

<name>

Class: Honors Geometry

Date: <date>

Topic: Lesson 1-1 (Patterns and Inductive Reasoning)

Inductive Reasoning	Observe data, recognize patterns, make generalizations.
Conjecture	Hypothesis... Generalizations made using inductive reasoning (IR) Assumes observed pattern will continue.
Why important?	Geometry focused on “proving” things Observe patterns → form conjecture → test conjecture <u>Example:</u> Look at several rectangles, observe diagonals are equal len. <u>Observation:</u> These rectangle’s diags are equal len <u>Conjecture:</u> All rect’s diags are equal len <u>Proof:</u> Positively, w/out any doubt, show diags are equal *FOR ALL* rectangles.
Sufficient for proofs?	No ... can’t prove conjecture, can only disprove it.
Counterexample	Case that proves conjecture wrong. Only takes one to disprove the conjecture.
Deductive Reasoning	Logical reasoning... Process: if certain statements are accepted as true, then other statements can be shown to follow from them. Used to prove a conjecture...geometric proofs. Inductive reasoning – form conjecture Counterexample – disprove conjecture Deductive reasoning – prove (or disprove) conjecture
How reason inductively?	Ask: <ul style="list-style-type: none">• Any patterns? Sequence?• How similar? Anything same in each? What in common?• How different? What changed? What is added each time?• How relate to each other?
Inductive Reasoning Steps	<ol style="list-style-type: none">1. Identify what is changing2. Make a conjecture about how things are changing3. Use conjecture to predict the next step4. Check it5. If false, conjecture is wrong.6. If right, try a few more steps (doesn’t prove it tho!)

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Algebra example

Observe: $0 \cdot 0 = 0$
 $1 \cdot 1 = 1$

Conjecture: $x \cdot x = x$

Check next step:

$2 \cdot 2 = 4$ *false!*

Counterexample that disproves our conjecture

Silly Example

Observe: 2, 4, 6, 8 ...

Conjecture: 10, 12 ...

Wrong! Who do we appreciate? ;)
(Yes, "10,12..." is correct

Be ready to think outside the box!)

Book examples 1-4

<optional notes as needed>