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Class: Honors Geometry

Date: 9/14/06

Topic: Lesson 2-3 (Deductive Reasoning)

Inductive Reasoning	Reasoning from the specific to the general
Deductive Reasoning	Reasoning from the general to the specific If given statement is true, D.R. produces a true conclusion
Law of Detachment	If $p \rightarrow q$ is a true statement and $p$ is true, then $q$ is true. <b>&lt;notes as needed to explain&gt;</b> Given a general conditional that's true ...and a specific situation ...if the hypoth applies to the situation ...then the concl holds true for the situation too
Example	Pg 83, Check Understanding #2...What can you conclude? <b>&lt;notes as needed to explain&gt;</b> Does general conditional hypoth directly apply to situation? <b>Yes...can use Law of Detachment</b> <b>Vladimir should not pitch a complete game on Tuesday</b>
Example	Pg 83, Check Understanding 3...Use Law? Why/why not? <b>&lt;notes as needed to explain&gt;</b> Does general conditional hypoth directly apply to situation? <b>No...situation is related to <u>conclusion not hypothesis</u></b> <b>Can not use Law of Detachment</b>

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Law of Syllogism

If  $p \rightarrow q$  and  $q \rightarrow r$  are true statements, then  $p \rightarrow r$  is true.  
Chain of conditionals, concl one is hypoth of next  
You can say final concl follows directly from initial hypoth

Example

Pg 84, Check Understanding #4...Draw concl or tell why can't

<notes as needed to explain>

a) If a number ends in 0, then it is divisible by 10.

$(p \rightarrow q)$

If a number is divisible by 10, then it is divisible by 5.

$(q \rightarrow r)$

Clear & consistent chain:  $p \rightarrow q$  and  $q \rightarrow r$

Both true

**Therefore we can conclude  $p \rightarrow r$ .**

**If a number ends in 0, then it is divisible by 5.**

b) If a number ends in 6, then it is divisible by 2.

$(p \rightarrow q)$

If a number ends in 4, then it is divisible by 2.

$(r \rightarrow q)$

This one is different:

**Concl of one is not the hypothesis of the next.**

**Not possible to apply the Law of Syllogism.**

Example

Pg 86, #22

<notes as needed to explain>

Statement 1: All national parks are interesting.

Conditional: If a park is a national park, it is interesting.

Statement 2: Mammoth Cave is a national park.

**Statement 2 related to hypoth, can use Law of Detach**

**Mammoth Cave is interesting.**