

# Spreadsheets

## Lookup Functions

# Skills Lesson Part 1 Overview

## Objectives

To understand the practical use of Lookup Functions.

To understand the purpose of the:

- **Lookup Value**
- **Table Array**
- **Col\_Index\_Num** or **Row\_Index\_Num**
- **Range\_Lookup**

To understand the need to use absolute cell referencing in Lookups.

## Outcomes

Pupils will complete the following activities:

- Task 1: **V**lookup (Vertical)
- Task 2: **H**lookup (Horizontal)
- Task 3: Using **Extract Functions** with LOOKUP
- Task 4: Lookup
- Task 5: Create your own question for your peer.

## Time

100

50

0

# Task 1: Vlookup (Vertical)

Using **VLOOKUP** is similar to looking up a person's name in a telephone book to get a telephone number. **VLOOKUP** looks at a **value in one column** and **finds its corresponding value in another column**.

	A	B	C	D
3	Student ID	Name	House Colour	Year
4	A00123			
5	B00765			
6	e00123			
7	C00769			
8				
9	A00124	Billy	Green	7
10	A00123	Sarah	Red	9
11	C00124	Jack	Blue	7
12	D00123	Mohammed		
13	E00124	Abdulla		
14	B00765	Julie		
15	B00766	Kayas	Yellow	12
16	e00123	Sofia	Green	8
17	e00124	Bob	Red	7
18	C00769	James	Blue	8
19	C00770	Jude	Yellow	10

Lookup Value

Table\_Array or  
lookup table

	A	B	
3	Student ID	Name	Hous
4	A00123	=VLOOKUP(A4	
5	B00765	VLOOKUP(lookup value,	

1) Select the lookup value.  
The lookup value will appear  
also in the lookup table  
(table\_array).

# Task 1: Vlookup (Vertical)

**2)** Select the **lookup table (table\_array)**. This may be in the same sheet, next tab or another excel file. Select the **lookup value** and then the **output value**.

Make sure you **absolute cell reference (Lock)** the table\_array.

**3)** Select the **column** in the table for the **output value**.

In this example the name is in the **second column** of the **selected table** so therefore you would write **2**.

	A	B	C
3	Student ID	Name	House Colour
4	A00123	=VLOOKUP(A4,\$A\$9:\$B\$19	
5	B00765	VLOOKUP(lookup_value, table_array, col	
6	C00123		
7	D00123		
8	E00123		
9	A00124	Billy	
10	A00123	Sarah	Red
11	C00124	Jack	Blue
12	D00123	Mohammed	Red
13	E00124	Abdulla	Green
14	B00765	Julie	Red
15	B00766	Kayas	Yellow
16	e00123	Sofia	Green
17	e00124	Bob	Red
18	C00769	James	Blue
19			Yellow

Lookup\_Value

Output value

	A	B	C	D
3	Student ID	Name	House Colour	Year
4	A00123	=VLOOKUP(A4,\$A\$9:\$B\$19,2		
5	B00765	VLOOKUP(lookup_value, table_array, col index num, [r		
6	e00123			
7	C00769			
8				
9	A00124	Billy	Green	7
10	A00123	Sarah	Red	9
11	C00124	Jack	Blue	7
12	D00123	Mohammed	Red	8
13	E00124	Abdulla	Green	11

2 Column - 2

# Task 1: Vlookup (Vertical)

	A	B	C	D
3	Student ID	Name	House Colour	Year
4	A00123	=VLOOKUP(A4,\$A\$9:\$B\$19,2,		
5	B00765			
6	e00123			

4) You need to select **false** which is an **exact match**. This means the **Vlookup** will only find an **exact match** of the lookup value for the output value.

Remember to close the brackets.

The **Student ID** has an exact match. **Sarah** in column 2 will be **outputted**.

A00123	Sarah
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TRUE - Approximate match  
 FALSE - Exact match

When the lookup value **does not have an exact match** in the **table array** then you have to use an **approximate match**. With the **grades example** if the **percentage (%)** is **90 or more** than the grade will be **A\***.

Name	%	Grade
Mohammed	96	
Abdulla	67	
Yousef	54	
	70	B
	80	A
	90	A*

Barcode	Brand
A00123	A Nike
	B Addidas

TRUE - Approximate match

First **letter of the Barcode** will be matched to the value in the **Table Array**.

# Task 2: Hlookup (Horizontal)

HLOOKUP works **horizontally**. You will be required to **select the row** rather than a **column** for a **VLOOKUP**.

B26 : X ✓ f\_x =HLOOKUP(B26

	A	B	C	D	E
26		GK	WI	FE	
27	<b>Position</b>	=HLOOKUP(B26			
28		HLOOKUP( <u>lookup_value</u> , table_array, row_index_num, [range_lookup])			

1) Select the lookup value.

	I	J	K	HLOOKUP(lookup_value, <u>table_array</u> , row_index_num, [range_lookup])		
26	GK	FW	FB	CB	MF	WI
27	Goal Keeper	Forward	Full Back	Centre Back	Midfielder	Winger

2) Select the **Table Array** and **absolute cell reference** if required.

# Task 2: Hlookup (Horizontal)

B27 : X ✓ fx =HLOOKUP(B26,\$I\$26:\$N\$27,2

	I	J	K	HLOOKUP(lookup_value, table_array, <u>row index num</u> , [range_lookup])		
26	GK	FW	FB	CB	MF	WI
27	Goal Keeper	Forward	Full Back	Centre Back	Midfielder	Winger

3) Select the **Row** to find the output data. In this case the data is in **Row 2**.

IF the **Lookup** is **FW** then **Forward** will be the **output from the second row**.

=HLOOKUP(B26,\$I\$26:\$N\$27,2,

4) You need to select **Approximate or exact match**.

	L	M	N	
	CB	MF		
ick	Centre Back	Midfielder		

TRUE - Approximate match  
 FALSE - Exact match

HLOOKUP will only find an exact match

=HLOOKUP(B26,\$I\$26:\$N\$27,2,FALSE)

Exact matches from the table array.

	B	C	D	E	F
26	GK	WI	FB	CB	FW
27	Goal Keeper	Winger	Full Back	Centre Back	Forward

# Task 3: Using **Extract Functions** with LOOKUP

Barcode	Brand
AB00123	Lookup Value
BC00765	
EF0123	
CD00769	
EF00183	
AB00324	
EF00725	
AB00226	
DE00127	
AB00153	
CD00123	Table Array
EF00130	

A	Samsung
B	Nokia
C	Apple
D	LG
E	Sony

In this example the **first character** of the **Barcode** needs to be used a **single lookup value** in the **Table array** shown below the table. **The match will be an exact Match.**

4	AB00123	=VLOOKUP(LEFT(A4,1),	Pathfi
5	BC00765		LEFT(text, [num chars])

Cell Reference for lookup

Number of Characters looking up from the left

=VLOOKUP(LEFT(A4,1),\$A\$17:\$B\$21,2,FALSE)

## Extract Functions:

**Left:** Returns the specified number of characters from the **start** of a text string.

**Right:** Returns the specified number of characters from the **end** of a text string.

**Mid:** Returns the character from the **middle** of a text string, given a **starting position** and **length**.



# Task 4: LOOKUP

Looks up a value either from a **one-row** or **one-column range** or from an **array**.  
Provided for **backward Compatibility**

1.  
Lookup  
Value

E	F	G	H
<b>Order ID</b>	<b>Sales Person Name</b>	<b>Branch</b>	
4541	=LOOKUP(E6		
4544	LOOKUP(lookup_value, lookup_vector, [result_vector])		
4549	LOOKUP(lookup_value, array)		

	A	B	C	D	E	F	G
5	<b>Branch</b>	<b>Sales Person Name</b>	<b>Order ID</b>		<b>Order ID</b>	<b>Sales Person Name</b>	<b>Branch</b>
6	Leeds	Lionel Messi	4541		4541	=LOOKUP(E6,\$C\$6:\$C\$15	
7	Manchester	Cristiano Ronaldo	4542		4544	LOOKUP(lookup_value, lookup_vector, [re	
8	Leeds	Andres Iniesta	4543		4549	LOOKUP(lookup_value, array)	
9	London	Zlatan Ibrahimovic	4544		4542		
10	Leeds	Radamel Falcao	4545				
11	Manchester	Robin van Persie	4546				
12	Liverpool	Andrea Pirlo	4547				
13	Liverpool	Yaya Toure	4548				
14	Manchester	Edinson Cavani	4549				
15	Liverpool	Sergio Aguero	4550				
16							

2. Lookup\_Vector

This will match the  
lookup value

# Task 4: LOOKUP

	A	B	C	D	E	F	G	H
5	<b>Branch</b>	<b>Sales Person Name</b>	<b>Order ID</b>		<b>Order ID</b>	<b>Sales Person Name</b>	<b>Branch</b>	
6	Leeds	Lionel Messi	4541		4541	=LOOKUP(E6,\$C\$6:\$C\$15,\$B\$6:\$B\$15)		
7	Manchester	Cristiano Ronaldo	4542		4544	LOOKUP(lookup_value, lookup_vector, [result vector])		
8	Leeds	Andres Iniesta	4543		4549	LOOKUP(lookup_value, array)		
9	London	Zlatan Ibrahimovic	4544		4542			
10	Leeds	Radamel Falcao	4545					
11	Manchester	Robin van Persie	4546					
12	Liverpool	Andrea Pirlo	4547					
13	Liverpool	Yaya Toure	4548					
14	Manchester	Edinson Cavani	4549					
15	Liverpool	Sergio Aguero	4550					

### 3. [Result\_Vector]

This will output the value based on the match from the **Lookup\_Vector**. For Example if the **Order ID** is 4541 then the output from the **Results\_Vector** will be **Lionel Messi**.

	A	B	C	D	E	F
5	<b>Branch</b>	<b>Sales Person Name</b>	<b>Order ID</b>		<b>Order ID</b>	<b>Sales Person Name</b>
6	Leeds	Lionel Messi	4541		4541	Lionel Messi
7	Manchester	Cristiano Ronaldo	4542			Zlatan Ibrahimovic
8	Leeds					Edinson Cavani
9	London					Cristiano Ronaldo
10	Leeds	Radamel Falcao	4545			
11	Manchester	Robin van Persie	4546			
12	Liverpool	Andrea Pirlo	4547			
13	Liverpool	Yaya Toure	4548			
14	Manchester	Edinson Cavani	4549			
15	Liverpool	Sergio Aguero	4550			

3. [Result\_Vector]

2. Lookup\_Vector

1. Lookup Value

# Task 4: LOOKUP

The **Look\_Vector** and the **Result\_Vector** can be selected either **vertically** or **horizontally**.

	A	B	C	D	E	F	G	I
19	<b>Supplier Code</b>	<b>Item</b>			<b>Bar Code</b>	<b>Item Name</b>	<b>Supplier Code</b>	
20	L34GG	Milk			4542	=LOOKUP(E20,\$A\$26:\$D\$26,\$B\$20:\$B\$23)		
21	MA455	Eggs			4543			
22	LE2234	Bread			4541			
23	L676GF	Butter			4544			
24								
25	<b>Bar Code</b>							
26	4541	4542	4543	4544				
27								

3. [Result\_Vector]

1. Lookup Value

2. Lookup\_Vector

The **Lookup\_Vector** and the **Result Vector** needs to be the **same length** (4 in this example).

# Plenary – Refer to the Lesson Objectives

## Objectives

To understand the practical use of Lookup Functions.

To understand the purpose of the:

- Lookup Value
- Table Array
- Col\_Index\_Num or Row\_Index\_Num
- Range\_Lookup

To understand the need to use absolute cell referencing in Lookups.

## Plenary Task (Q&A)

Can you describe the difference between the following lookup functions:

- Vlookup
- Hlookup
- Lookups