

MATH 402 Assignment
Problem-Solving Presentation Using Children's Literature

Description:

The purpose of this assignment is to have you select a piece of children's literature that can be developed into problem-solving lesson or that can be used to provide the context, or theme, for a series of mathematics lessons. Children's literature is an excellent source of problem-solving material because stories naturally provide a context for problems. The piece of literature you select should be a story that can be used as a theme or context for generating problems. The problems should not be simply counting the number of objects in a picture.

Use the format below and write a 1-2 page review of the literature, then prepare about a five-minute presentation to share with the class. If possible, bring the book you reviewed to class on the day this assignment is due.

Book:

Hutchins, P. (1986). *The doorbell rang*. New York, NY: William Morrow and Company, Inc.

Mathematical Concept (or Theme):

- (1) Beginning concept of division, equal sharing
- (2) Fractional parts of a set; equivalent fractions

Abstract:

Two children, Victoria and Sam, have 12 cookies to share equally between themselves. As the story progresses, friends and relations come to visit the two children and each time the doorbell rings, more visitors arrive and the 12 cookies have to be shared among more children. First, there are 2 children sharing cookies, then 4 children, 6 children, and finally 12 children. Children reading the story have to determine how many of the 12 cookies each child will get if the cookies are shared evenly.

Suggestions for Implementation: (You may want to use some key descriptors to help categorize your suggestions.)

- (1) **Assessment:** The story can be used as an assessment activity with small groups of children as you begin division unit. You can assess (a) children's notion of equal sharing, (b) whether they recognize the sharing activity as division, (c) or if they can represent the sharing of the cookies with symbols, i.e. $12/3$. Reading the story with young children will give the teacher a measure of a child's number sense, counting ability, and his/her informal knowledge of the concept of division prior to formal instruction.
- (2) **Develop problem-solving strategies:** The story can provide a problem-solving context for young children. Children can select characters in the story and they can role play the action. Objects can be used for the cookies and the children will have an opportunity to model the action in the story.
- (3) **Identify fractional parts of a set:** Throughout the story, children also can identify the fractional parts of the set of cookies, i.e., if a child has 3 cookies from the set of 12, then he/she has one-fourth of the set. If there were 15 cookies to the set and a child had one-third of the cookies, how many cookies would the child have?
- (4) **Relating division to fractions:** As the story is written, factors of 12, i.e., 2, 4, 6, and 12, are used to represent the number of children that share the cookies. Children can be asked whether there are any other number (factors) that can be used to share the cookies evenly. What would happen if there were 12 cookies shared by 5 children? How many cookies would each child get? How could you express that number?
- (5) **Extending the story/relating multiplication and division:** Children can generate their own version of the story, providing the reader with some information about factors/products and have the reader figure out the missing data.