

## INSTRUCTOR INFORMATION – INTRODUCTION TO MODELS

Objective: To introduce students to ideas of math modeling at a very basic level.

Important ideas

Model: definitions, reasons, examples

Mathematical models: definitions, reasons, kinds, examples

Mathematical models can be everyday objects or specifically designed math manipulatives.

Math properties can be expressed in many forms

concrete models -- demonstrate using physical objects

visual/graphic models -- demonstrate using pictures, diagrams or graphs

verbal models -- describe in words

numeric models -- describe using number lists, expressions or statements

... eventually ...

abstract symbolic models -- represent with symbols and variables

Follow-up activities will introduce other math models:

number lines

sketches

graphs

symbols and variables

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## INSTRUCTOR INFORMATION – VISUAL MODELS FOR NUMBER PROPERTIES

Students can build concrete models and use information learned to understand and express ideas in numeric or verbal form.

Number properties can frequently be modeled in more than one way.

example: 12 is an even number

concrete models

two groups of six blocks  
six pairs

numeric models

$6+6=12$   
 $2+2+2+2+2+2=12$   
 $2 \times 6 = 12$   
 $6 \times 2 = 12$

verbal models

correspond to concrete or numeric representation

The possibility of multiple models will become clear to students if individual responses are shared with the class.