

Summary: Truth Tables for Sentence Letters

To calculate the **number of valuations** (horizontal lines) are needed for truth table, **put a 2 above each sentence letter** and **multiply them together**.

1 sentence letter requires **2 valuations** (to cover all the possibilities).

2
P
—

2 sentence letters require **4 valuations** (to cover all the possibilities)

2	x	2	=	4
P		Q		
—		—		

3 sentence letters require **8 valuations**.

2	x	2	x	2	=	8
P		Q		R		
—		—		—		

Once the number of valuations is figured out, **start in the rightmost** column, **adding 1 then 0, repeatedly**, for the required number of valuations. Example: for three sentence letters, “P” “Q” and “R,” 8 valuations are needed. We start with the rightmost letter, “R”, adding 1 then 0, over and over, until we have 8 valuations.

2	x	2	x	2	=	8
P		Q		R		
—		—		—		
				1		
				0		
				1		
				0		
				1		
				0		
				1		
				0		

Then move left to the next column, “Q”, and double up: **add two 1s and 2 0s at a time**, repeatedly, for the required number valuations (8).

P	Q	R
	1	1
	1	0
	0	1
	0	0
	1	1
	1	0
	0	1
	0	0

And so on: for each letter further to the left we double the number of 1s and 0s we add at a time. So moving to the left to “P,” we adds four 1s and four 0s, for the required number of valuation.

P	Q	R
1	1	1
1	1	0
1	0	1
1	0	0
0	1	1
0	1	0
0	0	1
0	0	0