

Unit 1: Inductive and Deductive Reasoning

Lessons with Approximate Time

Day 1

U1L1: Making Conjectures: Inductive Reasoning

Main Concepts in Lesson:	Achievement Indicator:	AFL's Assigned to Assess
Definition of Conjecture A testable expression that is based on available evidence but is not yet proven Definition of Inductive Reasoning Drawing a general conclusion by observing patterns and indentifying properties in specific examples. You can state this conclusion as a conjecture. Important Information: More support for a conjecture strengthens the conjecture, but does not prove it	1.1 Make a conjectures by observing patterns and identifying properties, and justify the reasoning Acceptable: Partial justification Excellence: Full justification	Page 12 - 15 Questions #1, 9(Key Question), 13
Resources: Video on Inductive Reasoning and making a Conjecture http://www.khanacademy.org/video/inductive-reasoning-3?playlist=Algebra%20I%20Worked%20Examples http://www.khanacademy.org/video/inductive-reasoning-2?playlist=Algebra%20I%20Worked%20Examples		

U1L2: Exploring the Validity of Conjectures

Main Concepts in Lesson:	Achievement Indicator:	AFL's Assigned to Assess
Definition of Valid Important Information: Some conjectures initially seem to be valid, but are shown not to be valid after more evidence is gathered. The best we can say about a conjecture reached through inductive reasoning is that there is evidence either to support or deny it. A conjecture may be revised, based on new evidence.	1.2 Explain why inductive reasoning may lead to a false conjecture. 1.7 Determine if a given argument is valid, and justify the reasoning. Acceptable: Determine the validity, with partial justification Excellence: Determine the validity, with full justification	Page 17 Question # 1
Resources:		

Day 2

U1L3: Using Reasoning to Find a Counterexample to a Conjecture

Main Concepts in Lesson:	Achievement Indicator:	AFL's Assigned to Assess
Definition of Counterexample: An example that invalidates a conjecture. Important Information: You need only one counterexample to disprove a conjecture. If you can't find a counterexample, that does not prove that the conjecture is true. However, not finding a counterexample, increases the likelihood that the conjecture is true.	1.4 Provide and explain a counterexample to disprove a given a conjecture.	Page 22 - 26 Questions #3, 10, 14(Key Question) and 18.

Day 3

U1L4: Proving Conjectures: Deductive Reasoning

Main Concepts in Lesson:	Achievement Indicator:	AFL's Assigned to Assess
Definitions of: Proof: A mathematical argument showing that a statement is valid in all cases, or that no counterexample exists. Generalization: A principle, statement, or idea that has a general application. Deductive Reasoning: Drawing a specific conclusion through logical reasoning by starting with general assumptions that are known to be valid Transitive Property: If $a = b$ and $b = c$, then $a = c$ Two Column Proof: A presentation of a proof where the statement is written in one column and the justification in the other. Important Information: When you apply the principles of deductive reasoning correctly, you can be sure that the conclusion is valid. The transitive property is an important one to use. Using examples is not a proof.	1.6 Prove a conjecture, using deductive reasoning (not limited to two column proofs) Acceptable: simple proof Excellence: complex proof	Page 31 - 33 Questions #8, 10 (Key Question), 17

Day 4

Mid Unit Assessment -- Page 34

Day 5

U1L5: Proofs That are Not Valid

Main Concepts in Lesson:	Achievement Indicator:	AFL's Assigned to Assess
Definition of Invalid Proof A proof that contains an error in reasoning or that contains invalid assumptions Important Ideas: All you need is a single error in reasoning to result in an invalid conclusion in deductive reasoning. Division by zero always creates an error in a proof, leading to an invalid conclusion. Circular reasoning should be avoided. The reason why you are writing a proof is so that others can read and understand it. Make sure it is clear. Having someone else read it for clarification is a good tool.	1.7 Determine if a given argument is valid, and justify the reasoning Acceptable: Determine the validity, with partial justification. Excellence: Determine the validity with full justification.	Page 42 - 44 Questions #5, 7 (Key Question)

Day 6

U1L6: Reasoning to Solve Problems

Main Concepts in Lesson:	Achievement Indicator:	AFL's Assigned to Assess
Important Ideas: Inductive and Deductive reasoning are useful in problem solving. Inductive reasoning involves simpler problems, observing patterns, and drawing a logical conclusion from your observations to solve the original problem. Deductive Reasoning involves using facts or assumptions to develop an argument , which is hten used to draw a logical conclusion and solve the problem.	1.3 Compare, using examples, inductive and deductive reasoning 1.9 Solve a contextual problem that involves inductive or deductive reasoning. Acceptable: Write a complete solution that involves inductive reasoning, or a partial solution that involves deductive reasoning. Excellence: Write a complete solution that involves deductive reasoning.	Page 48 - 51 Questions 5a, 6, 10 (Key Question), 16

Day 7

U1L7: Analyzing Puzzles and Games

Main Concepts in Lesson:	Achievement Indicator:	AFL's Assigned to Assess
Use inductive reasoning for games that require recognizing patterns or creating a particular order. Use deductive reasoning for games that require inquiry and discovery to complete.	1.9 Solve a contextual problem that involves inductive or deductive reasoning. Acceptable: Write a complete solution that involves inductive reasoning, or a partial solution that involves deductive reasoning. Excellence: Write a complete solution that involves deductive reasoning. 2.1 and 2.2 as well	Page 55 - 57 Questions #5, 7(Key Question), and 14
Resources Leapfrog (lesson 1.7) http://butler.brocku.ca/mathematics/resources/learningtools/learningobjects/frogs/fullscreenframeset.html		

Day 8 and 9

Puzzles and **Chapter Assessment**

Day 10

Project Connection -- Creating an Action Plan

Assessment

Unit 1: AFL Questions:

Unit 1 Project: