



Learning Works Charter School



Integrated Math IB
Module 8

Student Name: _____ Teacher Name: _____

As you work through the chapters in your Integrated Math 1 course, you will be encouraged to think and to make conjectures while you persevere through challenging problems and exercises. You will make errors – and that’s okay! Learning and understanding occur when you make errors and push through mental roadblocks to comprehend and solve new and challenging problems.

Text: *Integrated Math I*, Big Ideas, 2016

**To ensure you are learning, you must show your work for all exercises.
YOU WILL NOT EARN CREDIT FOR ANSWERS WITHOUT WORK.**

Chapter 9: Reasoning and Proofs (9.1-9.5)

- _____ Maintaining Mathematical Proficiency (page 439): Complete exercises #1, 2 5, 7, 8, 9, 10, 12, 13 **all**
- _____ 9.2 Inductive and Deductive Reasoning: Read the lesson and complete exercises #3-10 **all**, 13, 15, 17, 23, 31, 33, 45
- _____ 9.3 Postulates and Diagrams: Read the lesson and complete exercises #3, 4, 5, 6, 9, 11, 13, 16, 21, 22, 35, 36, 37, 38
- _____ 9.4 Proving Statements about Segments and Angles: Read the lesson and complete exercises #1, 5-9 **all**, 11, 12, 13, 14, 17, 18, 26, 51, 52, 53
- _____ 9.5 Proving Geometric Relationships: Read the lesson and complete exercises #1, 4, 7, 8, 11, 15, 17, 26

Students must complete the Chapter Review and Project with a teacher or tutor at school.

- _____ Chapter Review (pages 488-490): Complete exercises #5-22 **all**
- _____ Complete the attached Project (**No project = No credit**)

A teacher or tutor reviewed the Chapter Review and Project with the student.

Date: _____ Signature: _____

<i>Grade</i>

Integrated Math 1 Project
Module 8: Reasoning and Proofs
Textbook Pages 439-492

Reasoning at the Zoo

People use both inductive and deductive reasoning to help them make decisions. When you visit the zoo, what conjectures do you make about the animals? What types of reasoning could be used to support or reject your conjectures?

1. Use the information in the chart to write two conjectures about orangutans. Support each conjecture with data.

Name of Orangutan	Gender	Height (feet)	Weight (pounds)
Nelly	Female	2.6	110
Abby	Female	2.4	97
Harry	Male	4.5	210
Goldie	Female	2.7	115
Oswald	Male	4.1	184
Pepper	Male	4.4	198

2. What conclusion can you make from each pair of true statements? State which law of logic you used.
- a. If an animal is an omnivore, then it eats both plants and animals.
Orangutans are omnivores.

 - b. If an animal is a female mammal, then it produces milk. If an animal produces milk, it can nurse its young.

 - c. If a species is endangered, then it is likely to become extinct.
Giant panda bears are endangered.

3. In the wild, a giant panda bear's diet consists primarily of bamboo, but in a zoo, the diet includes other foods. On the first two days of the week, the giant panda bear at your zoo eats 34 pounds of highly nutritious biscuits and 37 pounds of bamboo, respectively.

Use inductive reasoning to create two possible sequences that describe the giant panda bear's daily diet. Write the first five terms of each sequence.

First Sequence:

Second Sequence:

Describe the pattern you used to write each sequence. Which sequence do you think is more likely? Explain your reasoning.

4. A counterexample can be used to show that a conjecture is false. Below are three conjectures students made after visiting a zoo. Write a counterexample that shows that each conjecture is false.
- a. There are always more elephants in a zoo than giraffes.
 - b. The oldest leatherback sea turtle in captivity is 33 years old.
 - c. American bison are never over 6 feet tall.