

LESSON

Practice A**2-1****Using Inductive Reasoning to Make Conjectures**

Find the next item in each pattern.

1. 2, 4, 6, 8, . . .

2. Z, Y, X, . . .

3. fall, winter, spring, . . .

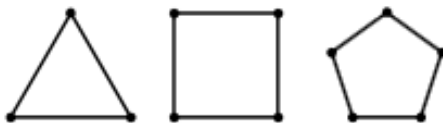
4. When several examples form a pattern and you assume the pattern will continue, you are applying _____.

5. A statement you believe to be _____ based on inductive reasoning is called a conjecture.

For Exercises 6–8, complete each conjecture by looking for a pattern in the examples.

6. The sum of two odd numbers is _____.

$3 + 5 = 8$ $13 + 3 = 16$ $1 + 1 = 2$

7. The number of sides of a polygon that has n vertices is _____.

8. When a tree is cut horizontally, a series of rings is visible in the stump. Make a conjecture about the number of rings and the age of the tree based on the data in the table.

Number of Rings	3	15	22	60
Age of Tree (years)	3	15	22	60

9. Assume your conjecture in Exercise 8 is true. Find the number of rings in an 82-year-old oak tree. _____

10. A counterexample shows that a conjecture is _____.

Show that each conjecture is false by finding a counterexample.11. For any number n , $2n > n$.

12. Two rays having the same endpoint make an acute angle.
(Sketch a counterexample.)



Practice

Conditional Statements

Identify the hypothesis and conclusion of each conditional.

1. If you can see the stars, then it is night.

Hypothesis: _____

Conclusion: _____

2. A pencil writes well if it is sharp.

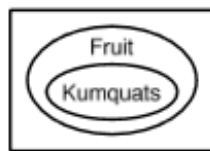
Hypothesis: _____

Conclusion: _____

Write a conditional statement from each of the following.

3. Three noncollinear points determine a plane.

4.



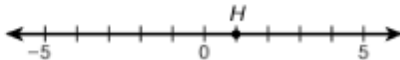
Determine if each conditional is true. If false, give a counterexample.

5. If two points are noncollinear, then a right triangle contains one obtuse angle.

6. If a liquid is water, then it is composed of hydrogen and oxygen.

7. If a living thing is green, then it is a plant.

8. "If
- G
- is at 4, then
- GH
- is 3." Write the converse, inverse, and contrapositive of this statement. Find the truth value of each.

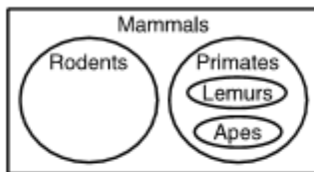


Converse: _____

Inverse: _____

Contrapositive: _____

This chart shows a small part of the *Mammalia* class of animals, the mammals. Write a conditional to describe the relationship between each given pair.



9. primates and mammals _____

10. lemurs and rodents _____

11. rodents and apes _____

12. apes and mammals _____