

## Overview

A formula is an expression that derives its value from other fields, expressions, or values. Formulas can be used in a number of contexts, such as custom fields for auto-calculating values, as criteria for data validation and workflow, as well as the expression language in Visualforce.

## Getting Started

You can build formulas if you're using a part of the Force.com platform that supports them. For example, when creating a new field you can create a validation rule that determines when data is valid:

```
AND(LEN(AccountNumber__c) > 0, NOT(ISNUMBER(AccountNumber__c)))
```

In Visualforce you can use formulas in any component that supports expressions by including the formula inside `{! }` characters. Here's an example of a Visualforce page that dynamically renders as a PDF or HTML, depending on whether a parameter "render" is passed:

```
<apex:page renderAs="{!IF($CurrentPage.Parameters.render == 'pdf', 'pdf', null)}">
    Something here...
</apex:page>
```

You can also create fields of type formula, to auto-calculate values within a record. For example, here's one calculating a line item value:

```
Unit_Price__c * Units_Sold__c
```

Not all formula functions are supported in all contexts.

## Math Operators

+	Calculates the sum of two values.
-	Calculates the difference of two values.
*	Multiplies its values.
/	Divides its values.
^	Raises a number to a power of a specified number.
()	Specifies that the expressions within the open parenthesis and close parenthesis are evaluated first. All other expressions are evaluated using standard operator precedence.

## Logical Operators

= and ==	Evaluates if two values are equivalent.
<> and !=	Evaluates if two values are not equivalent.
<	Evaluates if a value is less than the value that follows this symbol.
>	Evaluates if a value is greater than the value that follows this symbol
<=	Evaluates if a value is less than or equal to the value that follows this symbol
>=	Evaluates if a value is greater than or equal to the value that follows this symbol
&&	Evaluates if two values or expressions are both true. Use this operator as an alternative to the logical function AND.
	Evaluates if at least one of multiple values or expressions is true. Use this operator as an alternative to the logical function OR.

## Text Operators

&	Concatenates two or more strings.
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## Date and Time Functions

DATE	Returns a date value from year, month, and day values you enter. Salesforce displays an error on the detail page if the value of the DATE function in a formula field is an invalid date, such as February 29 in a non-leap year.
DATEVALUE	Returns a date value for a date/time or text expression.
DAY	Returns a day of the month in the form of a number between 1 and 31.
MONTH	Returns the month, a number between 1 (January) and 12 (December) in number format of a given date.
NOW	Returns a date/time representing the current moment.
TODAY	Returns the current date as a date data type.
YEAR	Returns the four-digit year in number format of a given date.

## Informational Functions

ISBLANK	Determines if an expression has a value and returns TRUE if it does not. If it contains a value, this function returns FALSE.
BLANKVALUE	Determines if an expression has a value and returns a substitute expression if it does not. If the expression has a value, returns the value of the expression.
PRIORVALUE	Returns the previous value of a field.

## Logical Functions

AND	Returns TRUE response if all values are true; returns a FALSE response if one or more values are false.
CASE	Checks a given expression against a series of values. If the expression is equal to a value, returns the corresponding result. If it is not equal to any values, it returns the else_result.
IF	Determines if expressions are true or false. Returns a given value if true and another if false.
ISCHANGED	Compares the value of a field to the previous value and returns TRUE if the values are different. If the values are the same, this function returns FALSE.
ISNEW	Checks if the formula is running during the creation of a new record and returns TRUE if it is. If an existing record is being updated, this function returns FALSE.
ISNUMBER	Determines if a text value is a number and returns TRUE if it is. Otherwise, it returns FALSE.
NOT	Returns FALSE for TRUE and TRUE for FALSE.
OR	Determines if expressions are true or false. Returns TRUE if any expression is true. Returns FALSE if all expressions are false.

## Math Functions

ABS	Calculates the absolute value of a number. The absolute value of a number is the number without its positive or negative sign.
CEILING	Rounds a number up to the nearest integer.
EXP	Returns a value for e raised to the power of a number you specify.
FLOOR	Returns a number rounded down to the nearest integer.
LN	Returns the natural logarithm of a specified number. Natural logarithms are based on the constant e value of 2.71828182845904.
LOG	Returns the base 10 logarithm of a number.
MAX	Returns the highest number from a list of numbers.
MIN	Returns the lowest number from a list of numbers.
MOD	Returns a remainder after a number is divided by a specified divisor.
ROUND	Returns the nearest number to a number you specify, constraining the new number by a specified number of digits.
SQRT	Returns the positive square root of a given number.

## Advanced Functions

GETRECORDIDS	Returns an array of strings in the form of record IDs for the selected records in a list, such as a list view or related list.
INCLUDE	Returns content from an s-control snippet. Use this function to reuse common code in many s-controls.
LINKTO	Returns a relative URL in the form of a link (href and anchor tags) for a custom s-control or Salesforce page.
REGEX	Compares a text field to a regular expression and returns TRUE if there is a match. Otherwise, it returns FALSE. A regular expression is a string used to describe a format of a string according to certain syntax rules.
REQUIRESCRIPT	Returns a script tag with source for a URL you specify. Use this function when referencing the Force.com AJAX Toolkit or other JavaScript toolkits.
URLFOR	Returns a relative URL for an action, s-control, or a file in a static resource archive in a Visualforce page.
VLOOKUP	Returns a value by looking up a related value on a custom object similar to the VLOOKUP() Excel function.

## Encoding Functions

HTMLENCODE	Encodes text and merge field values for use in HTML by replacing characters that are reserved in HTML, such as the greater-than sign (>), with HTML entity equivalents, such as &gt;.
JSENCODE	Encodes text and merge field values for use in JavaScript by inserting escape characters, such as a backslash (\), before unsafe JavaScript characters, such as the apostrophe (').
JSINHTMLENCODE	Encodes text and merge field values for use in JavaScript within HTML tags by inserting escape characters before unsafe JavaScript characters and replacing characters that are reserved in HTML with HTML entity equivalents.
URLENCODE	Encodes text and merge field values for use in URLs by replacing characters that are illegal in URLs, such as blank spaces, with the code that represent those characters as defined in RFC 3986, Uniform Resource Identifier (URI): Generic Syntax. For example, blank spaces are replaced with %20, and exclamation points are replaced with %21.

## Text Functions

BEGINS	Determines if text begins with specific characters and returns TRUE if it does. Returns FALSE if it does not.
BR	Inserts a line break in a string of text.
CONTAINS	Compares two arguments of text and returns TRUE if the first argument contains the second argument. If not, returns FALSE.
FIND	Returns the position of a string within a string of text represented as a number.
GETSESSIONID	Returns the user's session ID.
HYPERLINK	Creates a link to a URL specified that is linkable from the text specified.
IMAGE	Inserts an image with alternate text and height/width specifications.
INCLUDES	Determines if any value selected in a multi-select picklist field equals a text literal you specify.
ISPICKVAL	Determines if the value of a picklist field is equal to a text literal you specify.
LEFT	Returns the specified number of characters from the beginning of a text string.
LEN	Returns the number of characters in a specified text string.
LOWER	Converts all letters in the specified text string to lowercase. Any characters that are not letters are unaffected by this function. Locale rules are applied if a locale is provided.
LPAD	Inserts spaces or characters you specify to the left-side of a text string.
MID	Returns the specified number of characters from the middle of a text string given the starting position.
RIGHT	Returns the specified number of characters from the end of a text string.
RPAD	Inserts blank spaces or characters that you specify to the right-side of a text string.
SUBSTITUTE	Substitutes new text for old text in a text string.
TEXT	Converts a percent, number, date, date/time, or currency type field into text anywhere formulas are used. Also, converts picklist values to text in validation rules, formula fields, and field updates.
TRIM	Removes the spaces and tabs from the beginning and end of a text string.
UPPER	Converts all letters in the specified text string to uppercase. Any characters that are not letters are unaffected by this function. Locale rules are applied if a locale is provided.
VALUE	Converts a text string to a number.

## Summary Functions

Only used in the context of creating custom summary formulas for summary reports.

PARENTGROUPVAL	A summary function that returns the value of the selected summary field from the parent grouping level that you specify.
PREVGROUPVAL	A summary function that returns the value of the selected summary field from the previous summary row at the grouping level that you specify.