Checking for Understanding 1.1

Logic Gates

1. "If a 0 goes in, a 0 comes out" is the rule for which logic gate?

Answer: An AND gate. If even one input is a 0 the resulting output is always a 0.

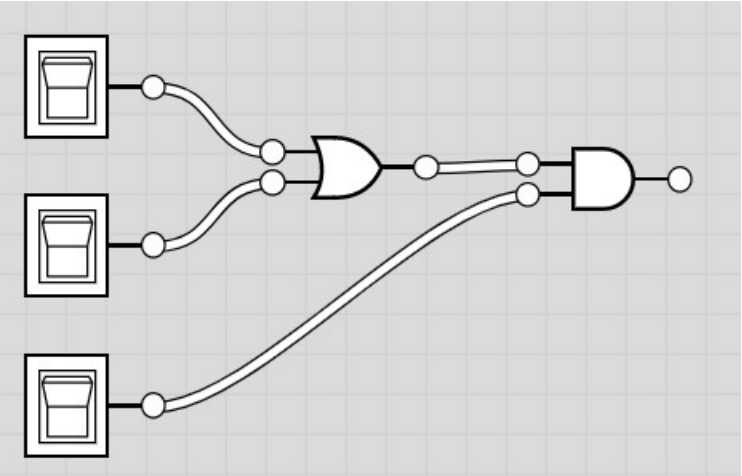
2. "If a 1 goes in, a 1 comes out" is the rule for which logic gate?

Answer: An OR gate. If even one input is a 1 the resulting output is always a 1.

3. "If a 0 goes in, a 1 comes out" and "if a 1 goes in, a 0 comes out" are the rules for which logic gate?

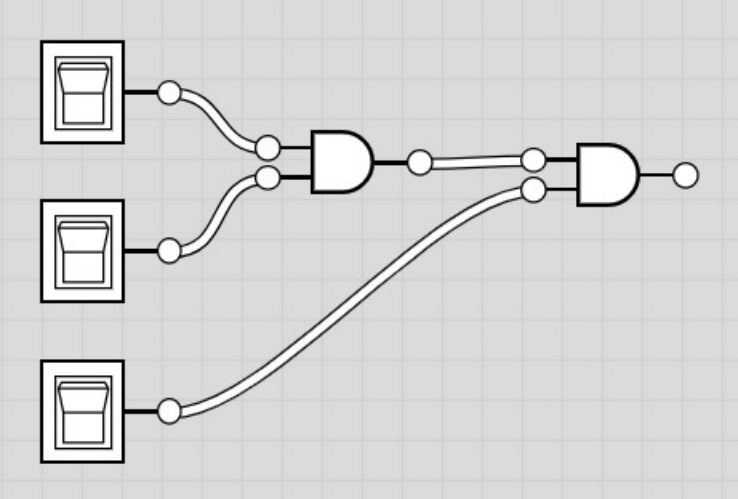
Answer: A NOT gate. It always “flips” the input to the opposite value.

4. What input patterns will cause the following circuit to produce an output of 1?



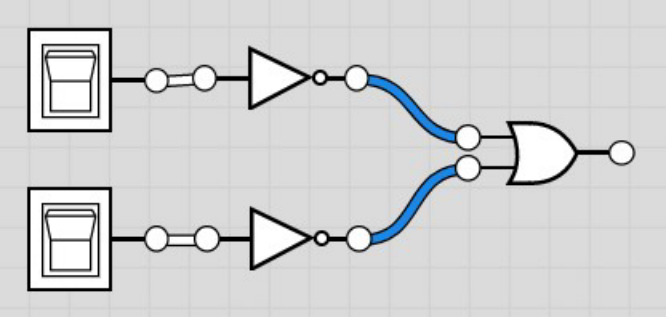
Answer: The third (bottom) input must be 1 along with at least one of the first two inputs (top/middle).

5. What input patterns will cause the following circuit to produce an output of 1?



Answer: All three inputs must be a 1.

6. What input patterns will cause the following circuit to produce an output of 1?



Answer: At least one of the inputs must be 0.