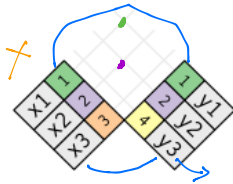


df/tibbles  
`left_join(X, Y, by = "key") =>`

X	xcol	Ycol
1	x <sub>1</sub>	y <sub>1</sub>
2	x <sub>2</sub>	y <sub>2</sub>
3	x <sub>3</sub>	NA

return all rows from x, and all columns from x and y. Rows in x with no match in y will have NA values in the new columns. If there are multiple matches between x and y, all combinations of the matches are returned.



`full_join( ) =>`

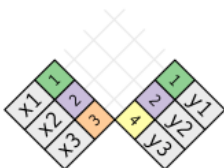
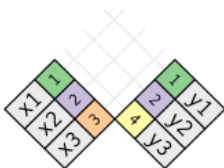
X	xcol	Ycol
1	x <sub>1</sub>	y <sub>1</sub>
2	x <sub>2</sub>	y <sub>2</sub>
3	x <sub>3</sub>	NA
4	NA	y <sub>3</sub>

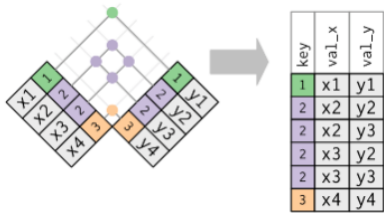
return all rows and all columns from both x and y. Where there are not matching values, returns NA for the one missing.

`inner_join( ) =>`

	xcol	ycol
1	x <sub>1</sub>	y <sub>1</sub>
2	x <sub>2</sub>	y <sub>2</sub>

return all rows from x where there are matching values in y, and all columns from x and y. If there are multiple matches between x and y, all combinations of the matches are returned.





key	val_x	val_y
1	x1	y1
2	x2	y2
2	x2	y3
2	x3	y2
2	x3	y3
3	x4	y4