All prime statements $P$, $Q$, $R$, etc. are statements.

If $P$ is a statement, then $\neg P$ is a statement.
If $P$ and $Q$ are statements, then $P \lor Q$ is a statement.
If $P$ and $Q$ are statements, then $P \land Q$ is a statement.
If $P$ and $Q$ are statements, then $P \Rightarrow Q$ is a statement.
If $P$ and $Q$ are statements, then $P \Leftrightarrow Q$ is a statement.

Idempotent Law (1) $P \lor P \equiv P$
Idempotent Law (2) $P \land P \equiv P$

Law of double negation $\neg (\neg P) \equiv P$ [same as $\neg (\neg P) \Leftrightarrow P$]

Or form of implication $P \Rightarrow Q \equiv \neg P \lor Q$
(when changing from implication to or form reference or form; but when changing from or form to implication reference implication form)

Contrapositive form of implication $P \Rightarrow Q \equiv \neg Q \Rightarrow \neg P$

De Morgan Law (1) $\neg P \lor \neg Q \equiv \neg (P \land Q)$
De Morgan Law (2) $\neg P \land \neg Q \equiv \neg (P \lor Q)$

Direct Proof Law $P \land R \Rightarrow Q \equiv (P \Rightarrow (R \Rightarrow Q))$

Indirect Proof Law $P \land \neg Q \Rightarrow \text{always false} \equiv P \Rightarrow Q$

Law of the Excluded Middle (1) $P \land \neg P \text{ always false}$
Law of the Excluded Middle (2) $P \lor \neg P \text{ always true}^1$

Commutative Law of “or” (1) $P \lor Q \equiv Q \lor P$
Commutative Law of “and” (2) $P \land Q \equiv Q \land P$

Associative Law of “or” (1) $P \lor (Q \lor R) \equiv (P \lor Q) \lor R \equiv P \lor Q \lor R$
Associative Law of “and” (2) $P \land (Q \land R) \equiv (P \land Q) \land R \equiv P \land Q \land R$

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$^1$ This is obvious, but let’s take a closer look. Note $P \lor \neg P$ is logically equivalent to $\neg P \lor P$ which by the or form into implication form is $P \Rightarrow P$ !!!! Now, if anyone (usually in the Social Sciences) says the Law of the Excluded Middle is an antiquated, outdated, or invalid law ask them, “‘If - - - -, then - - - ‘ [fill in the blank] is a fallacy?”
Distributive Law of “and over or” (1) \[ P \land (Q \lor R) \equiv (P \land Q) \lor (P \land R) \]
Distributive Law of “or over and” (2) \[ P \lor (Q \land R) \equiv (P \lor Q) \land (P \lor R) \]

Law of Addition \[ P \Rightarrow P \lor Q \]
Law of Simplification \[ P \land Q \Rightarrow P \]

Modus Ponens \[ [(P \Rightarrow Q) \land P] \Rightarrow Q \]
Modus Tollens \[ [(P \Rightarrow Q) \land \neg Q] \Rightarrow \neg P \]

Disjunctive Syllogism \[ [(P \lor Q) \land \neg Q] \Rightarrow P \]

Hypothetical Syllogism (Transitivity) \[ (P \Rightarrow Q) \land (Q \Rightarrow R) \Rightarrow (P \Rightarrow R) \]
Assume the hypothesis of the conclusion \[ (P \Rightarrow (R \Rightarrow Q)) \Rightarrow (P \land R) \Rightarrow Q \]

FALLACIES:

Asserting the conclusion \[ [(P \Rightarrow Q) \land Q] \Rightarrow P \]
(assuming the conclusion) (fallacy of the converse)
It is actually the case that \[ [(P \Rightarrow Q) \land Q] \not\Rightarrow P \] necessarily!

Asserting the premise \[ (P \Rightarrow Q) \Rightarrow P \]
(assuming the premise must always be true)
It is actually the case that \[ (P \Rightarrow Q) \not\Rightarrow P \] necessarily!

Fallacy of the inverse \[ [(P \Rightarrow Q) \land \neg P] \Rightarrow \neg Q \]
It is actually the case that \[ [(P \Rightarrow Q) \land \neg P] \not\Rightarrow \neg Q \] necessarily!

Fallacy (1) \[ P \lor Q \Rightarrow P \]
(they reversed the law of addition)

Fallacy (2) \[ P \Rightarrow P \land Q \]
(they reversed the law of simplification)

There are MANY more fallacies we could list; but, these are the most common. Avoid them!