

## Multiplication and Division: Grouping and Partitioning

The main similarity among multiplication and division is that both concepts involve the notions of grouping and partitioning .

Category	Example	Structure	Modeling Strategy
<b>Multiplication</b>	Bart has 4 boxes of pencils. There are 6 pencils in each box. How many pencils does Bart have all together?	<b>Known:</b> Number of groups (4 boxes) Number of objects in group – size of group (6 pencils) <b>Unknown:</b> Total number of objects (total number of pencils)	Make 4 groups with 6 counters in each group. Count all the counters to find the answer.
<b>Measurement Division</b> (you are given the size or “measure” of a group)	Bart has 24 pencils. They are packed 6 pencils to a box. How many boxes of pencils does he have?	<b>Known:</b> Total number of objects (24 pencils) Number of objects in group – size of group (6 pencils) <b>Unknown:</b> Number of groups (number of boxes)	Start with 24 counters. Put the counters into groups with 6 counters in each group. Count the number of groups to find the answer.  (Model by repeated subtraction.)
<b>Partitive Division</b> (you are given the number of groups or “parts”)	Bart has 6 boxes of pencils with the same number of pencils in each box. All together he has 24 pencils. How many pencils are in each box?	<b>Known:</b> Total number of objects (24 pencils) Number of groups (6 boxes) <b>Unknown:</b> Number of objects in group – size of group (number of pencils)	Divide the 24 counters into 6 groups with the same number in each group by, for example, counting off one counter at a time to each of 6 groups (piles) and repeating the process until all counters used. Count the number of counters in one group to find answer.  (Model by fair-sharing.)