

# Homework Help for Math Out of the Box

## Developing Algebraic Thinking

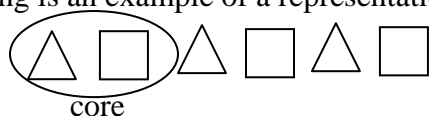
### Collecting and Sorting

Information about homework assignments is provided to help parents and other homework helpers with the mathematics ideas that are being developed. The homework help includes definitions of key vocabulary, questions to ask that will help students connect to the classroom investigations, problem solving examples, and other helpful explanations.

#### Homework 2A1 follows Lesson 3

- The **core** of a pattern is the smallest group of elements that repeats.

Example: To represent the letter pattern **ABAB**, a core of two different elements is repeated. Following is an example of a representation for an **ABAB** pattern:



A description of this pattern would state that it is a repeating pattern with a core of two elements. The two elements can be described as different from each other in some way, such as color, shape, or position.

When a student is asked to represent a pattern in a different way, they are expected to provide a pattern with the same number of elements in the core. For example, an **ABAB** pattern can be represented by **triangle, square, triangle, square, triangle, square**. It can also be represented with movements or sounds such as **snap, clap, snap, clap, snap, clap**.

#### Homework 2A2 follows Lesson 4

When students are asked to describe a pattern, they are expected to use terms such as core and element. These descriptions are meant to be general so that any representation of this repeating pattern can fit the description. The example provided above would be appropriate for this homework assignment.

#### Homework 2B1 follows Lesson 5

Students need experiences with connecting repeating patterns to sequences of numbers. These experiences lay the foundation for future explorations with addition, subtraction, multiplication, and division. When students are asked to verify, they are expected to



prove or justify their answers. One way they can verify their answers is to extend the pattern to the intended position and count the elements individually.

### **Homework 2B2 and 2C1 follow Lesson 7 and Lesson 9**

Students are continuing their exploration with number sequences by exploring patterns on number charts. Analysis of number patterns builds the foundation for more formal descriptions of relationships and the study of functions. Vertical, horizontal, and diagonal patterns can be observed.

### **Homework 2C2 follows Lesson 10**

To determine the missing numbers students may use a variety of strategies, such as comparing the numbers to see if they are increasing or decreasing or test the numbers with addition, subtraction, multiplication, and division. The rule can then be applied to the missing numbers.

### **Homework 2D1 follows Lesson 13**

Students are beginning to explore concepts related to central tendency such as range and mode. The mode of a data set is the item that occurs the most times. The range of a data set is the difference between the largest amount and the smallest amount. This homework deals with categorical data, so students analyze the data by examining the mode. When asked to tell the story of the data, they are expected to describe the data in terms of the categories that were used and how the amounts in each of these categories compare to each other.

### **Homework 2E1 follows Lesson 14**

A **bar graph** is a type of graph that uses bars to show relationships.

Below is an example of a bar graph. In a bar graph there is space between the columns or rows representing the different groups of data.



