quad \text{Hundreds} \quad \text{Tens} \quad \text{Units} \\
 8 \quad 0 \quad 0 \quad 2 \\
 - \quad 4 \quad 5 \quad 6 \quad 7 \\
 \hline
 3 \quad 4 \quad 3 \quad 5
 \end{array}$$

decimal borrow

$$\begin{array}{r}
 \text{Units} \quad \text{Tenths} \quad \text{Hundredths} \\
 9 \quad . \quad 3 \quad 6 \\
 - \quad 0 \quad . \quad 2 \quad 8 \\
 \hline
 9 \quad . \quad 0 \quad 8
 \end{array}$$

decimal zeros

$$\begin{array}{r}
 \text{Tens} \quad \text{Units} \quad \text{Tenths} \quad \text{Hundredths} \\
 2 \quad 5 \quad . \quad 0 \quad 0 \\
 - \quad \quad 4 \quad . \quad 2 \quad 3 \\
 \hline
 2 \quad 0 \quad . \quad 7 \quad 7
 \end{array}$$

longer decimal

$$\begin{array}{r}
 \text{Hundreds} \quad \text{Tens} \quad \text{Units} \quad \text{Tenths} \quad \text{Hundredths} \\
 1 \quad 0 \quad 0 \quad . \quad 0 \quad 0 \\
 - \quad \quad 3 \quad 7 \quad . \quad 4 \quad 8 \\
 \hline
 0 \quad 6 \quad 2 \quad . \quad 5 \quad 2
 \end{array}$$

Scale checks

addition 10 pt

	Hundreds	Tens	Units
	7	5	8
+	3	2	7
<hr/>			
	10	8	5
		1	

addition 16 pt

	Hundreds	Tens	Units
	7	5	8
+	3	2	7
<hr/>			
	10	8	5
		1	

subtraction 10 pt

	Hundreds	Tens	Units
	7	5	3
-	3	2	6
<hr/>			
	4	2	7

subtraction 16 pt

	Hundreds	Tens	Units
	7	5	3
-	3	2	6
<hr/>			
	4	2	7