

Multiple Groups Problems

Structure: Multiplication and division word problems that involve a whole number of groups, with a fractional amount in each group.

Goal: To strengthen children's understanding of fractions and provide an introduction to computation with fractions.

Types of multiple groups problems:

1. Multiplication: Number of groups is a whole number, amount per group is a fraction, and the total is unknown. $12 \times \frac{3}{4} = n$
2. Measurement Division: Number of groups (whole number) is unknown, amount per group is a fraction, and the total is known. $n \times \frac{3}{4} = 9$

Children's Strategies for Multiple Groups Problems:

See Chapter 3 in *Extending Children's Mathematics* p.48-64

❖ Representing each fractional quantity individually:

- Direct Modeling: see Grace's strategy for solving $n \times \frac{3}{8} = 10 \text{ and } \frac{1}{2}$
- Repeated Addition: see Luke's strategy for solving $n \times \frac{3}{8} = 10 \text{ and } \frac{1}{2}$
- Transitional: each fraction is represented individually but then child combines some fractions.
see Shawn's strategy for solving $20 \times \frac{3}{4} = n$

❖ Grouping and Combining: Children begin to realize they do not need to represent all of the quantities and develop ways to group and count sets of fractions that involve "friendlier" amounts. See Cam's strategy for solving $15 \times \frac{2}{3} = n$

❖ Multiplicative Strategies: Most sophisticated strategy marked by a shift in children's thinking from thinking additively to thinking multiplicatively. See Trenton's strategy for solving $n \times 1 \text{ and } \frac{1}{2} = 12$