

# Add Two Columns

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This section provides an overview of how to perform mathematical operations between columns.

## Check Data Types

Before you begin, you should verify that the data types of the two columns match. Check the icon in the upper left of each column to verify that they match.

To change the data type, you can:

- Click the data type icon.
- Select **Edit data type** from the column menu. See *Column Menus*.

## Check Values

After setting data types, you should address any missing or mismatched values in the column. For example, if you change a column's data type from Decimal to Integer, values that contain decimal points may be reported as mismatched values. Use the `ROUND` function to round them to the nearest integer.

<b>Transformation Name</b>	Edit column with formula
<b>Parameter: Columns</b>	myColumn
<b>Parameter: Formula</b>	<code>ROUND(myColumn)</code>

See *ROUND Function*.

**Tip:** You can use the `FLOOR` or `CEILING` functions to force rounding down or up to the nearest integer.

See *FLOOR Function*.

See *CEILING Function*.

## Syntax of Math Functions

You can express mathematical operations using numeric operators or function references. The following two examples perform the same operation, creating a third column that sums the first two.

### Numeric Operators:

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	(colA + colB + colC)
<b>Parameter: New column name</b>	'colD'

### Math Functions:

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	ADD(colA,colB)
<b>Parameter: New column name</b>	'colD'

**NOTE:** Expressions containing numeric operators can contain more than two column references or values, as well as nested expressions. Math functions support two references only.

For more information, see *Numeric Operators*.

For more information, see *Math Functions*.

### Add One Column into Another

To perform math operations, you can use the Edit column with formula transformation to update values in a column based on a math operation. The following transformation multiplies the column by 10 and adds the value of colB:

<b>Transformation Name</b>	Edit column with formula
<b>Parameter: Columns</b>	colA
<b>Parameter: Formula</b>	((colA * 10) + colB)

All values in colA are modified based on this operation.

### Add Selective Values from One Column into Another

You can use the Edit column with formula transformation to perform math operations based on a condition you define. In the following step, the Cost column is replaced reduced by 10% if the Qty column is more than 100. The expression is rounded down to the nearest integer, so that the type of the column (Integer) is not changed:

<b>Transformation Name</b>	Edit column with formula
<b>Parameter: Columns</b>	Cost
<b>Parameter: Formula</b>	IF(Qty > 100, ROUND(Cost * 0.9), Cost)

For rows in which Qty is less than 100, the value of Cost is written back to the column (no change).

## Add Two Columns into a New Third Column

To create a new column in which a math operation is performed on two other columns, use the New Formula transformation. The following multiplies `Qty` and `UnitPrice` to yield `Cost`:

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	<code>MULTIPLY(Qty,UnitPrice)</code>
<b>Parameter: New column name</b>	'Cost'

## Working with More than Two Columns

If you need to work with more than two columns, numeric operators allow you to reference any number of columns and static values in a single expression.

However, you should be careful to avoid making expressions that are too complex, as they can be difficult to parse and debug.

**Tip:** When performing complex mathematic operations, you may want to create a new column to contain the innermost computations of your expression. Then, you can reference this column in the subsequent step, which generates the full expression. In this manner, you can build complex equations in a way that is easier to understand for other users of the recipe. The final step is to delete the generated column.

## Concatenating Columns

If you are concatenating string-based content between multiple columns, use the Merge Columns transformation. In the following example, the Merge Columns transformation is used to bring together the order ID (`ordId`) and product ID (`prodId`) columns, with the dash character used as the delimiter between the two column values:

<b>Transformation Name</b>	Merge columns
<b>Parameter: Columns</b>	<code>ordId, prodId</code>
<b>Parameter: Separator</b>	' - '
<b>Parameter: New column name</b>	<code>primaryKey</code>

**Tip:** This method can be used for columns of virtually any type. Change the data type of each column to String and then perform the merge operation.

Array column types can be concatenated with the `ARRAYCONCAT` function. See *ARRAYCONCAT Function*.

**Tip:** You can also use the `MERGE` function to accomplish the above actions. The function method is useful if you are performing a separate transformation action on the data involved. For example, you could use the function if you are using the Edit formula column to modify a column in place. See *MERGE Function*.

## Summing Rows

You can use aggregate functions to perform mathematic operations on sets of rows. Aggregated rows are collapsed and grouped based on the functions that you apply to them. See *Aggregate Functions*.