(3) Symbolic to Truth table

Ex: $F(A,B,C) = AB' + A(B' + BC')'$

1. Identify input, outputs — output on LHS, by itself, w/ parenthesis
2. Write shell of truth table

A	B	C	F(A,B,C)	AB'	$B' + BC'$	$A(B' + BC')'$
0	0	0			1	
0	0	1			1	
0	1	0			1	
0	1	1				
1	0	0	1	1	1	
1	0	1	1	1	1	
1	1	0			1	
1	1	1	1			1

3. Evaluate function for each input

Evaluate = substitute + apply operations (in right order)

$F(1,0,1) = 1 \cdot 0' + 1 \cdot (0' + 0 \cdot 1')'$ — substitute

$= 1 \cdot 1 + 1 \cdot (1 + 0 \cdot 0)'$ — apply operations operator precedence

$= 1 + 1 \cdot (1)'$

$= 1 + 1 \cdot 0$

$= 1 + 0$

$= 1$

High: parenthesis, Not
And
Low: Or

4. Break expression into

few parts, easy to put together, easy to evaluate

product term - AND of variables

look, what input will cause product term to equal 1? What rows cause variables to equal 1?

④ Symbolic to Circuit Diagram

$F(A,B,C) = A(B+C') + B'C$

Process
1) Identify lowest precedence operator in expression
2) Draw this operator's gate
3) Connect this gate's output to parent gate
4) Remove this operation from the expression creating 0 or more sub expressions
5) Parse each sub expression

Expression

$A(B+C') + B'C$

$A(B+C')$ $B'C$

$B+C'$

Circuit diagram