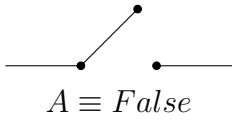
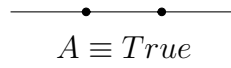


Circuits Key:

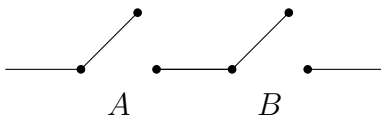
Open Switch



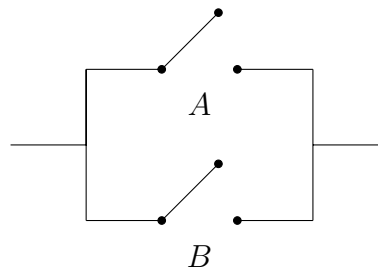
Closed Switch



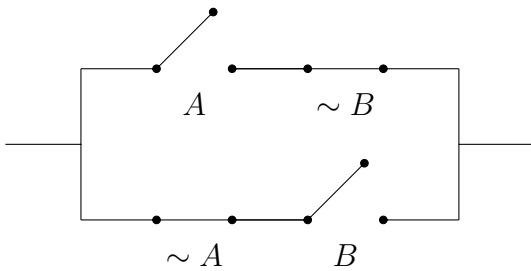
AND Circuit



OR Circuit



XOR Circuit



Battery



Bulb On



Bulb Off



Tautology



Contradiction



Flipping Switches:

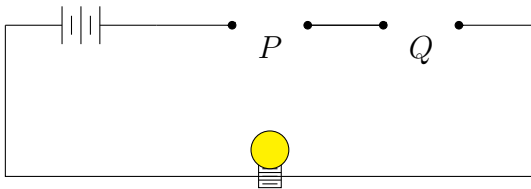
In each of the diagrams below, fill in the missing switch so that the bulb is either on or off as needed. Then fill in the necessary truth values for each switch, remember that

open \equiv *false*

and

closed \equiv *true*.

Law of Simplification:

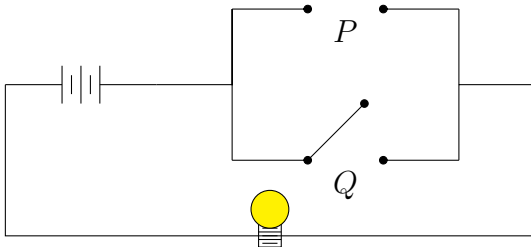


$P \wedge Q$

$\therefore P \equiv ??$

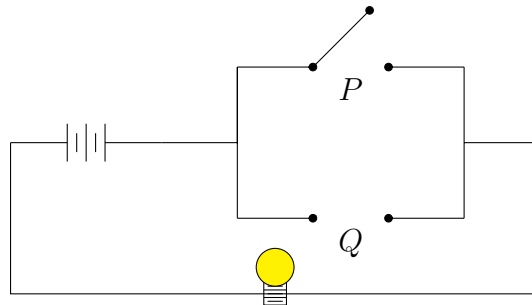
$\therefore Q \equiv ??$

Disjunctive Syllogism:



$P \vee Q$
 $\sim Q$

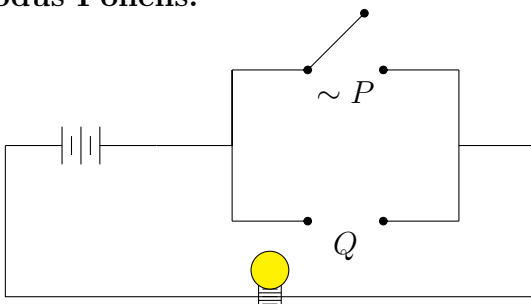
$\therefore P \equiv ??$



$P \vee Q$
 $\sim P$

$\therefore Q \equiv ??$

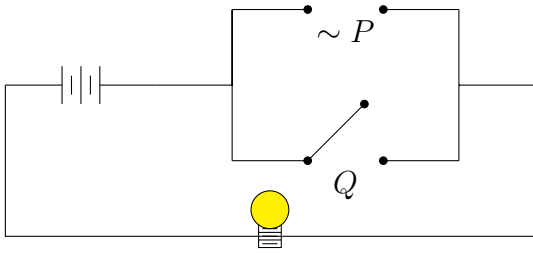
Modus Ponens:



$\sim P \vee Q$
 $P \equiv \sim(\sim P)$

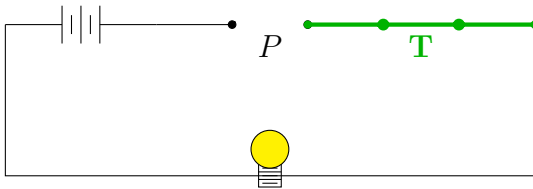
$\therefore Q \equiv ??$

Modus Tollens:

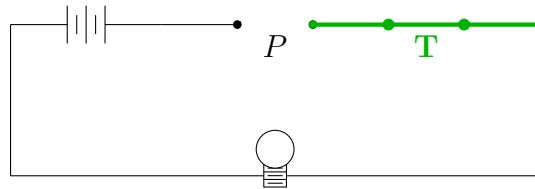


$$\begin{array}{l} \sim P \vee Q \\ \sim Q \\ \hline \therefore P \equiv \sim(\sim P) \equiv ?? \end{array}$$

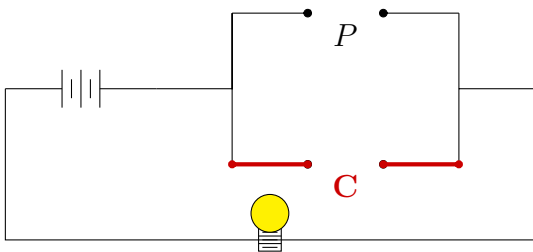
Identity Laws:



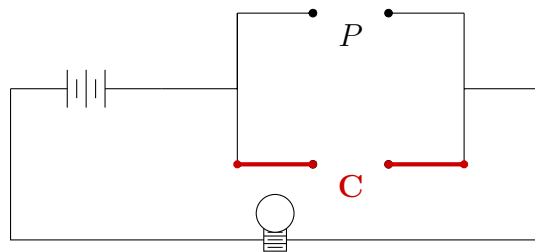
$$\begin{array}{l} P \wedge T \\ \hline \therefore P \equiv ?? \end{array}$$



$$\begin{array}{l} \sim(P \wedge T) \\ \hline \therefore P \equiv ?? \end{array}$$

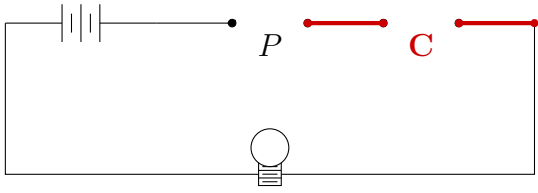


$$\begin{array}{l} P \vee C \\ \hline \therefore P \equiv ?? \end{array}$$



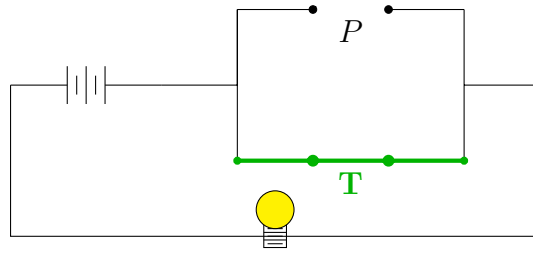
$$\begin{array}{l} \sim(P \vee C) \\ \hline \therefore P \equiv ?? \end{array}$$

Domination Laws:



$$\sim(P \wedge C)$$

$$\therefore P \equiv ??$$



$$P \vee T$$

$$\therefore P \equiv ??$$