

Unit 1: Inductive and Deductive Reasoning

Learning Goals

- You will be able to develop your logical reasoning ability by:
 - Forming and analyzing conjectures
 - Proving or disproving conjectures to solve problems
 - Analyzing puzzles and games involving spatial reasoning

1.1 Making Conjectures: Inductive Reasoning

Making Conjectures

**Ex. 1 A Math class list consists of 20 boys and 10 girls.
Can a conjecture be made about the composition of
the school?**

My conjecture is that in the school
there are twice as many boys as
girls.

My conjecture is that at this school
more boys like math than girls.

Ex. 2 Develop at least 3 conjectures about what is happening in this photograph.

My conjecture is:

a) the lady is travelling.

b) the lady is an artist scanning for scene to create

c) she likes to read.



Look at triangles, p.6



Figure 1

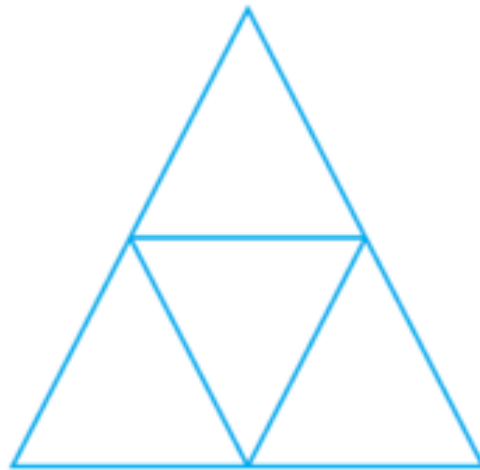


Figure 2

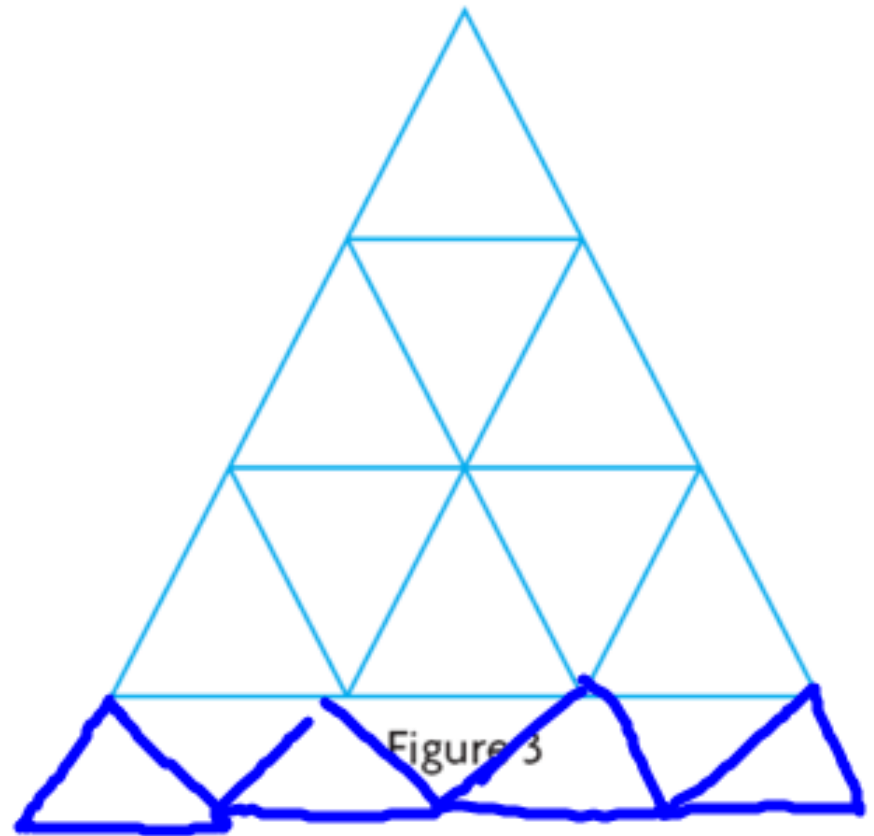


Figure 3

Make a conjecture about the pattern

Figure	1	2	3
Number of Triangles	1	4	9

10
100

- What is Georgia's conjecture for Figure 10?
- What pattern does she base this on?
- Do you agree?

100
△'s

Make a conjecture about the pattern

My conjecture is that the # of △'s will equal the square of figure #.

ONLY FOR GENIUSES

$$1 + 4 = 5$$

$$2 + 5 = 12$$

$$3 + 6 = 21$$

$$8 + 11 = ?$$

40

96

SHARE IF YOU GOT IT

Homework

P. 12-15

1, 2, 3, 5, 6, 9, 11, 12, 14

1. Troy works at a ski shop in Whistler, British Columbia, where three types of downhill skis are available: parabolic, twin tip, and powder. The manager of the store has ordered 100 pairs of each type, in various lengths, for the upcoming ski season. What conjecture did the manager make? Explain.

2. Tomas gathered the following evidence and noticed a pattern.

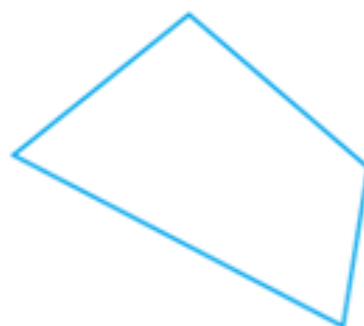
$$17(11) = 187 \quad 23(11) = 253$$

$$41(11) = 451 \quad 62(11) = 682$$




Tomas made this conjecture: When you multiply a two-digit number by 11, the first and last digits of the product are the digits of the original number. Is Tomas's conjecture reasonable? Develop evidence to test his conjecture and determine whether it is reasonable.

3. Make a conjecture about the sum of two even integers. Develop evidence to test your conjecture.

5. Marie studied the sum of the angles in quadrilaterals and made a conjecture. What conjecture could she have made?



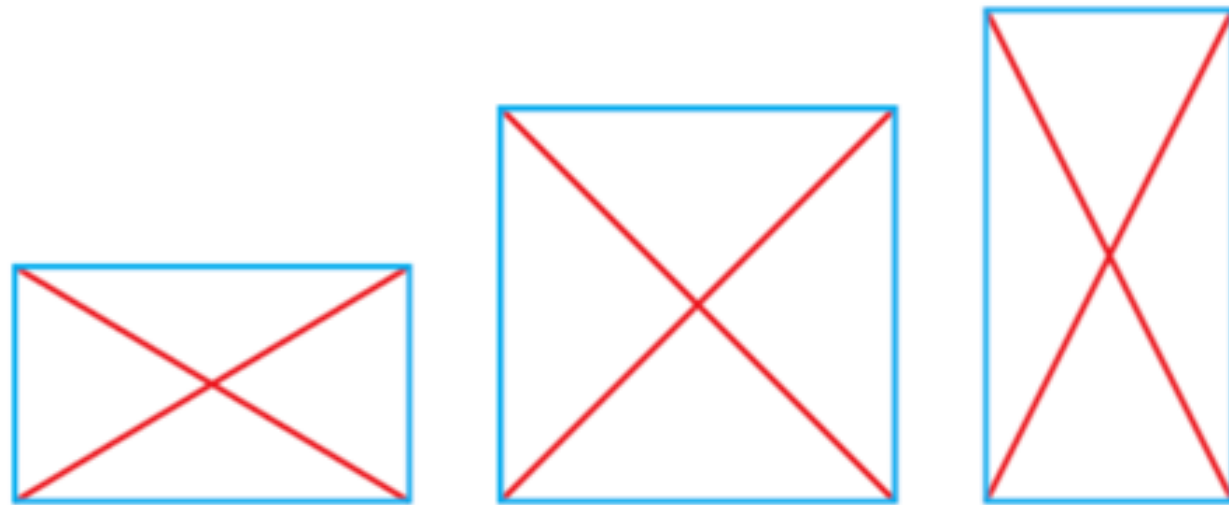
6. Use the evidence given in the chart below to make a conjecture.
Provide more evidence to support your conjecture.

Polygon	quadrilateral	pentagon	hexagon
Fewest Number of Triangles	 2	 3	 4

9. Make a conjecture about the sum of one odd integer and one even integer. Test your conjecture with at least three examples.

- 11.** Paula claims that whenever you square an odd integer, the result is an odd number. Is her conjecture reasonable? Justify your decision.

- 12.** Ursula studied the diagonals of these rectangles to look for patterns. Make a conjecture about the diagonals of rectangles. What evidence supports your conjecture?



14. Nick made a conjecture about the medians of a triangle. He used triangles of different sizes and types to gather evidence. The evidence always supported his conjecture. What might his conjecture have been? Provide additional evidence to support the conjecture.

