

Subject: Mathematics

Grade: Second

Standard: #9 Problem Solving

Key Concept: Solve problems using strategies, such as guess and check, act out, use objects, draw a picture, or look for patterns.

Generalization: Students use the strategy look for patterns.

Background:

This lesson is based on the Lawrence Hall of Science's Great Explorations in Math and Science unit Frog Math: Predict, Ponder, Play (ISBN# 0-912511-79-6). Before beginning this activity, students have read "The Lost Button" story from Frog and Toad Are Friends, by Arnold Lobel. In addition, the teacher may choose to read The Button Box, by Margarete S. Reid.

The teacher begins the lesson by doing whole class instruction involving questioning about "The Lost Button" story and modeling ways to sort buttons. Students assist the teacher in sorting a group of buttons by color. These buttons can be a set of homemade felt buttons or a group of actual buttons. Depending on the abilities of your students, you may choose to model sorting the same set of buttons based on several other attributes.

Students work in pairs using a cup of buttons specifically chosen for their readiness level. Each pair will complete the same basic activities and will share with other pairs in the same tier.

This lesson is tiered in *content* according to *readiness*.

Tier I: ***Grade Level Learners***

Pairs of students use a cup of buttons which are somewhat diverse, e.g. three colors, all two or three holed, all round, and four different textures. All pairs in this tier have identical collections of buttons.

Tier II: ***Advanced Learners***

Pairs of students use a cup of buttons which are diverse as possible in color, shape, size, number of holes including those with no holes, and texture. Pairs need not have the same collections.

After the whole class instruction and the formation of pairs, each tier will complete the following activities with respect to their cup of buttons:

Sort the collection by the color. Then sort the collection by number of holes.

Develop a list of attributes for the collection and sort the collection by a third attribute.

After each pair has sorted their collection, have them walk around the room and look at the ways that the buttons were sorted by their classmates in the same tier. Students guess the way in which the buttons were sorted, i.e. look for the pattern.

Assessment:

Teacher should use a summative assessment noting students' abilities to identify the attributes of buttons and recognize the patterns.

As a follow-up activity, have students list all the members of the class and as many attributes as the whole class can identify. As homework, have each student sort this collection using names only and bring to class the next day. Use several or all of these sorts as a problem(s) of the day for a week.