Logic Gates – Worksheet 3

1. Consider a **truth table** with two inputs **A** and **B**, given that the output **C** is **true** when both inputs are the same.
    a. Construct the truth table described above.

    b. Draw the logic circuit for this truth table.

2. James (J), Sue (S) and Mike (M) are three shareholders in a company and they have 650, 300 and 300 shares respectively. Whenever a decision is to be made, they take a vote by pressing a switch in front of them if they are in favour. The vote passes if:
    i. James alone is in favour
    ii. Both Sue and Mike are in favour
    iii. All three are in favour

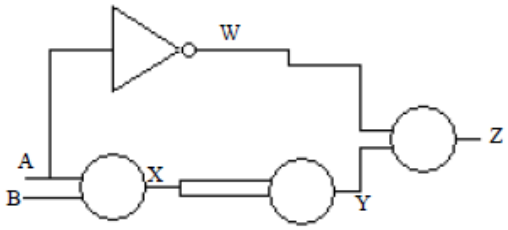
    When the vote passes a bell (B) rings.

    a. Using **J**, **S** and **M** as inputs and **B** as output, draw the **truth table** for the circuit described above. (Assume that logic 1 at an input is a vote in favour and logic 1 at the output implies the bell rings.)

    b. Draw the **circuit** for the truth table above.

    c. Write the **Boolean expression** for the circuit in terms of J, S and M.

3. Below is a partly drawn logic circuit and its incomplete truth table.



A	B	W	X	Y	Z
1	0				
0	1		1		
1	1				0
0	0			0	

    By examining both the circuit and truth table:

    a. Draw the **circuit again** and replace the three circles with the appropriate logic gates.
    b. Draw and complete the **truth table** to match the circuit.
    c. Write down the **Boolean expression** for this circuit.