

Logic Classwork – Implicational Rules of Inference

Identify the Implicational rule being used in each of the following examples.

$$\begin{array}{l} 1. \sim P \rightarrow (Q \cdot R) \\ (Q \cdot R) \rightarrow S \\ \therefore \sim P \rightarrow S \end{array}$$

$$\begin{array}{l} 2. X \vee (Y \leftrightarrow Z) \\ \sim (Y \leftrightarrow Z) \\ \therefore X \end{array}$$

$$\begin{array}{l} 3. \sim M \vee \sim N \\ \sim M \rightarrow \sim O \\ \sim N \rightarrow \sim P \\ \therefore \sim O \vee \sim P \end{array}$$

$$\begin{array}{l} 4. L \rightarrow (M \rightarrow N) \\ L \\ \therefore M \rightarrow N \end{array}$$

$$\begin{array}{l} 5. (C \rightarrow D) \cdot (E \vee F) \\ \therefore E \vee F \end{array}$$

Bonus: Complete the following proof, indicate from which steps each inference is drawn and by which rule the inference is made. See example: 1. $D \rightarrow V$

$$\begin{array}{l} 2. \sim V \\ \therefore \sim D \\ 3. \sim D \quad MT\ 1,2 \end{array}$$

$$\begin{array}{l} 1. W \rightarrow M \\ 2. N \rightarrow \sim M \\ 3. N \\ \therefore \sim W \end{array}$$