



# *Math Lesson Plans*

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# Using your Math Equations

## **Before you begin**

These equations are designed to be used with concrete manipulative materials such as the Montessori golden beads and/or the Montessori stamp game. For children who are able to write numbers legibly, offer them equation slips to copy the problem and write their solution. They may like to paste the completed slip into a notebook (this creates a wonderful historical record of their progress). A master for photocopying these slips is included with the equations. We recommend laminating or placing the master in a protective sheet (so you don't accidentally cut it along with the copies).

Each set of equations contains static (no borrowing/carrying) problems and dynamic (with borrowing/carrying) problems. Dynamic equations are marked with a star in the equation's upper right-hand corner. Always begin with static problems. Work with these repeatedly until the operation's concept (eg, addition means "put it all together beginning with the smallest things") is completely clear.

When you are ready for dynamic problems, use the concrete materials to reinforce the process of making exchanges. For example, show the child clearly that 10 units are the same as one ten bar. Let the child experiment with making exchanges. Children often "discover" these equivalences for themselves – how wonderful!

Present the operations in the following order:

1. Addition (put it together)
2. Multiplication (put it together so many times)
3. Subtraction (take it away)
4. Division (take it away/share it out so many times)

## **Addition**

When introducing the child to static addition, be sure to explain the following two basic rules. Say, "Today we're going to do some addition work. Addition means put it all together. What does addition mean?" Have the children repeat the first rule. Then, continue by saying, "We always start by putting together the smallest things first. What do we put together first?" Again, encourage the children to repeat the rule. Introduce the operation this way every time you do the work in order to reinforce the concept.

The first time you do addition, you may want to introduce the plus sign. To do this, say, "Addition is a long word. Instead of saying it every time, we like to draw this symbol." Draw the plus sign on a slip of paper (preferably in red to stay with the color-coding). Then continue by saying, "This says addition. It means put it all together!"

When you begin dynamic problems, review the first two rules as above and then add a new rule. Say, "Today, we have a special new rule to follow. When you get to 10, stop. What's the

**rule?"** Encourage repetition and have fun when they're counting and reach 10—be dramatic about the stop!

## **Multiplication**

Follow the same procedures as for addition (begin with static problems, explain and repeat the rules, introduce the symbol by writing it in yellow) but explain the rules for multiplication. Say, "Today we're going to do some multiplication work. Multiplication means put the same thing together so many times. We always put the smallest things together first." Again, encourage the children to repeat the rules and introduce the symbol for multiplication as you did for addition.

## **Subtraction**

Follow the same procedures as for addition (begin with static problems, explain and repeat the rules, introduce the symbol by writing it in green) but explain the rules for subtraction. Say, "Today we're going to do some subtraction work. Subtraction means take it away. We always start by taking away the smallest thing first." Again, encourage the children to repeat the rules and introduce the symbol for subtraction as you did for addition.

## **Division**

Follow the same procedures as for addition (begin with static problems, explain and repeat the rules, introduce the symbol by writing it in blue) but explain the rules for division. Say, "Today we're going to do some division work. There are three things you need to know to do division. First, division means share it fare. What does it mean? Second, we always start sharing the *biggest* thing first. What do we share first? Third, the answer is what one person gets. What's the answer?" Again, encourage the children to repeat the rules and introduce the symbol for division as you did for addition.

## **Notes**

When you first begin working with these four operations, focus on the process rather than the accuracy of the results. If you discover one or two extra beads on the rug, discreetly steal them and hide them in your hand. (I would find many of these in my pockets at the end of a day.) Don't let a simple counting error distract the children from internalizing the concept at hand.

