

# Foundations of Math 11 LG 1&2

## Inductive and Deductive Reasoning

### INTRODUCTION:

How do investigators determine what has happened at an accident scene? What reasoning do they use to help them understand what has happened?

### LEARNING GUIDE EXPECTATIONS:


On the completion of this learning guide you will be able to develop your logical reasoning ability by:

- 1) forming and analyzing conjectures.
- 2) proving or disproving conjectures to solve problems.
- 3) analyzing puzzles and games involving spatial reasoning.

### EVALUATION:







You are ready to progress to the next learning guide when you can demonstrate your understanding of the above expectations. Please refer to your Foundations of Mathematics 11 Marks Record Sheet to determine the assessment.

### RESOURCES NEEDED:

 Foundations of Mathematics 11 Text and possible Internet access.

## LEARNING ACTIVITIES:

### Expectation #1: Forming and analyzing conjectures.

1.  [Watch and take notes on instructional video on Conjectures.](#)
2.  In the Foundations of Mathematics 11 text, read Section 1.1 pages 6-11 and make sure you pay attention to the green boxes and work through Example 1 on page 7. Complete **Your Turn** on page 8 (at the end of Example 1).
3.  Work through Example 3 on page 9. Complete **Your Turn** on page 9.
4.  Complete #1, 2, 3, 6, 9, 11 on pages 12-15.
5.  Read Section 1.2 page 16 and work through Reflecting (A, B & C) on page 16.
6.  Complete #1 & 2 on page 17.



7. Read Section 1.3 pages 18 & 19 and work through Example 1 on page 18. Complete **Reflecting** (A & B) on page 19.



8. Read pages 19 & 20 and work through Example 2 on pages 19-20. Complete **Your Turn** (A & B) on page 20.



9. Read page 21 and work through Example 3 on page 21. Complete **Your Turn** on page 21.



10. Complete #1, 3, 5, 13 on pages 22-24.



11. In your math journal, complete the journal entry for LG1&2 Expectation 1 after you read the **In Summary** box on p. 12.



12. In your math journal, complete the journal entry for LG1&2 Expectation 1 after you read the **In Summary** box on p. 17.



13. In your math journal, complete the journal entry for LG1&2 Expectation 1 after you read the **In Summary** box on p. 22.



### **Expectation #2: Proving or disproving conjectures to solve problems.**



1. [Watch and take notes on instructional video on Deductive Reasoning.](#)



2. Work through Example 1 on Section 1.4 pages 27-28. Complete **Reflecting** (A & B) on page 28.

3. Work through Example 2 on page 28. Complete **Your Turn** on page 28.

4. Work through Example 3 on page 29. Complete **Your Turn** on page 29.

5. Work through Example 4 on pages 29-30. Complete **Your Turn** on page 30.



6. Complete #2, 4, 5, 8 on pages 31-33.

7. Read Section 1.5 page 36 and work through **Reflecting** (A-H) on page 36.



8. Work through Example 1 on page 37. Complete **Your Turn** on page 37.

9. Work through Example 2 on pages 37-38. Complete **Your Turn** on page 38.

10. Work through Example 4 on page 40. Complete **Your Turn** on page 40.



11. Complete #1, 2, 5 on pages 42-44.

12. Read Section 1.6 page 45 and work through **Reflecting** (A-E) on pages 45-46.



13. Work through Example 1 on page 46. Complete **Your Turn** on page 46.



14. Complete #1, 3, 6, 7, 8, 13, 15 on pages 48-51.



15. In your math journal, complete the journal entry for LG1&2 Expectation 2 after you read the **In Summary** box on p. 31.



16. In your math journal, complete the journal entry for LG1&2 Expectation 2 after you read the **In Summary** box on p. 41.



17. In your math journal, complete the journal entry for LG1&2 Expectation 2 after you read the **In Summary** box on p. 48.



### **Expectation #3: Analyzing puzzles and games involving spatial reasoning.**



1. [Watch and take notes on instructional video on Analyzing Puzzles and Games.](#)



2. Read Section 1.7 page 52 and complete **Reflecting (A -G)** on page 52.

3. Work through Example 1 on page 53. Complete **Your Turn (A & B)** on page 53.

4. Work through Example 2 on page 54. Complete **Your Turn (A & B)** on page 54.



5. Complete #1, 2, 3, 4, 11 on pages 55-57.



6. In your math journal, complete the journal entry for LG1&2 Expectation 3 after you read the **In Summary** box on p. 55.



### **REVIEW AND CHALLENGE**

#### **Important Terms For This Learning Guide**

- Conjecture
- Inductive reasoning
- Counterexample
- Reasoning
- Proof
- Generalization
- Deductive Reasoning
- Transitive Property
- Two-column Proof
- Invalid Proof
- Premise
- Circular Reasoning



1. Complete Chapter Self-Test page 58 #1-7.



2. Read Chapter 1 Review pages 59-60 and complete #1-17 in Chapter 1 Review pages 61-62.

## **PRACTICE QUIZZES**

[Practice quiz #1](#)

[Practice quiz #2](#)

[Practice quiz #3](#)

[Practice quiz #4](#)

[Practice quiz #5](#)