Lesson 2 Topics:

Rounding of Numbers

- To round normally, use the ROUND function.
- To round to the nearest *multiple*, use the MROUND function.
- To round *down* to the nearest specified *place*, use the ROUNDDOWN function.
- To round *down* to the nearest specified *multiple*, use the FLOOR function.
- To round *up* to the nearest specified *place*, use the ROUNDUP function.
- To round *up* to the nearest specified *multiple*, use the CEILING function.
- To round *down* and return an integer only, use the INT function.
- To truncate decimal places, use the TRUNC function.

ROUND

=ROUND(A1,1) // Round to 1 decimal place
=ROUND(A1,2) // Round to 2 decimal places
=ROUND(A1,3) // Round to 3 decimal places
=ROUND(A1,4) // Round to 4 decimal places

MROUND

The MROUND function rounds a number either **up** or **down** to the nearest multiple.

Example #1 - round to nearest 5

To round a number in A1 to the nearest multiple of 5, you can use MROUND like this:
=MROUND(A1,5) // round to nearest 5

Example #2 - round pricing to nearest .99

MROUND can be used to round pricing to end with .99. The formula below will round a value in A1 to the nearest 1 dollar, subtract 1 cent, and return a final price like $2.99, $5.99, $49.99, etc.
=MROUND(A1,1) - 0.01 // round to nearest .99

Example #3 - round time to nearest 15 minutes

MROUND can be used to round time. To round a time in A1 to the nearest 15 minutes, you can use a formula like this:
=MROUND(A1,"0:15") // round to nearest 15 min

ROUNDDOWN

This function works exactly like the ROUND function, but it will always round the number DOWN.

ROUNDUP

This function works exactly like the ROUND function, but it will always round the number UP.

CEILING

CEILING works like the MROUND function, but unlike MROUND, which rounds either up or down to the *nearest* multiple, CEILING *always rounds up*.

CEILING (number, significance)

Number	Significance	Result	Notes
10	3	12	Round up to nearest 3
36	7	42	Round up to nearest 7
610	100	700	Round up to nearest 100
5.37	0.05	5.40	Round up to nearest 0.05
5.37	1	6.00	Round up to nearest 1
-5.5	1	-5	Round up toward zero
-5.5	-1	-6	Round up away from zero

FLOOR

FLOOR works like the MROUND function, but unlike MROUND, which rounds up or down to the *nearest* multiple, FLOOR *always rounds down*.

FLOOR (number, significance)

Number	Significance	Result	Notes
10	3	9	Round down to nearest 3
36	7	35	Round down to nearest 7
660	100	600	Round down to nearest 100
$5.37	0.05	$5.35	Round down to nearest 0.05
$5.37	1	$5.00	Round down to nearest 1
-5.6	1	-6	Round away from zero
-5.6	-1	-5	Round toward zero

INT

The INT function returns the integer part of a decimal number.

Example #1 - positive numbers

When numbers are positive, the INT function always rounds *down* to the next lowest whole number:
=INT(3.25) // returns 3
=INT(3.99) // returns 3

Example #2 - negative numbers

When rounding negative numbers, the INT function will round down away from zero:
=INT(10.8) // returns 10
=INT(-10.8) // returns 11

INT vs TRUNC

INT is similar to the TRUNC function because they both can return the integer part of a number. However, TRUNC simply truncates a number, while INT actually rounds a number down to an integer. With positive numbers, and when TRUNC is using the default of 0 for num_digits, both functions return the same results. With negative numbers, the results can be different. INT(-3.1) returns -4, because INT rounds down to the lower integer. TRUNC(-3.1) returns -3. If you simply want the integer part of a number, you should use TRUNC.

Example #1 - basic usage

=TRUNC(4.9) // returns 4
=TRUNC(-3.5) // returns -3

Example #2 - set number of decimal places

TRUNC can also be used to return a set number of decimal places without rounding, using the num_digits argument. For example, TRUNC (PI(), 2) will return 3.14 and TRUNC (PI(), 3) will return 3.141.

TRUNC (PI(), 2) // returns 3.14
TRUNC (PI(), 3) // returns 3.141

More information: https://exceljet.net/

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