

## Sec. 9.1 Mathematical Patterns

sequence: an ordered list  
of numbers

$$\begin{array}{cccc}
 a_1, & a_2, & a_3 & \dots & a_n \\
 \downarrow & \downarrow & \downarrow & & \downarrow \\
 \text{1st} & \text{2nd} & \text{3rd} & & \text{n}^{\text{th}} \\
 \text{term} & \text{term} & \text{term} & & \text{term}
 \end{array}$$

explicit formula: finds the  $n^{\text{th}}$  term  
using the number  $n$

recursive formula: relates each term  
after the first term to the one before  
it

Problem 1:

A sequence has an explicit formula

$a_n = n^2 - 10$ . What is the term  $a_8$   
in the sequence?

## Problem 2

What is a recursive definition for the sequence 4, 14, 44, 134?

## Problem 3

What is an explicit formula for the sequence 1, -1, 1, -1, ...

## Problem 4:

In a certain kind of online auction, the price of an item begins high and falls over time until someone purchases the item. If an item begins at \$100 and decreases by 25% every 5 minutes, what is the price after a half hour?