THINKING ALGEBRAICALLY

Did you know that your child has been doing algebra since kindergarten? Thinking about how numbers work is called thinking algebraically. Let your children see you working with numbers and include your child, if appropriate. Below are some concepts that your child will be taught under the heading of algebraic thinking.

Patterns

When something happens over and over, we say there is a pattern. Patterns are all around us – in music, art, science, math and everyday living. Young children begin to identify patterns in the world around them. They begin hearing patterns in language and music as well as making patterns with their bodies, by playing such games as Simon Says. With many experiences, young children will see that patterns are predictable and can go on forever.

Patterns can be both numeric (using numbers) and non-numeric. The core of the pattern is what is repeated and the element is each part of the pattern. In the pattern moon, 2 stars, sun; moon, 2 stars, sun, etc., the core is moon, 2 stars, sun and it has three elements moon, star and sun.

Skip Counting

Skip counting means that you skip a number, or several numbers, as you count. If you are counting by 2s, you would count 2,4,6,8, etc. skipping 1,3,5,7, etc. You can skip count by 2, 5 or 10.

Functions

The relationships between two numbers is called a function. A function table lists pairs of numbers and how they relate to each other when a specific action is taken. The action is called the rule of the table. For any
input, there is only one possible output. Here is an example of a function table:

<table>
<thead>
<tr>
<th>Rule: +4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

**Equations**

An equation is a number sentence that shows that two amounts are equal (the same). An equation must be balanced. There must be the same amount on each side of the number sentence. To show that each side is the same, an equal sign (=) is used.

**How You Can Help Your Child at Home**

To help your child understand patterns, consider the following:

- When your child is eating a cereal that has different colors or shapes, help your child create a pattern – 2 green, 4 red, 2 green, 4 red, etc. The core is 2 green, 4 red and the elements are the red and green cereal. You might also use the following elements – star, moon, clover to make the core of - 1 star, 2 moons, 4 clover.
- Have your child rename the same pattern using letters (1 knife, 2 forks, 4 spoons; 1 knife, 2 forks, 4 spoons …or, A, B B, C C C C; A, B B, C C C C…)
- When taking a walk around the block, discuss with your child interesting arrangements of objects or patterns that appear in the environment. Encourage your child to point out what he/she is noticing.
- On your walk, help your child make their own pattern – walk, walk, hop, clap; walk, walk, hop, clap, etc.
- Help your child find patterns around the house – in wallpaper, in the fabric of their clothes or furniture.

To help your child understand the concept of skip counting, try the following:

- When an older child is learning about money, they learn that 1 nickel equals 5 pennies. They can then skip count a group of 5 nickels (5, 10, 15, 20, 25) to equal a quarter. Or, they could skip count 10 dimes to equal $1.00. This exercise also is a great way to reinforce the concept of an equation.

To help your child understand what a function is and how to use a function table:

- Talk with your child about functions and using a function table, cover the numbers in the output column and have the child “fill in the blank”.

To help your child understand about equations, try the following:

- Have your child use objects around the house to form equations: 4 red blocks + 2 blue blocks + 1 green block = 7 blocks; or, 2 cans of peas + 3 cans of soup = 5 cans in all.
- Use these same household objects to create inequalities where both sides are not equal and have your child tell you if they are equations and, if not, why not and then have them turn the non-equations into equations.