Excel LAMBDA: Mimic SQL's INTERSECT using BYROW and FILTER

Consider these two tables of employees

	A	B	C	D	E	F	G
1		Table name: _emp1			Table name: _emp2		
2		**first_name**	**last_name**		**forename**	**surname**	
3		Guy	Gilbert		Thierry	D'Hers	
4		Kevin	Brown		David	Bradley	
5		Roberto	Tamburello		David	Bradley	
6		Rob	Walters		JoLynn	Dobney	
7		Rob	Walters		Ruth	Ellerbrock	
8		Thierry	D'Hers		Gail	Erickson	
9		David	Bradley		Barry	Johnson	
10		David	Bradley		Jossef	Goldberg	
11		JoLynn	Dobney		Terri	Duffy	
12		Ruth	Ellerbrock		Sidney	Higa	

We want to find the employees that exist in both tables

	first_name	last_name		forename	surname
	Table name: _emp1			Table name: _emp2	
	Guy	Gilbert		Thierry	D'Hers
	Kevin	Brown		David	Bradley
	Roberto	Tamburello		David	Bradley
	Rob	Walters		JoLynn	Dobney
	Rob	Walters		Ruth	Ellerbrock
	Thierry	D'Hers		Gail	Erickson
	David	Bradley		Barry	Johnson
	David	Bradley		Jossef	Goldberg
	JoLynn	Dobney		Terri	Duffy
	Ruth	Ellerbrock		Sidney	Higa

We can compare one row from one table with all rows from the other table

	A	B	C	D	E	F	G	H	I
1		Table name: _emp1			Table name: _emp2				
2		**first_name**	**last_name**		**forename**	**surname**		=B8:C8=_emp2	
3		Guy	Gilbert		Thierry	D'Hers		TRUE	TRUE
4		Kevin	Brown		David	Bradley		FALSE	FALSE
5		Roberto	Tamburello		David	Bradley		FALSE	FALSE
6		Rob	Walters		JoLynn	Dobney		FALSE	FALSE
7		Rob	Walters		Ruth	Ellerbrock		FALSE	FALSE
8		Thierry	D'Hers		Gail	Erickson		FALSE	FALSE
9		David	Bradley		Barry	Johnson		FALSE	FALSE
10		David	Bradley		Jossef	Goldberg		FALSE	FALSE
11		JoLynn	Dobney		Terri	Duffy		FALSE	FALSE
12		Ruth	Ellerbrock		Sidney	Higa		FALSE	FALSE
13									

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Test if all columns in the row are TRUE

◢	A	B	C	D	E	F	G	H	I	J	K
1		Table name: _emp1			Table name: _emp2						
2		**first_name**	**last_name**		**forename**	**surname**		=BYROW(B8:C8=_emp2,LAMBDA(r,AND(r)))			
3		Guy	Gilbert		Thierry	D'Hers		TRUE			
4		Kevin	Brown		David	Bradley		FALSE			
5		Roberto	Tamburello		David	Bradley		FALSE			
6		Rob	Walters		JoLynn	Dobney		FALSE			
7		Rob	Walters		Ruth	Ellerbrock		FALSE			
8		Thierry	D'Hers		Gail	Erickson		FALSE			
9		David	Bradley		Barry	Johnson		FALSE			
10		David	Bradley		Jossef	Goldberg		FALSE			
11		JoLynn	Dobney		Terri	Duffy		FALSE			
12		Ruth	Ellerbrock		Sidney	Higa		FALSE			

…and passes each row into the LAMBDA in the second parameter

This LAMBDA uses AND to test if all the columns in the row are TRUE

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Test if any of the rows are TRUE

Passing an array of TRUE/FALSE to OR will return TRUE if any value in the array is TRUE, or FALSE if they are all FALSE

	A	B	C	D	E	F	G	H	I	J	K
1		Table name: _emp1			Table name: _emp2						
2		**first_name**	**last_name**		**forename**	**surname**		=OR(BYROW(B8:C8=_emp2,LAMBDA(r,AND(r))))			
3		Guy	Gilbert		Thierry	D'Hers		TRUE			
4		Kevin	Brown		David	Bradley					
5		Roberto	Tamburello		David	Bradley					
6		Rob	Walters		JoLynn	Dobney					
7		Rob	Walters		Ruth	Ellerbrock					
8		Thierry	D'Hers		Gail	Erickson					
9		David	Bradley		Barry	Johnson					
10		David	Bradley		Jossef	Goldberg					
11		JoLynn	Dobney		Terri	Duffy					
12		Ruth	Ellerbrock		Sidney	Higa					

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Apply the OR test expression to every row in _emp1

	A	B	C	D	E	F	G	H	I	J	K	L
1		Table name: _emp1			Table name: _emp2					Advanced Formula Environment		
2		**first_name**	**last_name**		**forename**	**surname**						
3		Guy	Gilbert		Thierry	D'Hers		FALSE		Grid Names Modules		
4		Kevin	Brown		David	Bradley		FALSE				
5		Roberto	Tamburello		David	Bradley		FALSE		✓ emp1 > H3		
6		Rob	Walters		JoLynn	Dobney		FALSE				
7		Rob	Walters		Ruth	Ellerbrock		FALSE				
8		Thierry	D'Hers		Gail	Erickson		TRUE				
9		David	Bradley		Barry	Johnson		TRUE				
10		David	Bradley		Jossef	Goldberg		TRUE				
11		JoLynn	Dobney		Terri	Duffy		TRUE				
12		Ruth	Ellerbrock		Sidney	Higa		TRUE				

```
1   =BYROW(
2       _emp1,
3       LAMBDA(emp1row,
4           OR(
5               BYROW(
6                   emp1row = _emp2,
7                   LAMBDA(r, AND(r))
8               )
9           )
10      )
11  )
```

For each row in _emp1, test if it exists in _emp2, return TRUE if it does, FALSE otherwise

And pass the resulting array into the 'include' parameter of FILTER

A	B	C	D	E	F	G	H	I
	Table name: _emp1			Table name: _emp2				
	first_name	**last_name**		**forename**	**surname**		Thierry	D'Hers
	Guy	Gilbert		Thierry	D'Hers		David	Bradley
	Kevin	Brown		David	Bradley		David	Bradley
	Roberto	Tamburello		David	Bradley		JoLynn	Dobney
	Rob	Walters		JoLynn	Dobney		Ruth	Ellerbrock
	Rob	Walters		Ruth	Ellerbrock			
	Thierry	D'Hers		Gail	Erickson			
	David	Bradley		Barry	Johnson			
	David	Bradley		Jossef	Goldberg			
	JoLynn	Dobney		Terri	Duffy			
	Ruth	Ellerbrock		Sidney	Higa			

Advanced Formula Environment

Grid Names Modules

✓ emp1 > H3

```
1  =FILTER(
2      _emp1,
3      BYROW(
4          _emp1,
5          LAMBDA(emp1row,
6              OR(
7                  BYROW(
8                      emp1row = _emp2,
9                      LAMBDA(r, AND(r))
10                 )
11             )
12         )
13     )
14 )
```

The first parameter of FILTER is the array we want to filter, the second parameter is an array of TRUE/FALSE indicating which rows (or columns) we want to return
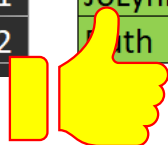
Finally, we can save the formula as a named LAMBDA function called INTERSECT

Using the function is now very easy

! We can optionally wrap the result in UNIQUE to remove duplicate entries

H3 =INTERSECT(_emp1,_emp2)

	A	B	C	D	E	F	G	H	I
1		Table name: _emp1			Table name: _emp2				
2		**first_name**	**last_name**		**forename**	**surname**			
3		Guy	Gilbert		Thierry	D'Hers		Thierry	D'Hers
4		Kevin	Brown		David	Bradley		David	Bradley
5		Roberto	Tamburello		David	Bradley		David	Bradley
6		Rob	Walters		JoLynn	Dobney		JoLynn	Dobney
7		Rob	Walters		Ruth	Ellerbrock		Ruth	Ellerbrock
8		Thierry	D'Hers		Gail	Erickson			
9		David	Bradley		Barry	Johnson			
10		David	Bradley		Jossef	Goldberg			
11		JoLynn	Dobney		Terri	Duffy			
12		Ruth	Ellerbrock		Sidney	Higa			

Advanced Formula Environment

Grid Names **Modules**

Workbook + New

```
1   INTERSECT = LAMBDA(array1,array2,
2       FILTER(
3           array1,
4           BYROW(
5               array1,
6               LAMBDA(emp1row,
7                   OR(
8                       BYROW(
9                           emp1row = array2,
10                          LAMBDA(r, AND(r))
11                      )
12                  )
13              )
14          )
15      )
16  )
```