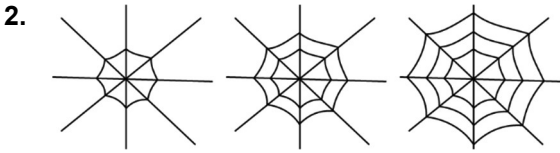Name _____ Date _____

2.2 Extra Practice

In Exercises 1 and 2, describe the pattern. Then write or draw the next two numbers, letters, or figures.

1. A, 26, B, 25, C, 24, …

2.

In Exercises 3 and 4, make and test a conjecture about the given quantity.

3. the sum of two absolute values

4. the product of a number and its square

5. Vertical angles are always complementary. Find a counterexample to show that the conjecture is false.

In Exercises 6 and 7, use the Law of Detachment to determine what you can conclude from the given information, if possible.

6. If you eat a healthy breakfast, then you will not be hungry until lunchtime. You are not hungry until lunchtime.

7. Adjacent angles share one common ray. $\angle AOB$ and $\angle DOB$ are adjacent angles.

In Exercises 8 and 9, use the Law of Syllogism to write a new conditional statement that follows from the pair of true statements, if possible.

8. If a polygon has three sides, then it is a triangle. If triangle has two congruent sides, then it is an isosceles triangle.

9. If it is Tuesday, then you mow the grass. If you mow the grass, then you water the flowers.

In Exercises 10 and 11, decide whether inductive reasoning or deductive reasoning is used to reach the conclusion. Explain your reasoning.

10. All mammals have hair. Cats are mammals. So, all cats have hair.

11. Each time you go to school you walk. You went to school today, so you walked.

12. Is it possible to have a series of true conditional statements that lead to a false conclusion? Explain.

13. The table shows the cost per pound of several varieties of organic and nonorganic produce at your local grocery store. What conjecture can you make about the relation between the cost of organic produce and the cost of nonorganic produce? Explain your reasoning.

	Organic	Nonorganic
Bananas	$0.49	$0.29
Carrots	$1.19	$0.89
Strawberries	$3.99	$2.99

2.2 Puzzle Time

Which Garden Insects Are Always Polite?

Write the letter of each answer in the box containing the exercise number.

Complete the sentence.

1. A _____ is an unproven statement that is based on observations.

2. _____ uses facts, definitions, accepted properties, and the laws of logic to form a logical argument.

3. You use _____ when you find a pattern in specific cases and then write a conjecture for the general case.

4. A _____ is a specific case for which the conjecture is false.

State the law of logic that is illustrated.

5. If you exercise every day, then you will be a better athlete. You exercise every day. So, you will be a better athlete.

6. If you play baseball, then you play a sport. If you play a sport, then you are an athlete. You play baseball, so you are an athlete.

Find the counterexample that shows that the conjecture is false.

7. $\dfrac{N}{N} = 1$

8. All prime numbers are odd.

Answers
H. false term
D. counterexample
L. $N = 0$
N. $N = -\dfrac{1}{2}$
U. 2
R. 15
I. 0
Y. conjecture
B. Law of Detachment
S. inductive reasoning
G. Law of Syllogism
A. deductive reasoning

7	2	4	1	5	8	6	3