Tuesday Reading Assessment: Chapters 6-1 through 6-6

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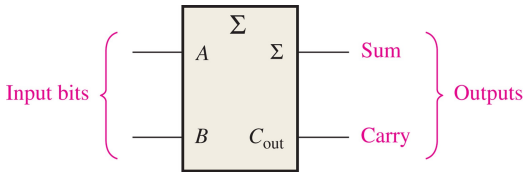

TABLE 6–1

Half-adder truth table.

A	B	C_{out}	Σ
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	0

Σ = sum
C_{out} = output carry
A and B = input variables (operands)

Figure 1: (Left) Symbol for a *half-adder*, that adds two bits and produces the sum and carry bits. (Right) The truth table for the sum and carry bits in terms of the input bits A and B.

1 Functions of Combinatorial Logic: Adders

1. Examine the Σ (sum) output in the truth table in Fig. 1 (right). What gate accurately describes Σ in terms of the inputs A and B?

2. Examine the $C_{\rm out}$ (carry) output in the truth table in Fig. 1 (right). What gate accurately describes $C_{\rm out}$ in terms of the inputs A and B?

3. Create a logic circuit schematic in the space below that functions like the component in Fig. 1 (left), producing the truth table in Fig. 1 (right).

2 Functions of Combinatorial Logic: Comparators

1. (a) Write down the truth table for an XOR gate, but inverted (XNOR). (b) Use this truth table to create a circuit that is HIGH if two 2-bit binary numbers are equal.