Excel allows you to use logical functions. The simplest of these is assigning a value of TRUE or FALSE. In the cell you can simply type =FALSE or =TRUE. The values of TRUE or FALSE will appear in the cell. These cells also take on a value of 1 in the cell which displays TRUE and 0 in the cell which displays FALSE. When writing complex nested values use parentheses to avoid ambiguity.

You can also use comparative values using the following symbols:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>=</td>
<td>Equal</td>
</tr>
<tr>
<td>&lt;&gt;</td>
<td>Not equal</td>
</tr>
<tr>
<td>&lt;</td>
<td>Less than</td>
</tr>
<tr>
<td>&gt;</td>
<td>Greater than</td>
</tr>
<tr>
<td>&lt;=</td>
<td>Equal to or less than</td>
</tr>
<tr>
<td>=&gt;</td>
<td>Equal to or greater than</td>
</tr>
</tbody>
</table>

For example, if you put in a cell =5 > 3, the cell will take on the value of TRUE or you put in a cell =3 > 5, the cell will take on the value of FALSE.

You can also use NOT, OR, and AND.

For example: = OR((5 < 3), (4 > 1), (6 < -8)) will take on the value of TRUE. If any of the values in an OR statement are true then it will take on the value of true.

The AND statement is only true if all the arguments are true. For example: = AND((5 > 3), (2 > -20), (-1 < 2), (7.11 > 7.111)) will take on the value of FALSE even though all statements are true except 7.11 > 7.111.

You can use nested logical statements, such as:

= AND((OR((5 > 4.5), (3.2 < 3.0)), NOT(4.2 > 6.0), AND((2 < 3), (4 > 3.6)))

The above will give a value of TRUE since the OR statement is TRUE, the NOT statement is TRUE and the AND statement is true, even though some individual entries are FALSE.

It should be noted that cell address and equations can be used in the above logical statements. For example,

= OR((A3 > 2*B4^2-2),(6 < A3^1.5)) is a good statement as long as there are values in cells A3 and B4.

Finally, IF statements can be used. The format for IF statements is:

= IF((logical statement), (equation, cell, number, etc), (another equation, cell, number, etc))

If the logical statement is TRUE, the cell will take on the value represented by the 1st equation, etc. If the logical statement is false, the cell will take on the 2nd equation, etc.

For example, = IF(5 > 3, 6, -6), the cell will take on the value of -6 since the logical statement is false. Using the above rules allows you to make many logical decisions.
A good thing to remember is that a TRUE statement takes on the numerical value of 1 and a FALSE statement takes on the numerical value of 0.

For example: suppose cell B2 has the value of 7 and B5 has the value of 3, the following cell equation:

\[ (0.5 > B2) \times B5^2 + \text{AND}(0.5 \leq B2, B2 < 9.5) \times B5^{1.5} + (9.5 < B2) \times (6 + B5^{1.5}) \]

The above cell will take on the value of 3^{1.5} = 5.196 because (0.5 > B2) is false and will be 0, \text{AND}(0.5 \leq B2, B2 < 9.5) will be true since the value of B2 (7) is between 0.5 and 9.5 and will take on the value of 1 and (9.5 < B2) is false and takes on the value of 0 so the equation is

\[ 0(3^2) + 1(3^{1.5}) + 0(6 + 3^{1.5}) = 3^{1.5} = 5.196 \]

If B2 were a value less than 0.5, then the answer would be 3^{2} = 9. If B2 were greater than 9.5, the value would be 6 + 3^{1.5} = 11.196.