

2-1

Patterns and Inductive Reasoning

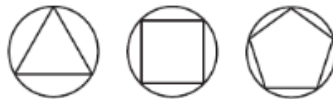
Inductive reasoning is reasoning based on patterns you observe.

**Problem 1** Finding and Using a Pattern

Look for a pattern. What are the next two terms in each sequence?

A 3, 9, 27, 81, ...

B



a. 45, 40, 35, 30, ...

A **conjecture** is a conclusion you reach using inductive reasoning.



Problem 2 Using Inductive Reasoning

Look at the circles. What conjecture can you make about the number of regions n diameters form?





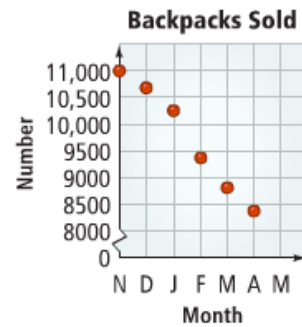
Problem 3 Collecting Information to Make a Conjecture



What conjecture can you make about the sum of the first 30 even numbers?

**Problem 4 Making a Prediction**

Sales Sales of backpacks at a nationwide company decreased over a period of six consecutive months. What conjecture can you make about the number of backpacks the company will sell in May?



A counterexample is an example that shows that a conjecture is incorrect.



Problem 5 Finding a Counterexample

What is a counterexample for each conjecture?

- a. If a flower is red, it is a rose.
- b. One and only one plane exists through any three points.
- c. When you multiply a number by 3, the product is divisible by 6.

