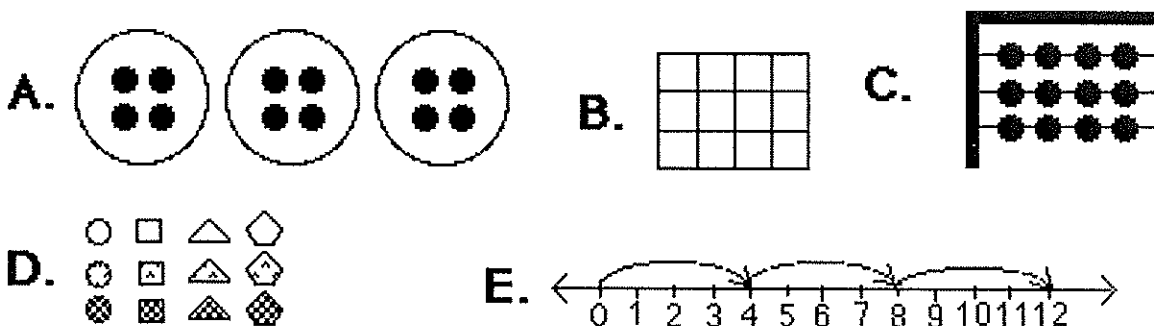


Teaching Sequence

1. Use a variety of problem settings and manipulative materials to act out and model the operation.
2. Provide representations of objects in pictures, diagrams, and drawings to move a step away from the concrete toward symbolization.
3. Finally, use symbols to illustrate the operation.

Multiplication - Which Diagram?



Grouping or "equivalent groups of objects"

How many wheels do 3 cars have?

Three 4-inch pieces of ribbon will make what length?

Array

Children in a marching band line up in 3 rows with 4 in each row. How many children are in the band?

A table top is covered by 3 rows of tiles with 4 tiles fitting across the table top. How many tiles cover the table top?

Combinations or Cartesian Products

I am making cookies with 3 flavors: vanilla, chocolate, and raisin. Cookies will be made in 4 shapes. How many different cookies can I make?

Types of Division

Measurement or Repeated Subtraction

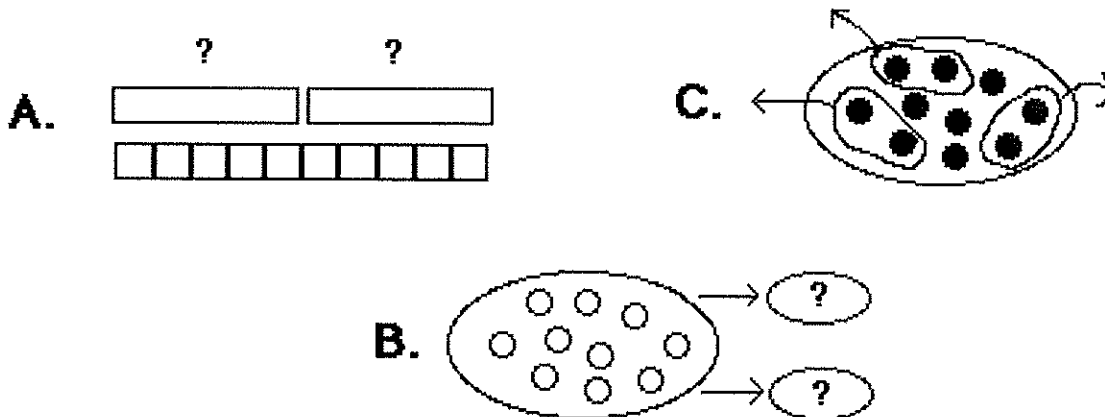
One knows the number in each group and must determine the number of groups.
Example: Jenny had 12 candies. She gave 3 to each person. How many persons got candies?

Partition or Sharing

A group is separated into a given number of equivalent groups, and one seeks the number in each group.

Example: Gil had 15 shells. If he wanted to share them equally among 5 friends, how many should he give to each?

Division - Which Diagram?



Measurement or Repeated Subtraction

I have 10 slices of bread. How many sandwiches (2 slices each) can I make?

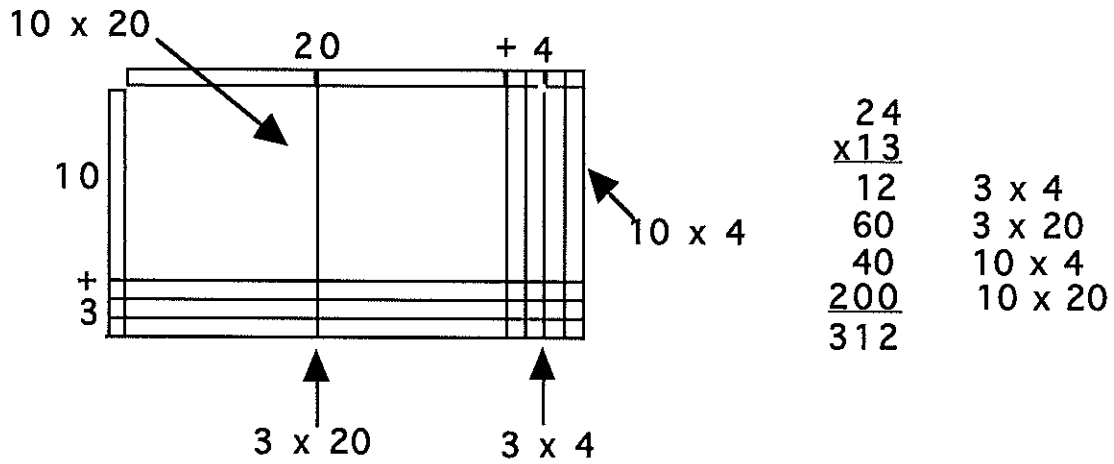
I have a piece of licorice 10 centimeters long. I cut off pieces 2 centimeters long for some friends. How many friends can I give a piece to?

Partition or Sharing Division

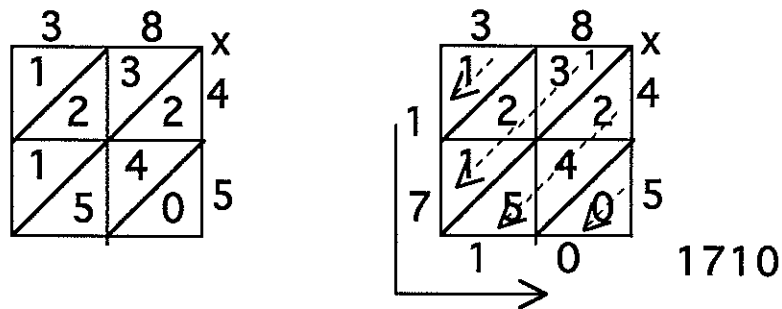
Ten cards are dealt to 2 children. How many cards does each child get?

Two children want to share a 10-centimeter string of licorice. How much will each get?

Partial Products Multiplication



Lattice Multiplication



Repeated Subtraction Division

