

## Truth table - the truth story

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Truth table shows all the cases of logic inputs and the corresponding output.

However, it grows exponentially  
 $\rightarrow 2^n$

truth table again, this time about min-term and max-term

↑  
product term

↑  
sum term

Example:

x	y	min-term	max-term
0	0	$\bar{x} \bar{y}$	$x + y$
0	1	$\bar{x} y$	$x + \bar{y}$
1	0	$x \bar{y}$	$\bar{x} + y$
1	1	$xy$	$\bar{x} + \bar{y}$

# Truth table and midterm

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Ex: what is f in SOP? Sum of product

x	y	f	
0	0	0	$\leftarrow \bar{x}\bar{y}$
0	1	1	$\leftarrow \bar{x}y$
1	0	1	$\leftarrow x\bar{y}$
1	1	0	$\leftarrow xy$

look at  
just the  
1s.

$$f = \bar{x}y + x\bar{y}$$

Ex what is f in SOP?

x	y	f
0	0	1
0	1	1
1	0	0
1	1	1

$$f = \bar{x}\bar{y} + \bar{x}y + xy$$