1. An industrial machine has sensors placed at 4 different locations. If one of the following conditions arises the machine has to be stopped and should fire an alarm.
    - If sensor 1 and 2 are activated
    - If sensor 1 and 4 are activated
    - If sensor 2, 3, and 4 are activated

    Draw a truth table for the above machine and derive a boolean expression.

2. What is the result of adding the following two numbers?

    0 + 0 = ...

    0 + 1 = ...

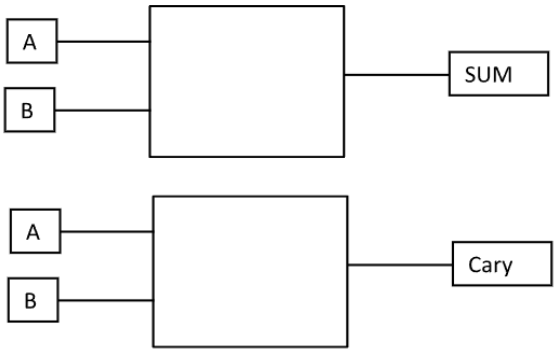
    1 + 0 = ...

    1 + 1 = ... and to ...

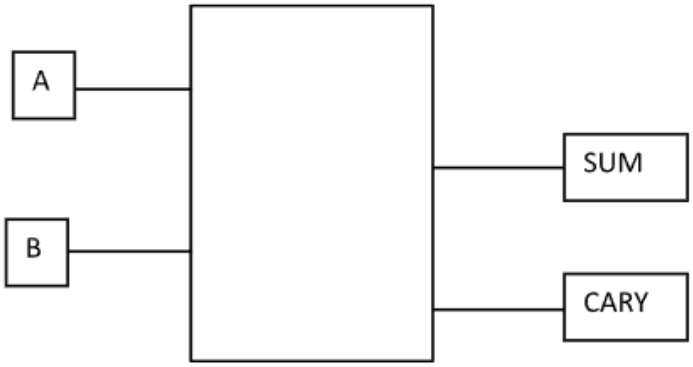
3. Fill the following table

A	B	SUM	CARY
0	0	...	...
1	0	...	...
0	1	...	...
1	1	...	...

4. Represent the sum and the carry-out put using two input logic gates in the following block diagram.



5. Using the above logic gates, design a Half Adder logic circuit.



6. Using the above Half Adder circuit design the full adder logic circuit in the following block diagram.