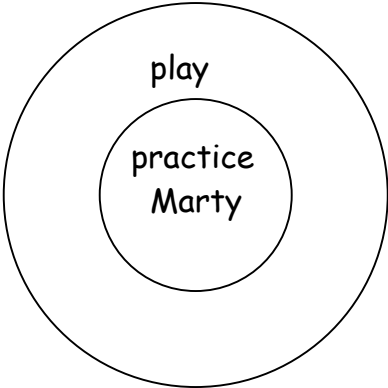
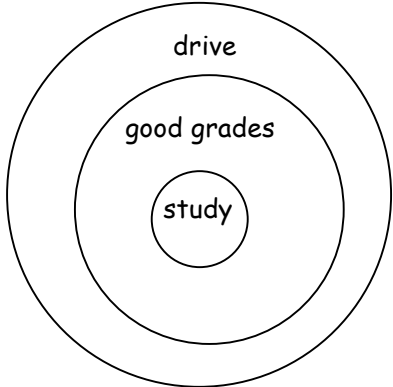


Geometry Journal: Logic

Post, Thm, or Defn	Example/Drawing	Conclusion
<p>1. Conditional:</p> <p>"if - then" statement</p> $p \rightarrow q$	<p>If you caught a shark, then you caught a fish.</p>	<p>True</p>
<p>2. Converse:</p> <p>"reverse" conditional</p> $q \rightarrow p$	<p>If you caught a fish, then you caught a shark</p>	<p>False</p> <p>counterexample: trout</p>
<p>3. Inverse:</p> <p>"negate" conditional</p> $\sim p \rightarrow \sim q$	<p>If you didn't catch a shark, then you didn't catch a fish.</p>	<p>False</p> <p>counterexample: guppy</p>
<p>4. Contrapositive:</p> <p>"negate" and "reverse" conditional</p> $\sim \square \rightarrow \sim \square$	<p>If you didn't catch a fish, then you didn't catch a shark.</p>	<p>True</p>

<p>5. Law of Contrapositive:</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>\sim <input type="checkbox"/> <input type="checkbox"/> \sim <input type="checkbox"/></p>	<p>If you caught a shark, then you caught a fish. Therefore: If you didn't catch a fish, then you didn't catch a shark.</p>	<p>If the conditional is true, then the contrapositive is also true.</p>
<p>6. Law of Detachment:</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p><input type="checkbox"/> therefore <input type="checkbox"/></p>	<p>If I go to practice, then I can play.</p> <p>Marty went to practice therefore, _____</p>	<p>Marty can play.</p> 
<p>7. Biconditional:</p> <p>"if and only if", "iff"</p> <p>$p \leftrightarrow q$</p> <p>When the conditional and its converse are both true</p>	<p>If an angle has a measure of 90°, then it is a right angle. ($p \rightarrow q$)</p> <p>if the angle is a right angle, then it has measure of 90°. ($q \rightarrow p$)</p>	<p>$p \rightarrow q$ (T)</p> <p>$q \rightarrow p$ (T)</p> <p>Therefore $p \leftrightarrow q$ (T)</p> <p>An angle has measure of 90° iff it is a right angle.</p>
<p>8. Law of Syllogism:</p> <p>$p \rightarrow q$ $q \rightarrow r$ $\therefore p \rightarrow r$</p>	<p>If I study, then I will make good grades. If I make good grades, then I can drive.</p> <p>Therefore, If _____, then _____</p>	<p>If I study, then I can drive.</p> 

9. Conjunction:

p "and" q

 $p \wedge q$

1] Christmas is in Dec. and school starts in Sept.

2] Christmas is in Jan. and school starts in Sept.

1] p: T
q: T $p \wedge q$ T2] p: F
q: T $p \wedge q$ F **$p \wedge q$ true only when both p and q are true.**

10. Disjunction:

p "or" q

 $p \vee q$

1] Christmas is in Dec. or school starts in Sept.

2] Christmas is in Jan. or school starts in Sept.

3] Christmas is in Jan. or School starts in Dec.

1] p: T $p \vee q$ T
q: T2] p: F $p \vee q$ T
q: T3] p: F $p \vee q$ F
q: F **$p \vee q$ if true as long as one statement, p or q, is true.**