EXCEL FORMULAS

VLOOKUP vs HLOOKUP vs XLOOKUP

Feature	XLOOKUP	VLOOKUP	HLOOKUP
Purpose	Looks up values in a range or array, returning a corresponding value.	Looks up values vertically in a table by matching the first column.	Looks up values horizontally in a table by matching the first row.
Syntax	=XLOOKUP(lookup_value, lookup_array, return_array, [if_not_found], [match_mode], [search_mode])	=VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])	=HLOOKUP(lookup_value, table_array, row_index_num, [range_lookup])
Orientation	Flexible (vertical or horizontal lookup).	Vertical only.	Horizontal only.
Lookup Direction	Can search left, right, up, or down.	Right only (returns value from columns to the right).	Down only (returns value from rows below).
Return Array	Can return multiple values (array) or a single value.	Returns a single value.	Returns a single value.
Column/Row Index	No index required; directly references return_array.	Requires column index number, error-prone if table changes.	Requires row index number, error-prone if table changes.
Match Mode	Exact (0), exact or next smaller (-1), exact or next larger (1), wildcard (2).	Exact (FALSE) or approximate (TRUE).	Exact (FALSE) or approximate (TRUE).
Search Mode	First-to-last, last-to-first, binary search (ascending/descending).	First-to-last only.	First-to-last only.
Error Handling	Customizable [if_not_found] argument (e.g., "Not Found").	Returns #N/A if not found; no custom error message.	Returns #N/A if not found; no custom error message.
Performance	Optimized for large datasets, supports dynamic arrays.	Slower on large datasets, no dynamic array support.	Slower on large datasets, no dynamic array support.
Dynamic Arrays	Native support for spill ranges (Excel 365/2021).	No support for spill ranges.	No support for spill ranges.
Availability	Excel 365, Excel 2021, and later.	All Excel versions.	All Excel versions.
Example	=XLOOKUP(A2, B2:B10, C2:C10, "Not Found", 0)	=VLOOKUP(A2, B2:D10, 2, FALSE)	=HLOOKUP(A2, B2:D10, 2, FALSE)

VLOOKUP

VLOOKUP in Excel is a function that searches for a specific value in the first column of a table and returns a value in the same row from a column you specify. It's used to retrieve data from a table based on a matching value. The "V" in VLOOKUP stands for vertical, as it searches vertically down a column.

=VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])

F2 =VLOOKUP(A2,A1:D9,4,TRUE)

	A	B	C	D	E	F
1	Product ID	Product Name	Colour	Unit Price		VLOOKUP
2	A101	Leather Chair	Black	$300		300
3	A102	Office Desk	Brown	$450		
4	A103	Standing Lamp	White	$120		
5	A104	Bookshelf	Oak	$200		
6	A105	Filing Cabinet	Grey	$350		
7	A106	Whiteboard	White	$100		
8	A107	Ergonomic Chair	Black	$400		
9	A108	Monitor Stand	Silver	$90		
10						

G6 =VLOOKUP(F6,A1:D9,3,TRUE)

	A	B	C	D	F	G
1	Product ID	Product Name	Colour	Unit Price		
2	A101	Leather Chair	Black	$300	Lets say we want to find the lookup of color using product id	
3	A102	Office Desk	Brown	$450	vlookup [mention the id for which we are searching,select the table array, number the column whose val is needed,true/false for exact match]	
4	A103	Standing Lamp	White	$120		
5	A104	Bookshelf	Oak	$200		VLOOKUP
6	A105	Filing Cabinet	Grey	$350	A103	White
7	A106	Whiteboard	White	$100	A104	Oak
8	A107	Ergonomic Chair	Black	$400	A105	Grey
9	A108	Monitor Stand	Silver	$90		

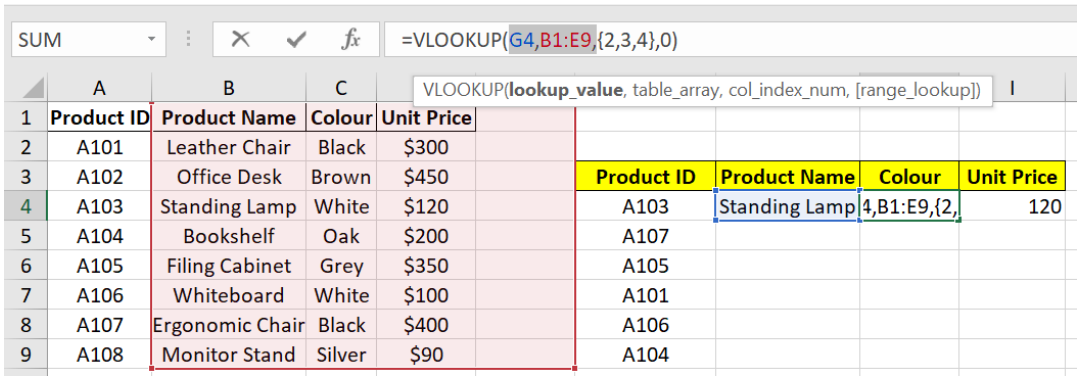
Here, we have to get multiple values:

G4 =VLOOKUP(F4,A1:D9,{2,3,4},0)

	A	B	C	D	E	F	G	H	I
1	Product ID	Product Name	Colour	Unit Price					
2	A101	Leather Chair	Black	$300					
3	A102	Office Desk	Brown	$450		Product ID	Product Name	Colour	Unit Price
4	A103	Standing Lamp	White	$120		A103	Standing Lamp		
5	A104	Bookshelf	Oak	$200		A107			
6	A105	Filing Cabinet	Grey	$350		A105			
7	A106	Whiteboard	White	$100		A101			
8	A107	Ergonomic Chair	Black	$400		A106			
9	A108	Monitor Stand	Silver	$90		A104			

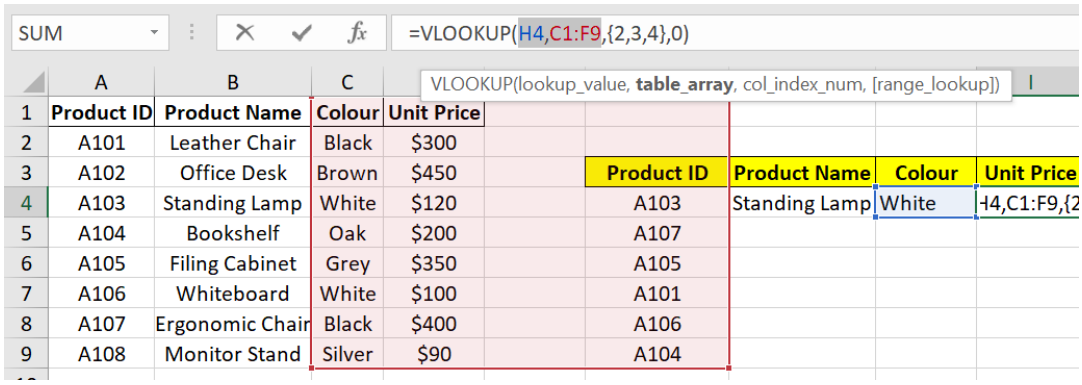
Product ID	Product Name	Colour	Unit Price
A103	Standing Lamp		
A107			
A105			
A101			
A106			
A104			

Problem is that lookup_value & table_array shifts too.



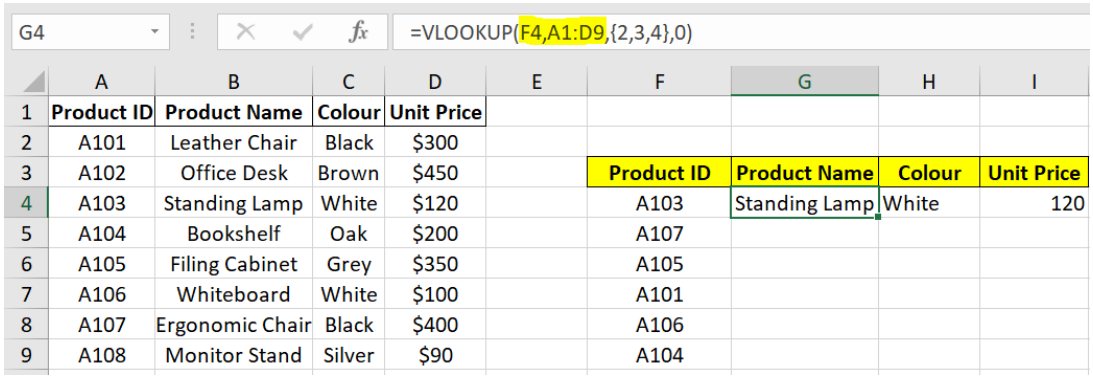
	A	B	C	D
1	Product ID	Product Name	Colour	Unit Price
2	A101	Leather Chair	Black	$300
3	A102	Office Desk	Brown	$450
4	A103	Standing Lamp	White	$120
5	A104	Bookshelf	Oak	$200
6	A105	Filing Cabinet	Grey	$350
7	A106	Whiteboard	White	$100
8	A107	Ergonomic Chair	Black	$400
9	A108	Monitor Stand	Silver	$90

Product ID	Product Name	Colour	Unit Price
A103	Standing Lamp	4,B1:E9,{2,	120
A107			
A105			
A101			
A106			
A104			



	A	B	C	D
1	Product ID	Product Name	Colour	Unit Price
2	A101	Leather Chair	Black	$300
3	A102	Office Desk	Brown	$450
4	A103	Standing Lamp	White	$120
5	A104	Bookshelf	Oak	$200
6	A105	Filing Cabinet	Grey	$350
7	A106	Whiteboard	White	$100
8	A107	Ergonomic Chair	Black	$400
9	A108	Monitor Stand	Silver	$90

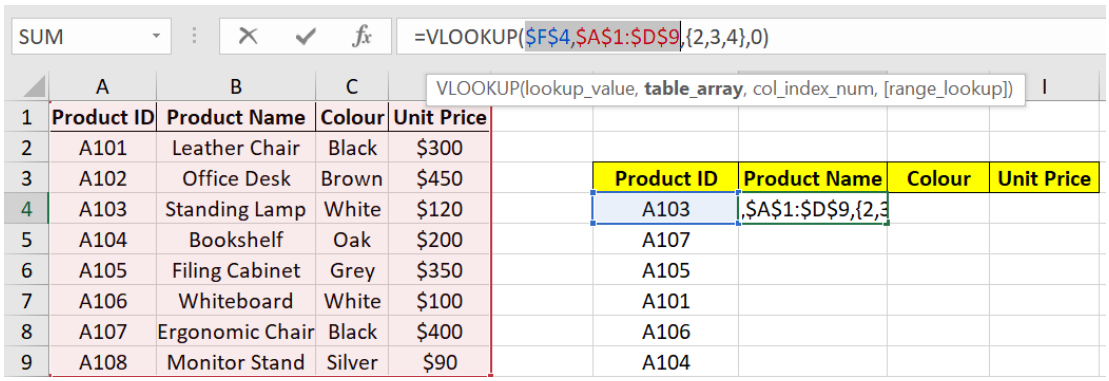
Product ID	Product Name	Colour	Unit Price
A103	Standing Lamp	White	H4,C1:F9,{2
A107			
A105			
A101			
A106			
A104			



	A	B	C	D	E	F	G	H	I
1	Product ID	Product Name	Colour	Unit Price					
2	A101	Leather Chair	Black	$300					
3	A102	Office Desk	Brown	$450		Product ID	Product Name	Colour	Unit Price
4	A103	Standing Lamp	White	$120		A103	Standing Lamp	White	120
5	A104	Bookshelf	Oak	$200		A107			
6	A105	Filing Cabinet	Grey	$350		A105			
7	A106	Whiteboard	White	$100		A101			
8	A107	Ergonomic Chair	Black	$400		A106			
9	A108	Monitor Stand	Silver	$90		A104			

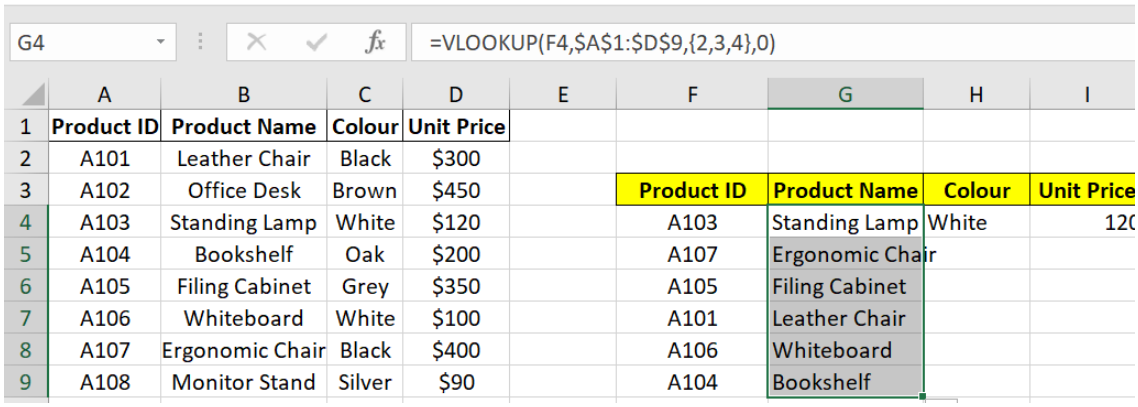
To fix F4,A1:D9

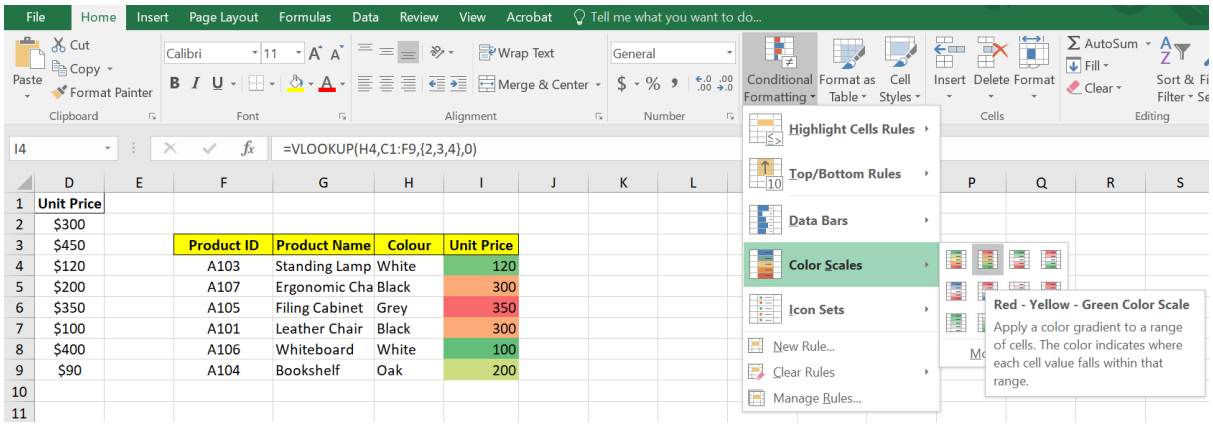
Select it and enter '**Fn + F4**'



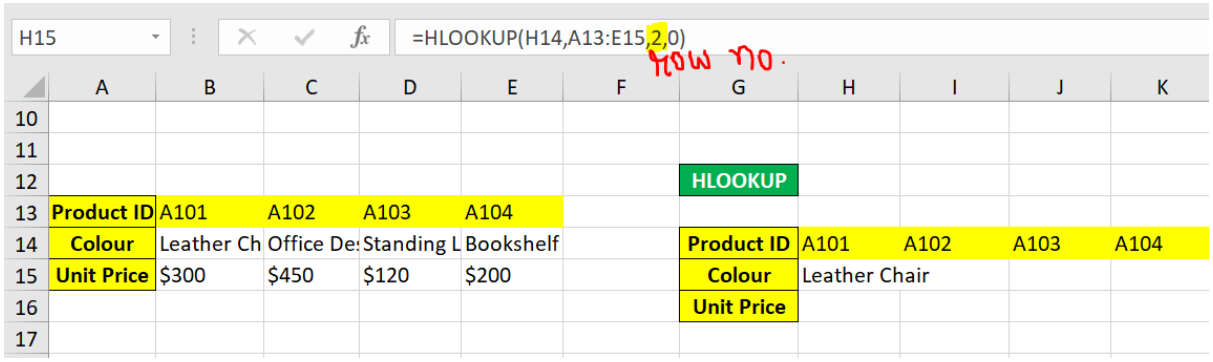
	A	B	C	D
1	Product ID	Product Name	Colour	Unit Price
2	A101	Leather Chair	Black	$300
3	A102	Office Desk	Brown	$450
4	A103	Standing Lamp	White	$120
5	A104	Bookshelf	Oak	$200
6	A105	Filing Cabinet	Grey	$350
7	A106	Whiteboard	White	$100
8	A107	Ergonomic Chair	Black	$400
9	A108	Monitor Stand	Silver	$90

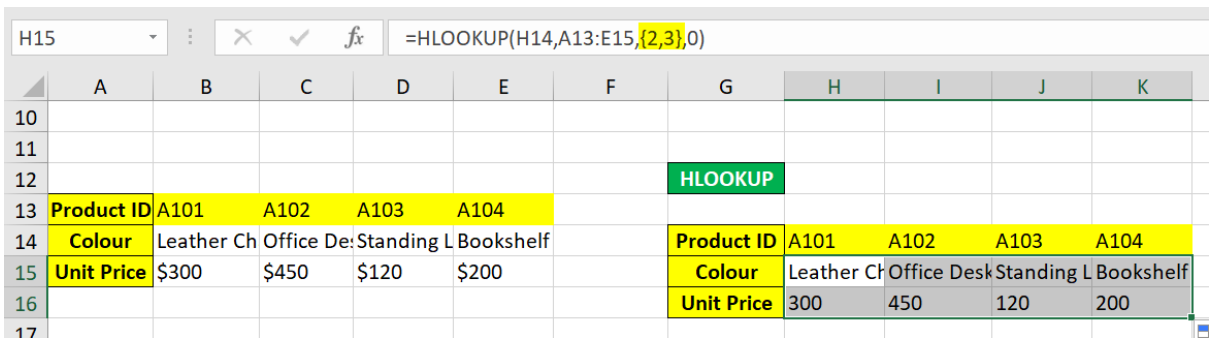
Product ID	Product Name	Colour	Unit Price
A103	,$A$1:$D$9,{2,3		
A107			
A105			
A101			
A106			
A104			


G4
=VLOOKUP(F4,$A$1:$D$9,{2,3,4},0)
Product ID | Product Name | Colour | Unit Price
A101 | Leather Chair | Black | $300
A102 | Office Desk | Brown | $450
A103 | Standing Lamp | White | $120
A104 | Bookshelf | Oak | $200
A105 | Filing Cabinet | Grey | $350
A106 | Whiteboard | White | $100
A107 | Ergonomic Chair | Black | $400
A108 | Monitor Stand | Silver | $90
A103 | Standing Lamp | White | 120
A107 | Ergonomic Chair
A105 | Filing Cabinet
A101 | Leather Chair
A106 | Whiteboard
A104 | Bookshelf


I4
=VLOOKUP(H4,C1:F9,{2,3,4},0)
Conditional Formatting
Highlight Cells Rules
Top/Bottom Rules
Data Bars
Color Scales
Icon Sets
New Rule...
Clear Rules
Manage Rules...
Red - Yellow - Green Color Scale
Apply a color gradient to a range of cells. The color indicates where each cell value falls within that range.

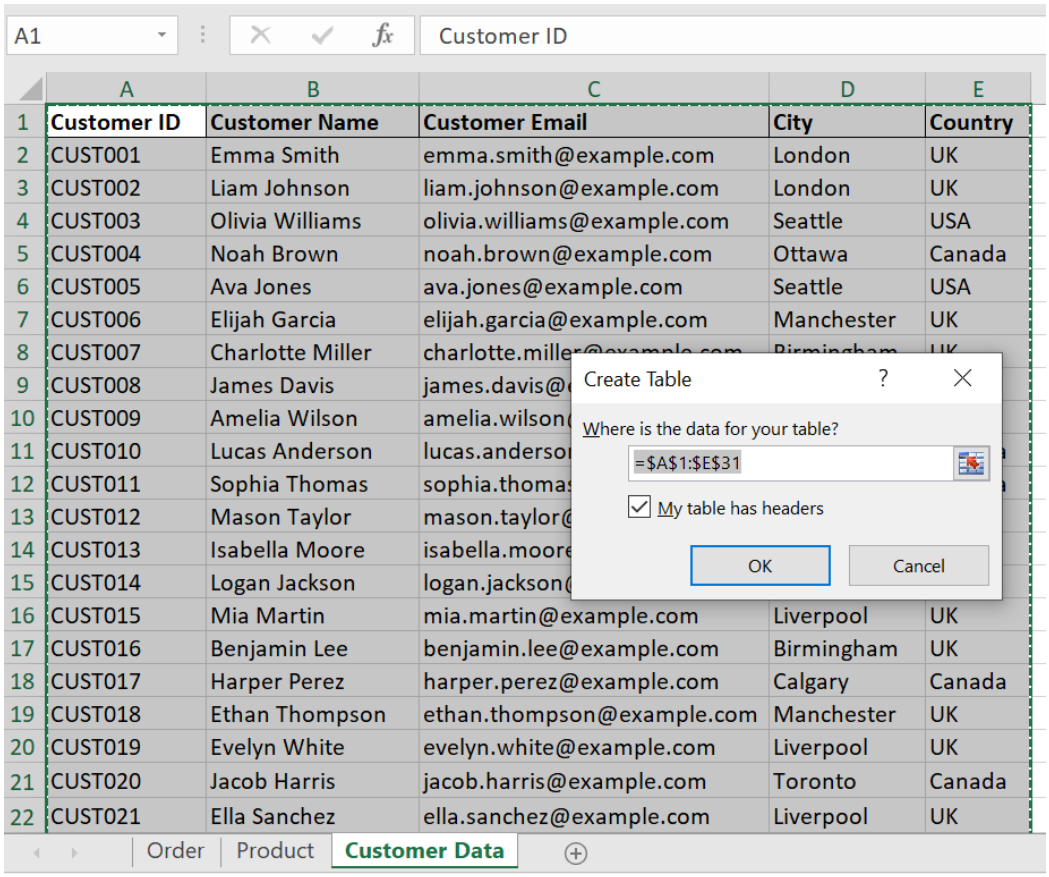
HLOOKUP


H15
=HLOOKUP(H14,A13:E15,2,0)
How to.
HLOOKUP
Product ID | A101 | A102 | A103 | A104
Colour | Leather Ch | Office De | Standing L | Bookshelf
Unit Price | $300 | $450 | $120 | $200
Product ID | A101 | A102 | A103 | A104
Colour | Leather Chair
Unit Price

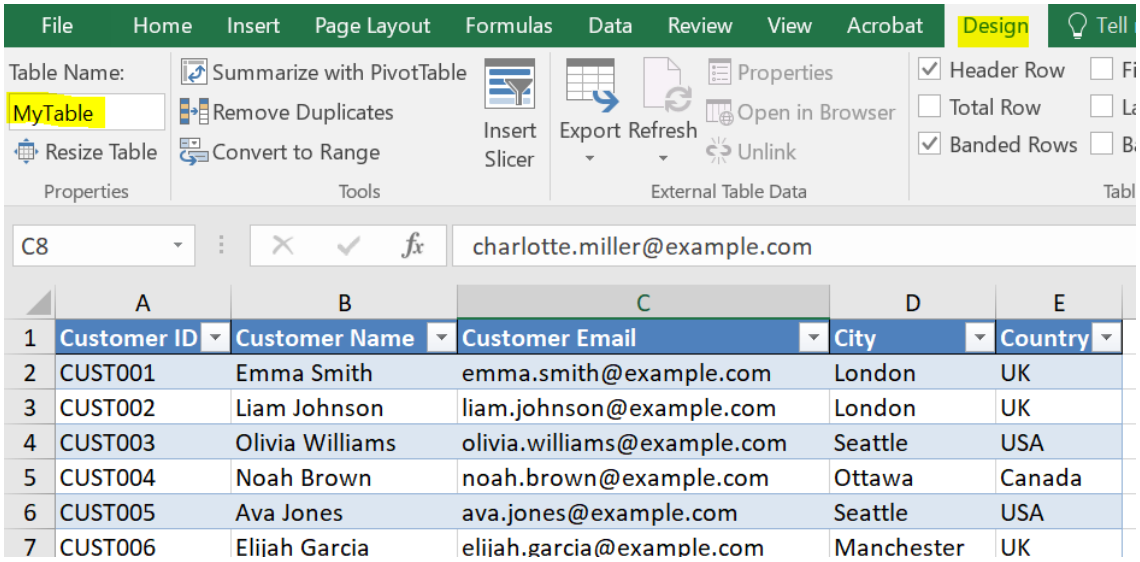

H15
=HLOOKUP(H14,A13:E15,{2,3},0)
HLOOKUP
Product ID | A101 | A102 | A103 | A104
Colour | Leather Ch | Office De | Standing L | Bookshelf
Unit Price | $300 | $450 | $120 | $200
Product ID | A101 | A102 | A103 | A104
Colour | Leather Ch | Office Desk | Standing L | Bookshelf
Unit Price | 300 | 450 | 120 | 200

XLOOKUP

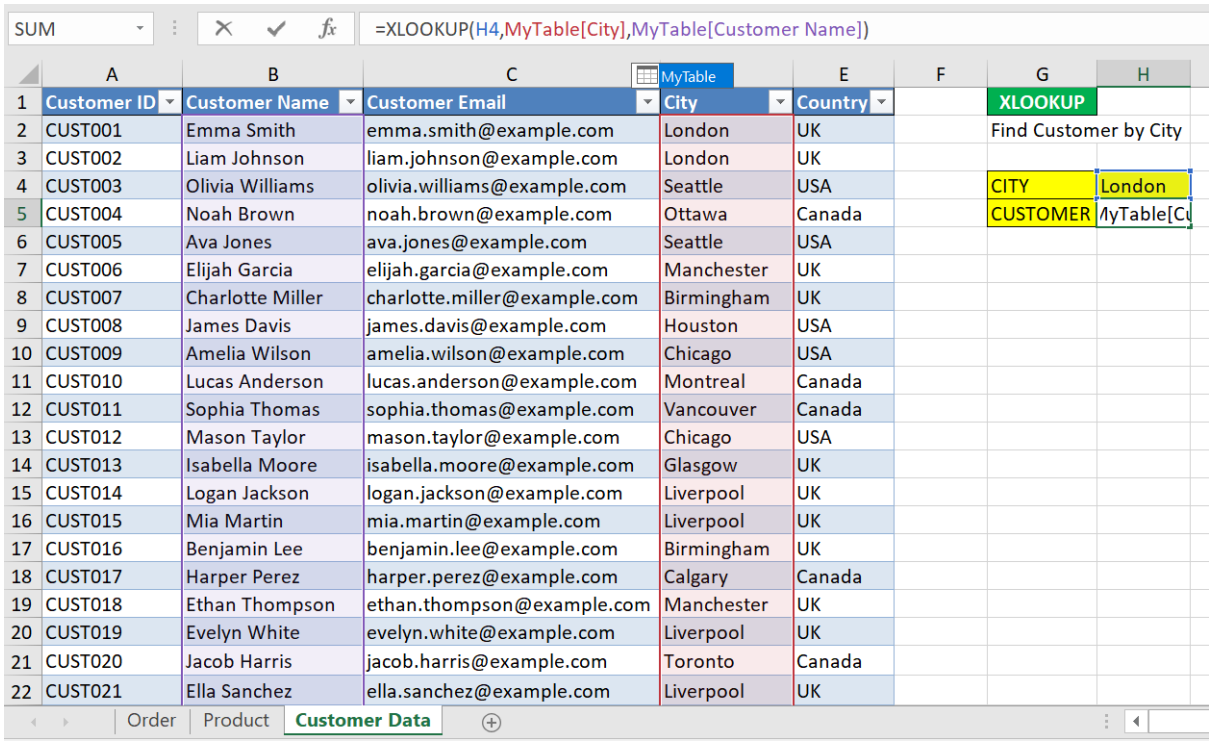
First we will format it into table [Ctrl + T]



Customer ID	Customer Name	Customer Email	City	Country
CUST001	Emma Smith	emma.smith@example.com	London	UK
CUST002	Liam Johnson	liam.johnson@example.com	London	UK
CUST003	Olivia Williams	olivia.williams@example.com	Seattle	USA
CUST004	Noah Brown	noah.brown@example.com	Ottawa	Canada
CUST005	Ava Jones	ava.jones@example.com	Seattle	USA
CUST006	Elijah Garcia	elijah.garcia@example.com	Manchester	UK
CUST007	Charlotte Miller	charlotte.miller@example.com	Birmingham	UK
CUST008	James Davis	james.davis@		
CUST009	Amelia Wilson	amelia.wilson(		
CUST010	Lucas Anderson	lucas.anderso		
CUST011	Sophia Thomas	sophia.thomas		
CUST012	Mason Taylor	mason.taylor@		
CUST013	Isabella Moore	isabella.moore		
CUST014	Logan Jackson	logan.jackson(		
CUST015	Mia Martin	mia.martin@example.com	Liverpool	UK
CUST016	Benjamin Lee	benjamin.lee@example.com	Birmingham	UK
CUST017	Harper Perez	harper.perez@example.com	Calgary	Canada
CUST018	Ethan Thompson	ethan.thompson@example.com	Manchester	UK
CUST019	Evelyn White	evelyn.white@example.com	Liverpool	UK
CUST020	Jacob Harris	jacob.harris@example.com	Toronto	Canada
CUST021	Ella Sanchez	ella.sanchez@example.com	Liverpool	UK



Customer ID	Customer Name	Customer Email	City	Country
CUST001	Emma Smith	emma.smith@example.com	London	UK
CUST002	Liam Johnson	liam.johnson@example.com	London	UK
CUST003	Olivia Williams	olivia.williams@example.com	Seattle	USA
CUST004	Noah Brown	noah.brown@example.com	Ottawa	Canada
CUST005	Ava Jones	ava.jones@example.com	Seattle	USA
CUST006	Elijah Garcia	elijah.garcia@example.com	Manchester	UK



SUM | =XLOOKUP(H4,MyTable[City],MyTable[Customer Name])

MyTable

	A	B	C	E	F	G	H
1	Customer ID	Customer Name	Customer Email	City	Country	XLOOKUP	
2	CUST001	Emma Smith	emma.smith@example.com	London	UK	Find Customer by City	
3	CUST002	Liam Johnson	liam.johnson@example.com	London	UK		
4	CUST003	Olivia Williams	olivia.williams@example.com	Seattle	USA	CITY	London
5	CUST004	Noah Brown	noah.brown@example.com	Ottawa	Canada	CUSTOMER	MyTable[Cu
6	CUST005	Ava Jones	ava.jones@example.com	Seattle	USA		
7	CUST006	Elijah Garcia	elijah.garcia@example.com	Manchester	UK		
8	CUST007	Charlotte Miller	charlotte.miller@example.com	Birmingham	UK		
9	CUST008	James Davis	james.davis@example.com	Houston	USA		
10	CUST009	Amelia Wilson	amelia.wilson@example.com	Chicago	USA		
11	CUST010	Lucas Anderson	lucas.anderson@example.com	Montreal	Canada		
12	CUST011	Sophia Thomas	sophia.thomas@example.com	Vancouver	Canada		
13	CUST012	Mason Taylor	mason.taylor@example.com	Chicago	USA		
14	CUST013	Isabella Moore	isabella.moore@example.com	Glasgow	UK		
15	CUST014	Logan Jackson	logan.jackson@example.com	Liverpool	UK		
16	CUST015	Mia Martin	mia.martin@example.com	Liverpool	UK		
17	CUST016	Benjamin Lee	benjamin.lee@example.com	Birmingham	UK		
18	CUST017	Harper Perez	harper.perez@example.com	Calgary	Canada		
19	CUST018	Ethan Thompson	ethan.thompson@example.com	Manchester	UK		
20	CUST019	Evelyn White	evelyn.white@example.com	Liverpool	UK		
21	CUST020	Jacob Harris	jacob.harris@example.com	Toronto	Canada		
22	CUST021	Ella Sanchez	ella.sanchez@example.com	Liverpool	UK		

Order | Product | Customer Data