



TEACHER PAGE

Lesson: Addends with Spiffy (Missing Elements-Addition)

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New Arizona Math Strand 3 Patterns, Algebra and Functions Grade 3

Articulated 3M33-02 Solve equations with one variable using missing addends to sums of 18.

Arizona Mathematics Standard 3 Algebra Foundations 6 Grades 1-3

3MF6-PO1 Finding the missing number in addition and subtraction number sentences.

Learning Objectives: The student will be able to:

1. fill in the missing addend in an addition problem
2. fill in the missing sum in an addition problem.
3. identify and answer the variable represented by a letter in an addition problem. For example: $n + 3 = 5$
 $n = 2$

Grade level notes:

Addition-subtraction learning begins with first graders using manipulatives. With proficiency using manipulatives, they can put their problems on paper to feed through a “function box.” At third grade, students should be able to do this with multiplication problems.

Materials:

Large box into which a small child could fit.
Small items such as blocks, pencils, erasers, chalk and small squares made of paper.

Overview:

The variable is the concept that enables arithmetic (algebra) to be generalized. Algebra is a set of rules for manipulating symbols, and a way of thinking. Algebra concepts have been brought to primary classrooms since the new national standards have called for algebraic experiences to start early. Student should play games that teach them numerical reasoning. The function box can help with that as well as facilitate experiences with variables.

Engage students:

Cut 2 holes, for “in puts” and “out puts,” in a large box (large enough to fit over a child). For instance, if the rule is add two, and a student puts three pencils in one hole, five pencils should come out the other hole. The student inside the box can make noises like a machine.



**Follow-up, extensions:**

A “real” function box helps students migrate from concrete ideas to abstract. As the students get older, they can work problems from a picture of the function box drawn on the chalkboard.

Assessment:

Pre-test and a post-test students on missing numbers (addends). Example: $4 + \underline{\quad} = 6$, $\underline{\quad} + 5 = 7$. This assessment shows if a child has developed reversibility, which allows them to work problems with missing addends. Most children will have developed reversibility by the end of first grade.

Teacher Note:

This lesson may be appropriate for more advanced 1st and 2nd graders.

Bibliography:

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