

Section 2-2:
Conditional Statements
(Day 2)

Conditional

- A statement that can be written in *if-then* form
- symbol: If $p \rightarrow$, then q

Converse

- The statement formed by **exchanging** the **hypothesis** and **conclusion** of the conditional statement
- symbol: $q \rightarrow p$

Inverse

- The statement formed by **negating** the **hypothesis** and **conclusion** of the conditional statement
- symbol: $\sim p \rightarrow \sim q$

Contrapositive

- The statement formed by **exchanging** AND **negating** the **hypothesis** and **conclusion** of the *conditional statement*
- symbol: $\sim q \rightarrow \sim p$

If it rains, then I will get wet.

1. If I don't get wet, then it's not raining. _____

2. If I get wet, then it's raining. _____

3. If it's not raining, then I don't get wet. _____

A) converse

B) inverse

C) contrapositive

Truth Value

Determine the truth of each statement. If the statement is false, provide a ***counterexample***.

1. If I don't get wet, then it's not raining.

2. If I get wet, then it's raining.

3. If it's not raining, then I don't get wet.

Section 2-3: Deductive Reasoning

Deductive Reasoning

Using logic to *draw conclusions* based on *facts, definitions,* and *properties.*

Law of Syllogism

If $p \rightarrow q$ and $q \rightarrow r$ are true statements,
then $p \rightarrow r$ is a true statement.

Section 2-4: Biconditional Statements

Biconditional Statements

- can be written in the form “***p* if and only if *q***”, which means “***if p, then q***” and “***if q, then p***”
- are ***reversible***
- contain the ***conditional*** AND ***converse*** statements
- “***if and only if***” shorthand: ***iff***