Complete the outline as you view Video Lecture 2.2. Pause the video as needed to fill in the blanks. Then press Play to continue. Also, circle your answer to each numbered exercise.

**Objective 1** Use Logic to Understand Patterns

Work Video Exercise 1 with me.

Look for a pattern in the list. Then use this pattern to predict the next number.

1. 1, 4, 9, 16, 25, ...

**Objective 2** Understand and Use Inductive Reasoning

Inductive Reasoning is the process of arriving at a general conclusion based on observing patterns or observing specific examples.

Work Video Exercise 2 with me.

Look for a pattern in the list. Then use this pattern to predict the next number.

2. 0, 1, 3, 7, 15, ..., 2, 4, 8, 16, ...

Pause and work Video Exercise 3.

Study the list of figures. Use the pattern to draw the next figure in the list.

3. △, △, △, △, △, △, ...

Play and check.
Section 2.2 Patterns and Inductive Reasoning

**Objective 3** Form Conjectures and Finding Counterexamples

Work Video Exercise 4 with me.

Make a conjecture about the scenario. Try a few examples if necessary.

4. the product of two even numbers

Pause and work Video Exercise 5.

Answer parts a–d.

a. Make a conjecture about the color of the 12th figure.

b. Make a conjecture about the shape of the 12th figure.

c. Sketch the 13th figure. Label the color.

d. Sketch the 26th figure. Label the color.

5. $\triangle, G, \square, \triangle, G, G, \triangle, \ldots$

Play and check.
Work Video Exercise 6 with me.

Light travels much faster than sound, so you see lightning before you hear thunder. If you count 5 seconds between the lightning and thunder, how far away is the storm? See the graph below.

6.

![Graph showing distance versus seconds between lightning and thunder.](image)

Show a conjecture is wrong (false) by finding a(n) _________.

Pause and work Video Exercise 7.

Find one counterexample to show that the conjecture is false.

7. The sum of two numbers is always greater than either number.

Play and check.