

LOGICAL FORMULAS AND CONDITIONAL FORMATTING

Agenda

=IF() Function

Conditional Formatting – Using Rules

Conditional Formatting – Data Bars

Conditional Formatting – Color Scales

Conditional Formatting – Icon Sets

=IF() Function

- The IF() Function has three parameters
 - Logical Test Value (a test that results in either true or false)
 - Value If True (the result if the Logical Test is True)
 - Value If False (the result if the Logical Test False)

IF(logical_test,value_if_true,value_if_false)

Checks whether a condition is met, and returns one value if TRUE, and another value if FALSE.

Logical_test is any value or expression that can be evaluated to TRUE or FALSE.

Value_if_true is the value that is returned if Logical_test is TRUE. If omitted, TRUE is returned. You can nest up to seven IF functions.

Value_if_false is the value that is returned if Logical_test is FALSE. If omitted, FALSE is returned.

=IF() Function

- **=IF([@[Main_Basement_Area]]<>0,"Basement","None")**
 - Condition is that the main basement area is not equal (<>) to zero
 - If the condition is true, we are instructing Excel to show the word Basement
 - Otherwise (main basement area is zero) we are instructing Excel to show the word None
- Can use nested if statements where either the true or false value or both is another if statement.
 - **=IF([@[Main_Basement_Area]]<>0,"Basement",IF([@[Main_Style_Descr]]="Mfd Home (Multi-Section)","MH","None"))**
 - Here the false portion adds another if statement checking the the Main Style Descr is MFD Home (Multi-Section), if it is we are instructing Excel to show the initials MH, otherwise we are still instructing Excel to show the word None.

=IF() Function

- The condition can be anything that results in either a true or false, including using other functions so long as the ultimate outcome is either true or false.
- Use the OR() function to enter multiple conditions any one of which being true will result in the entire OR() function being true.
- Use the AND() function to enter multiple conditions any one of which being false will result in the entire AND() function being false.

IFERROR() Function

- The **IFERROR** function allows you to specify a value, message, or alternative calculation to return when a formula results in an error. It is commonly used to hide errors such as **#N/A**, **#DIV/o!**, **#VALUE!**, and **#REF!**, making worksheets easier to read and more user-friendly.
- For example, the formula `=[@[Gross_Bldg_Area]]/[@[Main_Basement_Area]]` will result in an error if `[@[Main_Basement_Area]]` is zero since you can't divide by zero.
- You can add the IFERROR function to produce a zero instead of the error message `=IFERROR([@[Gross_Bldg_Area]]/[@[Main_Basement_Area]],o)`

Other IF functions

- Ifs() – multiple logical conditions, returns specified value for first true condition
- Sumif() – Sum a specified field, based upon a condition
- Sumifs() – Sum a specified field, based upon one or more conditions
- Countif() – Count based upon a condition
- Countifs() – Count based upon one or more conditions

Conditional Formatting

Format based on Rules

The screenshot shows the Microsoft Excel interface with the Conditional Formatting ribbon selected. The ribbon includes options for Highlight Cells Rules, Top/Bottom Rules, Data Bars, Color Scales, Icon Sets, New Rule..., Clear Rules, and Manage Rules... The data table below shows various properties for 12 parcels. A red box highlights the 'Manage Rules...' option, and a blue arrow points to the 'Preset formats' label.

	A	B	C	D	E	F	H	I
	Parcel_Number	Parcel Class	SubdivDescr	Occupancy	Main_Style_Descr	Main_Year	Main_Condition_Descr	Main_Basement_Area
1	13-0007100	Residential	NONE	Single-Family / Owner Occupied	1 Story Frame	1980	ormal	1232.0
3	44-0182150	Residential	CLYDE SUBDIVISION	Single-Family / Owner Occupied	Mfd Home (Single)	2021	ormal	0.0
4	11-0147000	Residential	CROSS S SUBDIVISION	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2018	ormal	0.0
5	52-0190000	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	1999	ormal	0.0
6	52-0190100	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	1999	ood	0.0
7	52-0190300	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	2002	ormal	1482.0
8	52-0190400	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	1999	ormal	1508.0
9	52-0190600	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2013	ormal	0.0
10	52-0190700	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2000	ormal	0.0
11	52-0190800	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	2002	ormal	1189.0
12	52-0190900	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	1998	bove Normal	1392.0

Preset formats

Manage Rules

Conditional Formatting – Using Rules

The screenshot shows the Microsoft Excel interface with the 'Conditional Formatting' menu open. The 'Highlight Cells Rules' option is selected, and the 'Equal To...' rule type is chosen. The 'Equal To' dialog box is open, showing the rule configuration.

Conditional Formatting Menu Options:

- Highlight Cells Rules
- Top/Bottom Rules
- Data Bars
- Color Scales
- Icon Sets
- New Rule...
- Clear Rules
- Manage Rules...

Equal To Rule Configuration:

Format cells that are **EQUAL TO:**

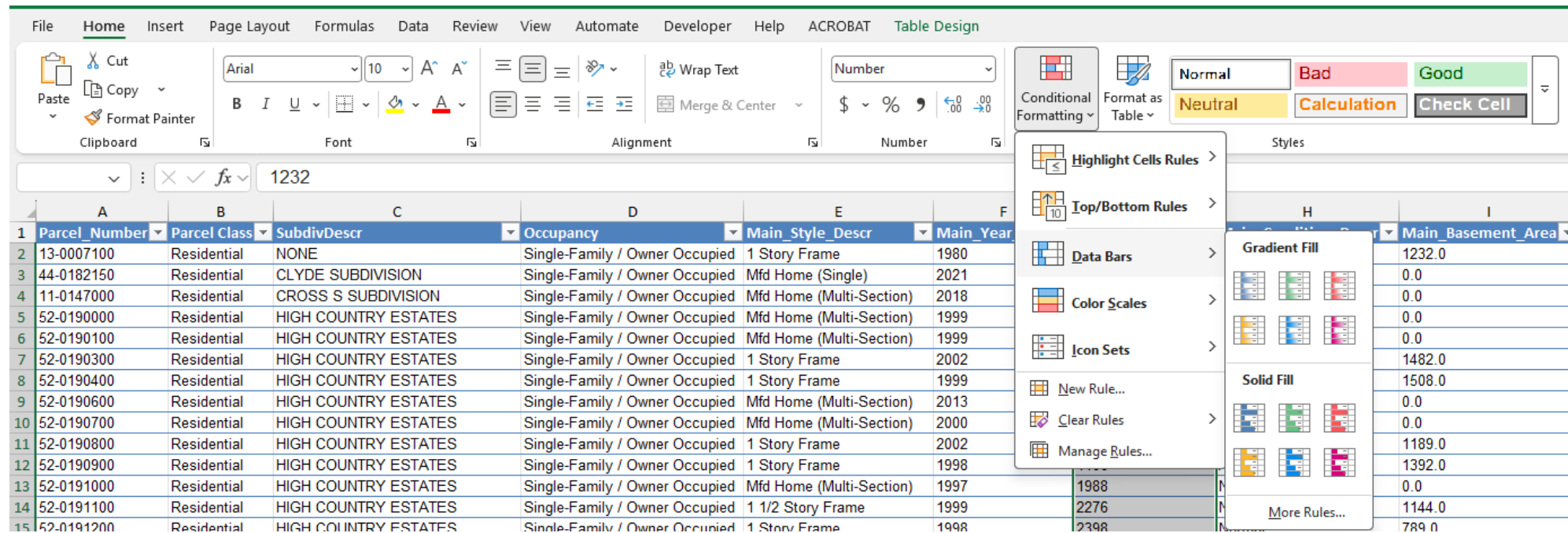
Good with Green Fill with Dark Green Text

OK Cancel

	A	B	C	D	E	F
1	Parcel_Number	Parcel Class	SubdivDescr	Occupancy	Main_Style_Descr	Main_Year
2	13-0007100	Residential	NONE	Single-Family / Owner Occupied	1 Story Frame	1980
3	44-0182150	Residential	CLYDE SUBDIVISION	Single-Family / Owner Occupied	Mfd Home (Single)	2021
4	11-0147000	Residential	CROSS S SUBDIVISION	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2018
5	52-0190000	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	1999
6	52-0190100	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	1999
7	52-0190300	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	2002
8	52-0190400	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	1999
9	52-0190600	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2013
10	52-0190700	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2000
11	52-0190800	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	2002
12	52-0190900	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	1998
13	52-0191000	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	1997

Conditional Formatting – Data Bars

- **Data Bars** are a type of conditional formatting that display a horizontal bar inside each cell based on the cell's value. Larger values show longer bars and smaller values show shorter bars, making it easy to visually compare numbers and identify trends, highs, and lows without creating a chart. Data bars automatically adjust as the underlying data changes.



	A	B	C	D	E	F
	Parcel_Number	Parcel Class	SubdivDescr	Occupancy	Main_Style_Descr	Main_Year
1	13-0007100	Residential	NONE	Single-Family / Owner Occupied	1 Story Frame	1980
2	44-0182150	Residential	CLYDE SUBDIVISION	Single-Family / Owner Occupied	Mfd Home (Single)	2021
3	11-0147000	Residential	CROSS S SUBDIVISION	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2018
4	52-0190000	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	1999
5	52-0190100	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	1999
6	52-0190300	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	2002
7	52-0190400	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	1999
8	52-0190600	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2013
9	52-0190700	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2000
10	52-0190800	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	2002
11	52-0190900	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	1998
12	52-0191000	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	1997
13	52-0191100	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 1/2 Story Frame	1999
14	52-0191200	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	1998

Conditional Formatting – Color Scales

- **Color Scales** are a type of conditional formatting that apply different colors to cells based on their values. Typically, lower values are shown in one color, higher values in another, and middle values in a third color. This creates a visual gradient that makes it easy to identify patterns, trends, and outliers within a range of data. Color scales automatically update as the data changes.

The screenshot shows the Microsoft Excel interface with the 'Conditional Formatting' menu open. The 'Color Scales' option is selected, displaying a list of color scale presets. The background spreadsheet contains data for various properties, including parcel numbers, classes, subdivisions, occupancy types, main style descriptions, and main years.

	A	B	C	D	E	F
	Parcel_Number	Parcel Class	SubdivDescr	Occupancy	Main_Style_Descr	Main_Year
1	13-0007100	Residential	NONE	Single-Family / Owner Occupied	1 Story Frame	1980
2	44-0182150	Residential	CLYDE SUBDIVISION	Single-Family / Owner Occupied	Mfd Home (Single)	2021
3	11-0147000	Residential	CROSS S SUBDIVISION	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2018
4	52-0190000	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	1999
5	52-0190100	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	1999
6	52-0190300	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	2002
7	52-0190400	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	1999
8	52-0190600	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2013
9	52-0190700	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2000
10	52-0190800	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	2002
11	52-0190900	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	1998

Conditional Formatting – Icon Sets

- **Icon Sets** are a type of conditional formatting that display symbols such as arrows, traffic lights, flags, or rating indicators based on a cell's value. Excel automatically compares values within the selected range and assigns an icon according to predefined thresholds. Icon sets provide a quick visual way to identify performance levels, trends, and rankings without analyzing the underlying numbers. They automatically update as data changes.

Parcel Number	Parcel Class	SubdivDescr	Occupancy	Main Style Descr	Main Year	Main Condition Descr	Main Basement Area
13-0007100	Residential	NONE	Single-Family / Owner Occupied	1 Story Frame	1980	normal	1232.0
44-0182150	Residential	CLYDE SUBDIVISION	Single-Family / Owner Occupied	Mfd Home (Single)	2021	normal	0.0
11-0147000	Residential	CROSS S SUBDIVISION	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2018	normal	0.0
52-0190000	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	1999	normal	0.0
52-0190100	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	1999	normal	0.0
52-0190300	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	2002	normal	0.0
52-0190400	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	1999	normal	0.0
52-0190600	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2013	normal	0.0
52-0190700	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2000	normal	0.0
52-0190800	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	2002	normal	0.0
52-0190900	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	1998	normal	0.0
52-0191000	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	1997	normal	0.0
52-0191100	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 1/2 Story Frame	1999	normal	0.0
52-0191200	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	1 Story Frame	1998	normal	0.0
52-0191300	Residential	HIGH COUNTRY ESTATES	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	1998	normal	0.0
52-0192100	Residential	HIGH COUNTRY ESTATES 3RD	Single-Family / Owner Occupied	1 Story Frame	2010	normal	0.0
52-0192200	Residential	HIGH COUNTRY ESTATES 3RD	Single-Family / Owner Occupied	1 Story Frame	2000	normal	0.0
52-0192300	Residential	HIGH COUNTRY ESTATES 3RD	Single-Family / Owner Occupied	1 Story Log-Pine	2000	normal	0.0
52-0192400	Residential	HIGH COUNTRY ESTATES 3RD	Single-Family / Owner Occupied	1 Story Frame	2002	normal	0.0
52-0192500	Residential	HIGH COUNTRY ESTATES 3RD	Single-Family / Owner Occupied	1 Story Frame	2004	normal	0.0
52-0193100	Residential	HIGH COUNTRY EST 3RD REPLAT	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2002	normal	0.0
52-0193300	Residential	HIGH COUNTRY EST 3RD REPLAT	Single-Family / Owner Occupied	1 Story Frame	2002	normal	0.0
51-0145000	Residential	ENTZEL ACRES 11TH SUBDIVISION	Single-Family / Owner Occupied	1 Story Frame	2020	normal	0.0
51-0145140	Residential	ENTZEL ACRES 11TH	Single-Family / Owner Occupied	1 Story Frame	2021	normal	0.0
51-0145120	Residential	ENTZEL ACRES 11TH	Single-Family / Owner Occupied	1 Story Frame	2023	normal	0.0
51-0145100	Residential	ENTZEL ACRES 11TH	Single-Family / Owner Occupied	1 Story Frame	2020	normal	0.0
51-0145080	Residential	ENTZEL ACRES 11TH	Single-Family / Owner Occupied	1 Story Frame	2025	normal	0.0
51-0145060	Residential	ENTZEL ACRES 11TH	Single-Family / Owner Occupied	1 Story Frame	2020	normal	0.0
51-0145040	Residential	ENTZEL ACRES 11TH SUBDIVISION	Single-Family / Owner Occupied	1 Story Frame	2021	normal	0.0
52-0250005	Residential	WINDSOR ESTATES 1ST	Single-Family / Owner Occupied	Mfd Home (Multi-Section)	2001	normal	0.0

Conditional Formatting

Data Bars

G
Gross_Bldg_Area
1232
960
2280
1456
2316
1509
1823
1680
1232
1203
1406
1988
2276
2398
1876
1512
1132
2730
1476
1400
1904
1472
2091
1824
1350
2267
2017
2414
1934
1974
2089
1740
1736
2128
1792
2546
1320
1641

Color Scales

G
Gross_Bldg_Area
1232
960
2280
1456
2316
1509
1823
1680
1232
1203
1406
1988
2276
2398
1876
1512
1132
2730
1476
1400
1904
1472
2091
1824
1350
2267
2017
2414
1934
1974
2089
1740
1736
2128
1792
2546
1320
1641

Icon Sets

G
Gross_Bldg_Area
1232
960
2280
1456
2316
1509
1823
1680
1232
1203
1406
1988
2276
2398
1876
1512
1132
2730
1476
1400
1904
1472
2091
1824
1350
2267
2017
2414
1934
1974
2089
1740
1736
2128
1792
2546
1320
1641

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