

Making Notes | Lesson 2.4 Day 1 — The Named Argument Forms

Name	Symbolic Form	Example	Connection to the 4 Conditional Forms
Law of Detachment ✓ <i>(Modus Ponens)</i>	$p \rightarrow q$ p $\therefore q$		Uses the:
Denying the Consequent ✓ <i>(Modus Tollens)</i>	$p \rightarrow q$ $\sim q$ $\therefore \sim p$		Uses the:
Law of Syllogism ✓	$p \rightarrow q$ $q \rightarrow r$ $\therefore p \rightarrow r$		This is the ENGINE of deductive reasoning.
Disjunctive Syllogism ✓	$p \vee q$ $\sim p$ $\therefore q$		Not directly a conditional, but equivalent to: $\sim p \rightarrow q$ <i>Ruling one option out forces the other.</i>
Valid forms use...		Fallacies use...	
The conditional ($p \rightarrow q$) <i>and</i> its contrapositive ($\sim q \rightarrow \sim p$) <i>These two are EQUIVALENT — they always have the same truth value.</i>		The converse ($q \rightarrow p$) <i>and</i> the inverse ($\sim p \rightarrow \sim q$) <i>These two are equivalent to each other — but NOT to the original conditional.</i>	
Which valid forms are you using each time? Law of Detachment: uses the _____ Denying the Consequent: uses the _____ Law of Syllogism: uses the _____		The two fallacies you need to know: Affirming the Consequent ✗ $p \rightarrow q, q, \therefore p$ Error: uses the _____ Denying the Antecedent ✗ $p \rightarrow q, \sim p, \therefore \sim q$ Error: uses the _____	

If you remember one thing: valid forms use the conditional or its contrapositive (the two that are equivalent). Fallacies use the converse or inverse (the two that are not).

For each argument below: (1) identify the form by name, (2) state valid or fallacy, (3) state the conclusion if valid.

A. *If it is a parallelogram, then opposite sides are parallel. ABCD is a parallelogram. $\therefore$?*

Form: _____ Valid / Fallacy (circle one)

B. *If a triangle is equilateral, then all its angles are 60° . $\triangle PQR$ does not have all angles equal to 60° . $\therefore$?*

Form: _____ Valid / Fallacy (circle one)

C. *If a figure is a square, then it is a rectangle. WXYZ is a rectangle. $\therefore$ WXYZ is a square?*

Form: _____ Valid / Fallacy (circle one)

D. *All rhombuses have equal sides. All squares have equal sides. $\therefore$ All rhombuses are squares?*

Form: _____ Valid / Fallacy (circle one)

E. *If it is raining $\rightarrow$ the ground is wet. If the ground is wet $\rightarrow$ the game is cancelled. $\therefore$?*

Form: _____ Valid / Fallacy (circle one)

F. *I will take either Algebra 2 or Statistics. I am not taking Algebra 2. $\therefore$?*

Form: _____ Valid / Fallacy (circle one)
