

**Office 2016– Excel Basics 14**  
**Video/Class Project #26**  
**Excel Basics 14: Excel VLOOKUP Function Made Easy!**

**Goal in video # 14:** Learn the basics of the VLOOKUP Function.

Topics Covered in Video:

- 1) Looking things up in Lookup Tables is a common task in business, accounting and other professions.
- 2) Almost all Lookup Tables are Vertical because the first column contains the item that we try to match, and items are listed vertically.
  - i. Examples of Looking up items in a Vertical Lookup Table:
    1. This is a Price Lookup Table:

**What is the price for Quad?**

Product	Supplier	Price
Flying Eagle	Channel Craft	\$19.95
V Range	Colordao	\$18.95
Quad	Gel Boom	\$43.95
Bellen	Gel Boom	\$26.95
Carlota	Gel Boom	\$27.95

2. This is a Commission Bonus % Lookup Table:

**If your sales are \$36,500, what is the Commission Bonus you earned?**

Sales Lower Limit	Category	Bonus Commission %
0	\$0 or more, all the way up to, but not including \$10,000	0
10000	\$10,000 or more, all the way up to, but not including \$20,000	0.01
20000	\$20,000 or more, all the way up to, but not including \$30,000	0.02
30000	\$30,000 or more, all the way up to, but not including \$40,000	0.04
40000	\$40,000 or more, all the way up to, but not including \$50,000	0.05
50000	\$50,000 or more, all the way up to, but not including \$60,000	0.06
60000	Bigger than or equal to \$60,000	0.075

3. This is an Employee Lookup Table:

**What is "Chukes, Hal" Zip Code?**

Employee	Address	City	State	Zip
June, Aler	3557 1st St.	Seattle	WA	98114
Acero, Natisha	6281 173rd St.	Tacoma	WA	98131
Bruess, Natisha	7149 1st Ave.	Seattle	WA	98133
Chukes, Hal	7726 66th Ave.	Tacoma	WA	98111
Dahnke, Georgeann	316 66th Blvd. 151st St.	Kent	WA	98124

4. This is a Tax Lookup Table:

**If your Income is \$3000, what is your tax?**

Income	Tax
\$0	\$0.00
\$1,000	\$25.00
\$2,000	\$60.00
\$5,000	\$120.00
\$10,000	\$175.00

5. This is a Region Lookup Table:

**What Region does "Miles, Josefina" represent?**

Sales Rep	Region
Anderson, Robin	Midwest
Bryan, Viola	West
Gonzalez, Danny	East
Miles, Josefina	Southwest
Nguyen, Sheldon	East
Nichols, Claudia	Northwest
Pittman, Otis	West
Richardson, Kristina	Northwest
Rodgers, Bob	Midwest
Stokes, Taylor	Southwest

6. This is a Commission Bonus \$ Lookup Table:

**If your sales are \$6000, what is your commission?**

Your Sales	Commission
\$0	\$0
\$5,000	\$200
\$12,500	\$625
\$15,000	\$975
\$20,000	\$1,700

7. This is a Sales Category Table:

**If your sales are \$375, what is the category?**

Sales Lower Limit	Upper & Lower Limits	Category
0	\$0 or more, all the way up to, but not including \$100	Below Par
100	\$100 or more, all the way up to, but not including \$250	Par
250	\$250 or more, all the way up to, but not including \$500	Average
500	\$500 or more, all the way up to, but not including \$600	Above Average
600	Bigger than or equal to \$600	Excellent

3) VLOOKUP function is much easier to use than the IF Function when we have more than one of two items to put in a cell or formula.

i. IF Function:

	A	B	C	D	E	F	G	H	I	J	K	L	M
15	Employee	Sales	Bonus Commission %?										
16	Rod Barbaria	17,382.00	=IF(B16>=\$E\$24,\$F\$24,IF(B16>=\$E\$23,\$F\$23,IF(B16>=\$E\$22,\$F\$22,IF(B16>=\$E\$21,\$F\$21,IF(B16>=\$E\$20,\$F\$20,IF(B16>=\$E\$19,\$F\$19,\$F\$18))))))										
17	Elinore Cromedy	19,504.00	1.00%		Sales	Bonus Comm. %							Contract Reads:
18	Twanda Spruce	29,999.99	2.00%		0	0.00%							If you have sales of less than \$10,000 you get 0.00% commission,
19	Darius Raffety	30,000.01	4.00%		10000	1.00%							If you have sales of \$10,000 or more you get 1.00% commission,
20	Frida Vickerson	16,081.00	1.00%		20000	2.00%							If you have sales of \$20,000 or more you get 2.00% commission,
21	Sioux Radcoolinato	39,999.99	4.00%		30000	4.00%							If you have sales of \$30,000 or more you get 4.00% commission,
22	Abdi Han	40,000.00	5.00%		40000	5.00%							If you have sales of \$40,000 or more you get 5.00% commission,
23	Philly Johns	62,552.12	7.50%		50000	6.00%							If you have sales of \$50,000 or more you get 6.00% commission,
24					60000	7.50%							If you have sales of \$60,000 or more you get 7.50% commission,
25													
26													0 or 0.01 or 0.02 or 0.04 or 0.05 or 0.06 or 0.075 in each cell
27													1 of 7 Numbers

ii. VLOOKUP Function:

	A	B	C	D	E	F	G	H	I	J	K	L	M
29	Employee	Sales	Bonus Commission %?										
30	Rod Barbaria	17,382.00	=VLOOKUP(B30,\$E\$32:\$F\$38,2)										
31	Elinore Cromedy	19,504.00	1.00%		Sales	Bonus Comm. %							Contract Reads:
32	Twanda Spruce	29,999.99	2.00%		0	0							If you have sales of less than \$10,000 you get 0.00% commission,
33	Darius Raffety	30,000.01	4.00%		10000	0.01							If you have sales of \$10,000 or more you get 1.00% commission,
34	Frida Vickerson	16,081.00	1.00%		20000	0.02							If you have sales of \$20,000 or more you get 2.00% commission,
35	Sioux Radcoolinato	39,999.99	4.00%		30000	0.04							If you have sales of \$30,000 or more you get 4.00% commission,
36	Abdi Han	40,000.00	5.00%		40000	0.05							If you have sales of \$40,000 or more you get 5.00% commission,
37	Philly Johns	62,552.12	7.50%		50000	0.06							If you have sales of \$50,000 or more you get 6.00% commission,
38					60000	0.075							If you have sales of \$60,000 or more you get 7.50% commission,
39													
40													0 or 0.01 or 0.02 or 0.04 or 0.05 or 0.06 or 0.075 in each cell
41													1 of 7 Numbers

4) What does VLOOKUP Function do?

- i. VLOOKUP tries to find a match of an item in the first column of the Lookup Table and then retrieves (goes and gets) something from one of the other columns in the table and bring it back to the cell or formula.
- ii. In VLOOKUP the V means Vertical.
- iii. Example: VLOOKUP can find a match for the Sales Number 17,382 in the sorted first column of the Lookup Table and retrieve the correct Bonus Commission %, 1.00%, from the 2nd column and bring it back to the cell C30, like in this picture:

	A	B	C	D	E	F	G
29	Employee	Sales	Bonus Commission %?				
30	Rod Barbara	17,382.00	=VLOOKUP(B30,\$E\$32:\$F\$38,2)				
31	Elinore Cromedy	19,504.00	1.00%		Sales	Bonus Comm. %	
32	Twanda Spruce	29,999.99	2.00%		0	0	
33	Darius Raffety	30,000.01	4.00%		10000	0.01	
34	Frida Vickerson	16,081.00	1.00%		20000	0.02	
35	Sioux Radcoolinato	39,999.99	4.00%		30000	0.04	
36	Abdi Han	40,000.00	5.00%		40000	0.05	
37	Philly Johns	62,552.12	7.50%		50000	0.06	
38					60000	0.075	
39							
40							
41							

- iv. Example: VLOOKUP can find a match for the Product “Quad” in the first column of the Lookup Table and retrieve the Quad’s Price, 43.95, from the 3rd column and bring it back to the cell F23.

	A	B	C	D	E	F	G
46	Product	Price			Product	Supplier	Price
47	Quad	=VLOOKUP(A47,\$E\$47:\$G\$51,3,0)			Flying Eagle	Channel Craft	\$19.95
48	Bellen	26.95			V Rang	Colorado	\$18.95
49	Flying Eagle	19.95			Quad	Gel Boom	\$43.95
50					Bellen	Gel Boom	\$26.95
51					Carlota	Gel Boom	\$27.95
52							

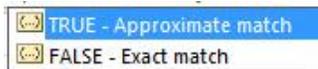
5) VLOOKUP Function arguments:

=VLOOKUP( lookup\_value , table\_array , col\_index\_num , [range\_lookup] )

- i. **lookup\_value** = Item that you are trying to find in first column of lookup table.
- ii. **table\_array** = Vertical table = Lookup table. First Column contains items you want to “match” with the lookup\_value.
- iii. **col\_index\_num** = Which column in the lookup table has the items that you want to go and get and bring back to the cell? You have to count to determine which columns contains the items you want to retrieve: is it column 2, or column 3, or column 4, and so on.
- iv. **[range\_lookup]** = Because there are two different types of lookup, we must tell VLOOKUP which of the two lookups we want it to do: either: Approximate Match Lookup or Exact Match Lookup. This argument tells VLOOKUP how to find a match in the first column of the Lookup Table.

1. **Approximate Match:**

- For “**Approximate Match**” we must put = TRUE or 1 or omitted.



- How **Approximate Match** works:

1. For Approximate Match the VLOOKUP table MUST be sorted on the first column: Ascending, A to Z (Small to Big).

2. This is how Approximate Match Lookup works:

- i. It will look through the first column:

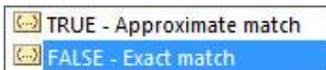
1. If the first value in the table is smaller than the lookup\_value, VLOOKUP returns a Not Available Error: #N/A!
    2. Then it looks through the first column until it bumps into the first value bigger than it and then jump back one row. When it finds a match, it knows what row it should look in.

- i. It actually does a “binary search”, which is a technical computer term for “Approximate Match”. “Binary Search” calculates quickly compared to “Exact Match”.

3. If the lookup\_value is bigger than the last value, it stops at the last row.

2. **Exact Match:**

- For “**Exact Match**” we must put = FALSE or 0.



- How **Exact Match** works:

1. VLOOKUP will look through each item in the first column of the VLOOKUP table and try to find a match. When it finds a match, it knows what row it should look in.

2. If VLOOKUP cannot find a match it will give an #N/A! error that tells you it did not find a match “it is not available”.

- Note about Exact Match: If you have very large data sets, Exact Match Lookup may cause formula to calculate slowly because “Exact Match” Lookup must look through every item, one-by-one, until it finds a match.

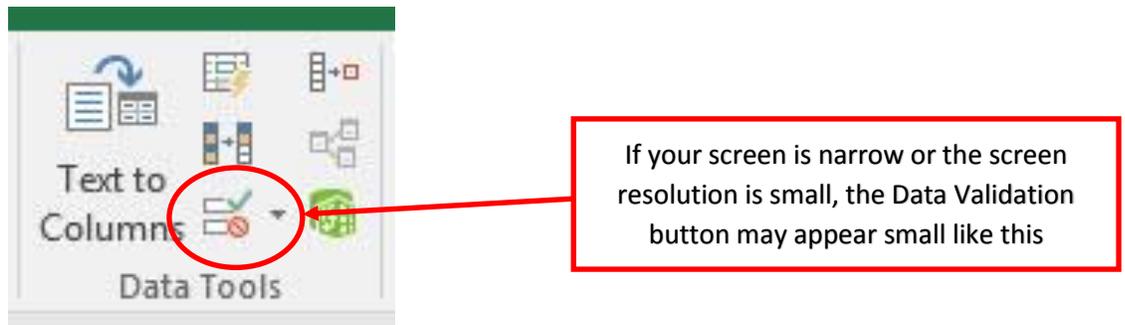
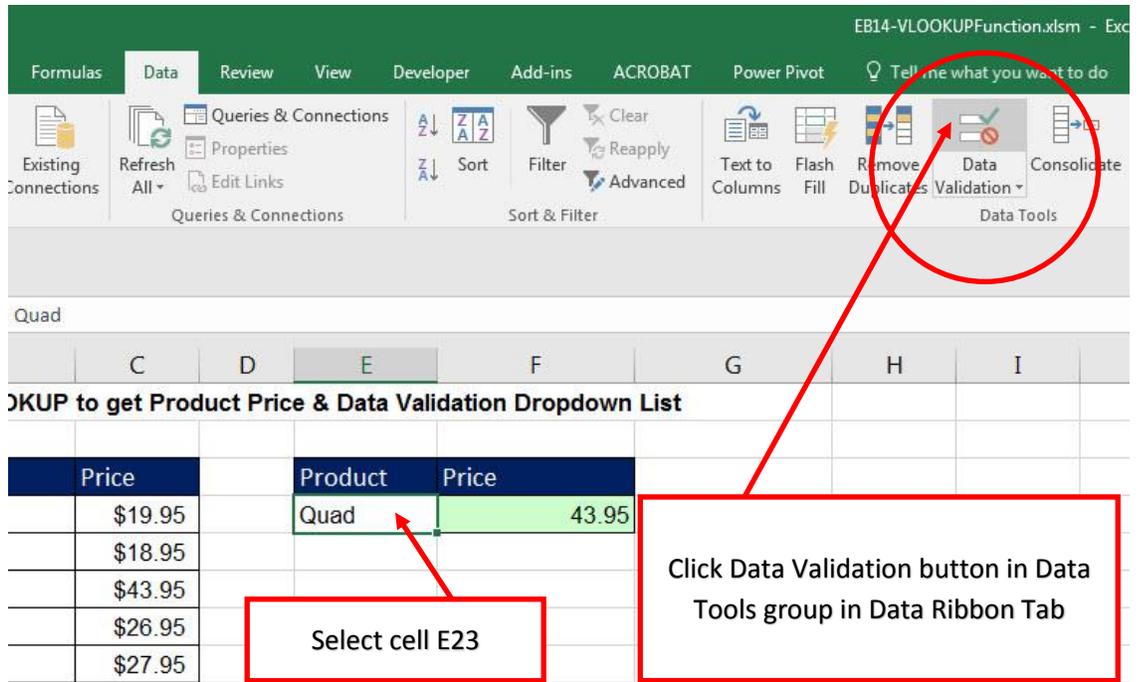
6) Example 1: Exact Match VLOOKUP to get Product Price & Data Validation Dropdown List

	A	B	C	D	E	F	G	H
20	Example 1: Exact Match VLOOKUP to get Product Price & Data Validation Dropdown List							
21								
22	Product	Supplier	Price		Product	Price		
23	Flying Eagle	Channel Craft	\$19.95		Quad	43.95	=VLOOKUP(E23,A23:C27,3,0)	
24	V Rang	Colorado	\$18.95					
25	Quad	Gel Boom	\$43.95				**[range_lookup] ==> Exact Match = FALSE or 0	
26	Bellen	Gel Boom	\$26.95					
27	Carlota	Gel Boom	\$27.95					

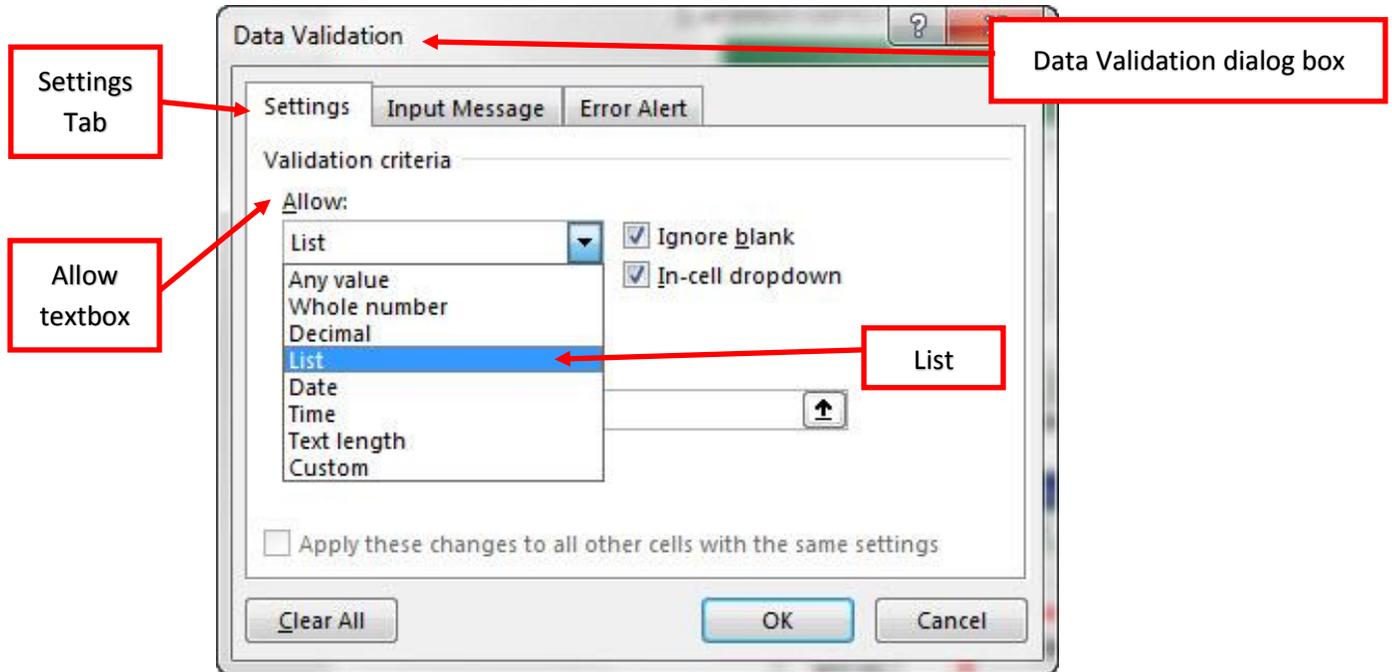
i.

7) Data Validation List

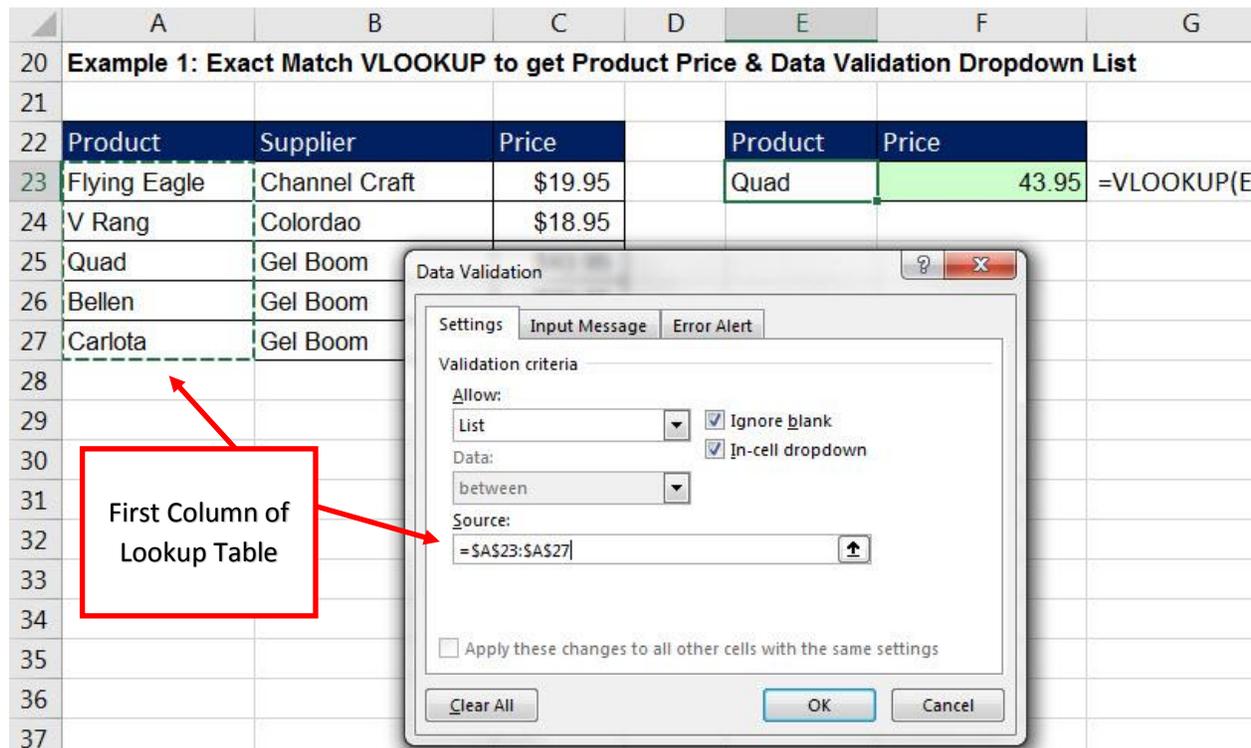
- i. If you are using VLOOKUP with “Exact Match” as the first argument, we can validate the values that go into the first argument of VLOOKUP, lookup\_value, by using the Data Validation List feature.
- ii. Steps to add Data Validation List to a cell:
  1. Select cell E23 and click Data Validation button in Data Tools group in Data Ribbon Tab:



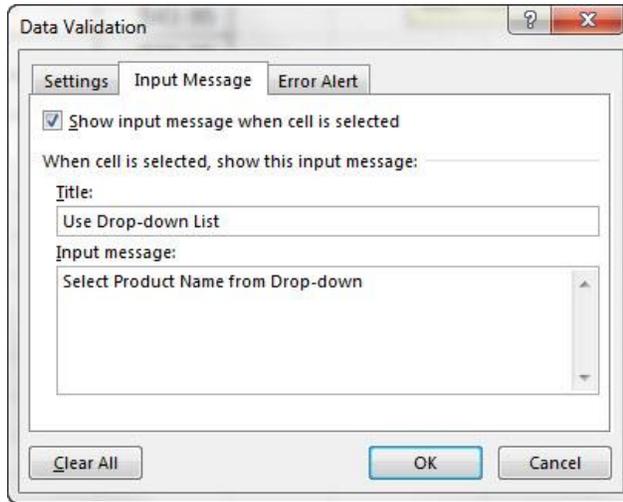
- In the Data Validation dialog box, on the Settings Tab, select "List" from Allow textbox drop-down:



- With your cursor in the Source textbox, select the "**First Column of Lookup Table**":



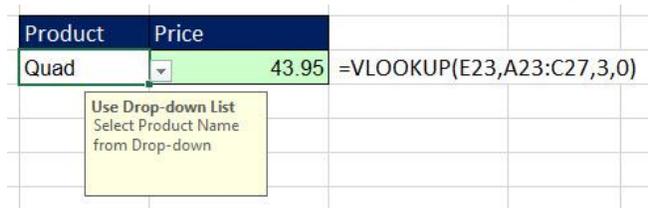
- Click on the Input Message Tab and type this text:



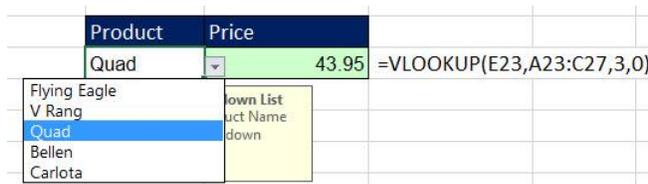
- Click on the Error Alert Tab and type this text:



- Now when you select cell there will be a message, like this:



- Now when you select cell there will be a drop-down list, like this:



8) Example 2: Exact Match VLOOKUP to get Product Price for an Invoice:

	A	B	C	D	E
30	<b>Example 2: Exact Match VLOOKUP to get Product Price for an Invoice</b>				
31					
32	<b>Invoice</b>				
33	Fly High Boomerangs				
34					
35	<b>Sell To:</b>		<b>Invoice #</b>	1255	
36	Kite Flight		<b>Date</b>	11/11/2013	
37	1414 43rd Ave.				
38	Watermore				
39					
40	<b>Item purchased</b>	<b>Quantity</b>	<b>Price Each</b>	<b>Line Item Total</b>	
41	Flying Eagle	15	=VLOOKUP(A41,\$A\$23:\$C\$27,3,0)		
42	Quad	10	\$43.95	\$439.50	
43	V Rang	25	\$18.95	\$473.75	
44			<b>Subtotal</b>	\$1,212.50	
45	<b>Shipping Terms:</b>	Shipping Point	<b>Shipping</b>	\$15.00	
46	<b>Terms:</b>	2/15, 1/30, net 45	<b>Invoice Total</b>	\$1,227.50	

i.

**9) Example 3: Approximate Match VLOOKUP to get a Bonus Commission %:**

	A	B	C	D	E	F	G	H
18	<b>Example 3: Approximate Match VLOOKUP to get a Bonus Commission %</b>							
19								
20	<b>Employee</b>	<b>Sales</b>	<b>Bonus Commission %?</b>			<b>Sales Lower Limit</b>	<b>Bonus Commission %</b>	<b>Upper &amp; Lower Limits</b>
21	Rod Barbara	17,382.00	1.00%	=VLOOKUP(B21,\$F\$21:\$G\$27,2)		0	0	\$0 or more, all the way up to, but not including \$10,000
22	Elinore Cromedy	19,504.00	1.00%			10000	0.01	\$10,000 or more, all the way up to, but not including \$20,000
23	Twanda Spruce	29,999.99	2.00%			20000	0.02	\$20,000 or more, all the way up to, but not including \$30,000
24	Darius Raffety	30,000.01	4.00%			30000	0.04	\$30,000 or more, all the way up to, but not including \$40,000
25	Frida Vickerson	16,081.00	1.00%			40000	0.05	\$40,000 or more, all the way up to, but not including \$50,000
26	Sioux Radcoolinator	39,999.99	4.00%			50000	0.06	\$50,000 or more, all the way up to, but not including \$60,000
27	Abdi Han	40,000.00	5.00%			60000	0.075	Bigger than or equal to \$60,000
28	Philly Johns	62,552.12	7.50%					

**10) Example 4: Approximate Match VLOOKUP to get a Bonus Commission % & Calculate Bonus Amount:**

	A	B	C	D	E
30	<b>Example 4: Approximate Match VLOOKUP to get a Bonus Commission % &amp; Calculate Bonus Amount</b>				
31					
32	<b>Employee</b>	<b>Sales</b>	<b>Bonus Commission %?</b>		
33	Rod Barbara	17,382.00	173.82	=VLOOKUP(B33,\$F\$21:\$G\$27,2)*B33	
34	Elinore Cromedy	19,504.00	195.04		
35	Twanda Spruce	29,999.99	599.9998		
36	Darius Raffety	30,000.01	1200.0004		
37	Frida Vickerson	16,081.00	160.81		
38	Sioux Radcoolinator	39,999.99	1599.9996		
39	Abdi Han	40,000.00	2000		
40	Philly Johns	62,552.12	4691.409		

### 11) Example 5 & 6: Exact Match VLOOKUP to get Employee Data from an Employee Lookup Table:

	A	B	C	D	E	F	G	H	I
1	<b>Employee</b>	<b>Address</b>	<b>City</b>	<b>State</b>	<b>Zip</b>	<b>E-mail</b>	<b>Phone</b>	<b>Hire Date</b>	<b>Salary</b>
2	June, Aler	3557 1st St.	Seattle	WA	981147	JNV@yahoo.com	206-594-4524	11/11/2005	\$79,284.00
3	Acero, Natisha	6281 173rd St.	Tacoma	WA	981317	HDT641@fun.edu	253-831-6211	10/8/2008	\$39,555.00
4	Bruess, Natisha	7149 1st Ave.	Seattle	WA	981335	YSE222@fun.edu	206-817-3217	3/7/2013	\$38,066.00
5	Chukes, Hal	7726 66th Ave.	Tacoma	WA	981118	MGF675@fun.edu	253-522-4565	5/17/2012	\$35,751.00
6	Dahnke, Georgeann	316 66th Blvd. 151st St.	Kent	WA	981244	RWN@fun.edu	253-716-7665	3/28/2011	\$61,883.00
7	Dillaman, Darius	965 151st St.	Kent	WA	981162	MJG@yahoo.com	253-585-7294	4/10/2004	\$70,157.00
8	Durtschi, Dane	7582 4th Lane	Tacoma	WA	981177	KVC@gmail.com	253-860-3024	6/16/2005	\$57,280.00
9	Fila, Bryon	1654 66th St.	Seattle	WA	981143	QKC@gmail.com	206-801-4535	11/15/2008	\$63,015.00
10	Fukumoto, Marvis	3653 4th Blvd.	Seattle	WA	981280	PKF@yahoo.com	206-563-8203	8/14/2008	\$54,005.00
11	General, Marlin	7900 173rd Lane	Kent	WA	981266	KFP@yahoo.com	253-547-6428	1/9/2009	\$41,404.00
12									
13	<b>Example 5: Exact Match VLOOKUP to get Employee E-mail and Phone Number</b>								
14									
15	<b>Employee</b>	<b>E-mail</b>	<b>Phone</b>						
16	Chukes, Hal	MGF675@fun.edu	253-522-4565						
17									
18		=VLOOKUP(A16,A2:I11,6,0)	=VLOOKUP(A16,A2:I11,7,0)						
19									
20	<b>Example 6: Exact Match VLOOKUP to List of Employee Salaries</b>								
21									
22	<b>Employee</b>	<b>Salary</b>							
23	Dillaman, Darius	\$70,157.00	=VLOOKUP(A23,\$A\$2:\$I\$11,9,0)						
24	Chukes, Hal	\$35,751.00							
25	General, Marlin	\$41,404.00							
26	Fukumoto, Marvis	\$54,005.00							
27	Acero, Natisha	\$39,555.00							
28	Bruess, Natisha	\$38,066.00							
29	Dahnke, Georgeann	\$61,883.00							

**12) Example 7: Approximate Match VLOOKUP to get a Tax Amount:**

	A	B	C	D	E
1	<b>Example 7: Approximate Match VLOOKUP to get Tax Amount</b>				
2					
3	<b>Income</b>	<b>Tax</b>		<b>Income</b>	<b>Tax</b>
4	\$0.00	\$0.00		\$6,895.25	\$120.00
5	\$1,000.00	\$25.00			
6	\$2,000.00	\$60.00			=VLOOKUP(D4,A4:B8,2)
7	\$5,000.00	\$120.00			
8	\$10,000.00	\$175.00			

**13) Example 8: Approximate Match VLOOKUP to get a Tax Amount:**

	A	B	C	D	E	F	G	H
10	<b>Example 8: Approximate Match VLOOKUP to get Commission Amount for Payroll Table:</b>							
11								
12	<b>Your Sales</b>	<b>Commission</b>	<b>Employee</b>	<b>Sales</b>	<b>Commission</b>			
13	\$0.00	\$0.00	Antonio May	\$9,635	\$200			=VLOOKUP(E13,\$A\$13:\$B\$17,2)
14	\$5,000.00	\$200.00	Brittany Ellis	\$3,856	\$0			
15	\$12,500.00	\$625.00	Clyde Haynes	\$33,567	\$1,700			
16	\$15,000.00	\$975.00	Johnnie Jones	\$6,895	\$200			
17	\$20,000.00	\$1,700.00	Emmett Fleming	\$13,210	\$625			
18			Krista Kennedy	\$25,912	\$1,700			
19			Bernadette Barber	\$24,954	\$1,700			
20			Marvin Wood	\$15,364	\$975			
21			Wendy Thomas	\$2,415	\$0			
22			Heidi Ross	\$33,108	\$1,700			

**14) Example 8: Approximate Match VLOOKUP to get a Sales Category based on a Sales Amount:**

	A	B	C	D	E	F	G	H	I
1	<b>Date</b>	<b>Product</b>	<b>County Co</b>	<b>Units</b>	<b>Sales</b>	<b>Sales Category</b>		<b>Sales</b>	<b>Category</b>
2	12/16/2018	Frido Fast Catch	USA	36	263.52	=VLOOKUP(E2,\$H\$2:\$I\$7,2)		0	Below Par
3	1/18/2018	Aspen	ESP	2	32.78	Par		30	Par
4	2/13/2018	Fun Fly	POL	2	37.82	Par		68	Average
5	11/20/2018	Sunshine	ARE	2	38.4	Par		150	Target
6	11/18/2018	Fun Fly	CZE	2	32.5	Par		250	Above Target
7	12/18/2018	Fun Fly	USA	1	10.59	Below Par		500	Excellent
8	4/16/2018	Majestic Beaut	UKR	4	55	Par			
9	5/12/2018	Darnell Tri Fly	USA	3	38.34	Par			
10	11/28/2018	Aspen	USA	2	23.62	Below Par			
11	6/16/2018	Majestic Beaut	ISL	2	39.76	Par			
12	4/6/2018	Aspen	ESP	4	71.04	Average			
13	11/14/2018	Carlota	POL	2	34.28	Par			
14	8/29/2018	Sunset	DOM	2	23.12	Below Par			
15	6/20/2018	Bellen	BRA	3	36.39	Par			
16	12/17/2018	Quad	CAN	1	12.22	Below Par			