Table <-> Expression Worksheet

Convert from a truth table to an algebraic expression

Input	Output
ABC	Y
0 0 0	0
0 0 1	0
0 1 0	1
0 1 1	0
1 0 0	0
1 0 1	0
1 1 0	0
1 1 1	1

Expression:

$\overline{A}B\overline{C} + ABC$

Input	Output
ABC	Y
0 0 0	1
0 0 1	0
0 1 0	0
0 1 1	0
1 0 0	0
1 0 1	0
1 1 0	0
1 1 1	1

Expression:

$\overline{ABC} + ABC$

Convert from a minterm expression to a truth table

$\overline{A} \cdot \overline{B} \cdot \overline{C} + \overline{A} \cdot B \cdot C + A \cdot B \cdot \overline{C} = Y$

A	B	C	Y
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	0

Table <-> Expression Worksheet

$\overline{A} \cdot \overline{B} + A \cdot B \cdot C = Y$

A	B	C	Y
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

Worksheet

1. Convert the truth table below into an equivalent algebraic expression. **Inputs**: A, B **Output**: Y

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

Minterm Expression: $\overline{A}B + A\overline{B}$

Is there a way we can simplify this further? **No** If so, how?

Write down your newly learned theorem:

Input ABC	Output Y
0 0 0	0
0 0 1	0
0 1 0	1
0 1 1	1
1 0 0	0

Minterm Expression:

$\overline{A}B\overline{C} + \overline{A}BC + A\overline{B}C + ABC$

Table <-> Expression Worksheet

1 0 1 1
1 1 0 0
1 1 1 1

Can your expression be simplified? If so, show all of your steps below.
This expression can be simplified.
By using

$\overline{A}B\overline{C} + \overline{A}BC + A\overline{B}C + ABC$

$\overline{A}B(1\overline{C} + 1C) + A\overline{B}C + ABC$

$\overline{A}B(\overline{C} + C) + AC(\overline{B} + B)$

$\overline{A}B(1) + AC(1)$

$\overline{A}B + AC$

Next, draw the simplified version of your circuit below.