

TOPIC: STANDARD FORMS OF ARGUMENTS

Standard Form of Arguments

◆ Certain classic forms of arguments are *known* to be valid and do _____ need to be proven.

EXAMPLE

Given the following premises, determine a valid conclusion based on each standard argument.

p : It is raining outside. q : I bring my umbrella. r : I take the train.

Name	Form	Example
Direct Reasoning, Modus Ponens	$\begin{array}{l} p \rightarrow q \\ p \\ \hline \therefore q \end{array}$	$\begin{array}{l} \text{If it is raining outside, then I bring my umbrella.} \\ \text{It is raining outside.} \\ \hline \therefore \end{array}$
Contrapositive Reasoning, Modus Tollens	$\begin{array}{l} p \rightarrow q \\ \hline \therefore \sim p \end{array}$	$\begin{array}{l} \text{If it is raining outside, then I bring my umbrella.} \\ \text{I did not bring my umbrella.} \\ \hline \therefore \end{array}$
Disjunctive Reasoning, Disjunctive Syllogism	$\begin{array}{l} p \vee q \\ \hline \therefore p \end{array}$	$\begin{array}{l} \text{It is raining outside or I bring my umbrella.} \\ \text{I did not bring my umbrella.} \\ \hline \therefore \end{array}$
Transitive Reasoning, Law of Syllogism	$\begin{array}{l} p \rightarrow q \\ \hline \therefore p \rightarrow r \end{array}$	$\begin{array}{l} \text{If it is raining outside, then I bring my umbrella.} \\ \text{If I bring my umbrella, then I take the train.} \\ \hline \therefore \end{array}$

◆ If an argument does _____ match one of these forms *exactly*, it must be _____ valid.

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PRACTICE

Determine if the argument is valid and justify.

- 1) Students must show up to the final or they will receive a grade deduction.
 - 2) Charlie didn't receive the grade deduction.
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$\therefore$ Charlie showed up to the final.

PRACTICE

Determine if the argument is valid and justify.

- 1) If a number is divisible by 6, it is divisible by 3.
 - 2) The number is not divisible by 3.
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$\therefore$ The number is not divisible by 6.

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PRACTICE

Identify the type of argument and come to a valid conclusion.

- 1) If I finish my homework, then I can go to the movies.
 - 2) If I go to the movies, then I'll get popcorn.
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PRACTICE

Identify the type of argument and come to a valid conclusion.

- 1) If I forget to return the library book, I will get a late fine.
 - 2) I forget to return the library book.
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