Using Vlookup for approximate matches

vlookup Grade Book

Grading Scale

Breakpoint	Grade
0	F
60	D
70	C
80	B
90	A

Grade Book

Student	Score	Grade
Adams	76.4	C
Baker	67.9	D
Crane	45.3	F
Drake	96.8	A
Evans	80.0	B
Franks	86.3	B
Grayson	92.8	A
Hamilton	79.9	C
Isley	58.4	F

=VLOOKUP (Lookup Value, Table Array, Col Index, Range Lookup)

- **Lookup Value** - What the function is looking for in the table array
- **Table Array** - The table defined as a cell range
- **Col Index** - The column in the table that forms the return
- **Range lookup** - **False** for exact match, **True** or blank for near match

Notes:

- A vlookup can only search vertically through the **left most column** of a table array for near or exact matches
- In most cases you will want to use **absolute cell referencing** when indicating a table array
- If you omit the Range Lookup, Excel will assume "True" and look for a near match

There are many reasons why you might want to use a vlookup function to get an approximate match - one that readily comes to mind a grade book.

A standard grading scale is:

- 90% and greater = A
- Less than 90% but equal to or greater than 80% = B
- Less than 80% but equal to or greater than 70% = C
- Less than 70% but equal to or greater than 60% = D
- Less than 60% = F

If a student has a Score of 76.4% in the Grade Book table, we want the vlookup function to return a grade of C from the Grading Scale table.

For a vlookup to function properly for an appoximate match, we need to remember two things:

- The vlookup function "looks up" values ONLY in the leftmost column of the table array.
- The table array's leftmost column of data MUST be sorted from lowest to highest

See the Grade Scale section on this worksheet in cells A7:B11 for an example

In cells F7:F15 we will create a vlookup that lookup the grades values from E7:E15 in the table array A7:B11 and turn an approximate match from column 2.
That formula looks like: =**VLOOKUP(E7,$A$7:$B$11,2,TRUE)**

- **E7** → Lookup Value - this is what the formula is searching for in the Table Array's leftmost column
- **$A$7:$B$11** → Table Array - this the data set where the formula is looking in the leftmost column for the value from cell E7 - the lookup value
  We use Absolute Cell Referencing so that as we Fill Down for this formula, we will use a new lookup value from each row, but consistently search for those values in the table array defined by the cells $A$7:$B$11
- **2** → The formula will return data from the 2nd column of the Table Array on the row where it finds the value from cell E7 - the lookup value
- **TRUE** → This has nothing to do with TRUE or FALSE - TRUE simply means an approximate match. If we had used FALSE, the formula would look for an exact match (*and not find it, since 76.4 does not appear in the leftmost column of the table array*).