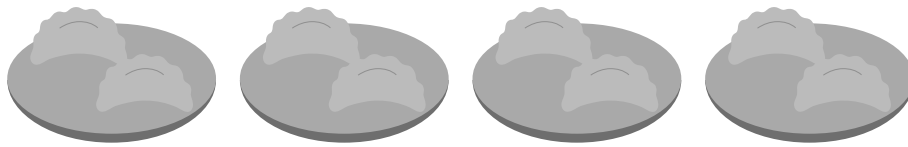## Home Connection

In Dimensions Math 1B, students thought about multiplication and division as equal groups. In this chapter, students revisit the concepts of:

• Multiplication as repeated addition.
• Division as sharing equally.
• Division as grouping equally.

This chapter's emphasis is on understanding multiplication and division using equal groups or arrays, not on memorizing facts. Your child will use counters or draw pictures as they are developing these concepts.

Multiplication

The "×" as the symbol for multiplication is introduced first. We read this as "times".

> There are 2 dumplings in each group.
> There are 4 groups.

$2 + 2 + 2 + 2 = 8$

4 twos is 8.

$$4 \quad \times \quad 2 \quad = \quad 8$$

↑ number of groups ↑ number in each group ↑ total

"4 times 2 equals 8."

Arrays are then used to show students that the answer is the same, regardless of which number represents the groups and which number represents the quantity in each group.
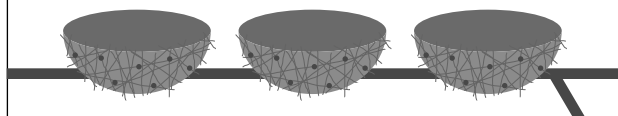
$8 \times 3 = \boxed{}$

$3 \times 8 = \boxed{}$

$8 \times 3 = 3 \times \boxed{}$

Division

Division has two interpretations, sharing and grouping. Both use the symbol for division, "÷," which is read "divided by".

Equal sharing

Divide 15 birds equally into 3 nests.
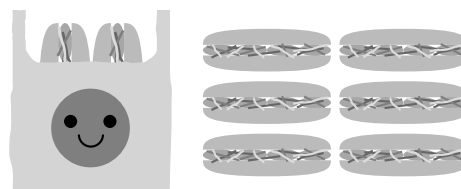How many birds are in each nest?

15	÷	3	=	5
↑		↑		↑
total		number of groups		number in each group

"15 divided by 3 equals 5".

Equal grouping
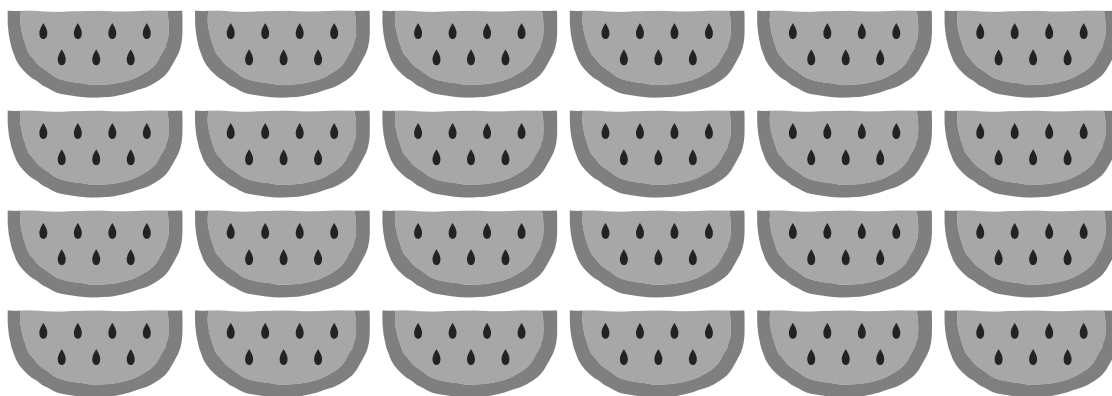
There are 8 sandwiches.
Each bag can hold two sandwiches.
How many bags do we need to hold all the sandwiches?

8	÷	2	=	4
↑		↑		↑
total		number in each group		number of groups

"8 divided by 2 equals 4".

Finally, your child will connect multiplication and division as inverse operations similar to addition and subtraction.

$4 \times 6 = \boxed{}$ | $6 \times 4 = \boxed{}$

$24 \div 4 = \boxed{}$ | $24 \div 6 = \boxed{}$
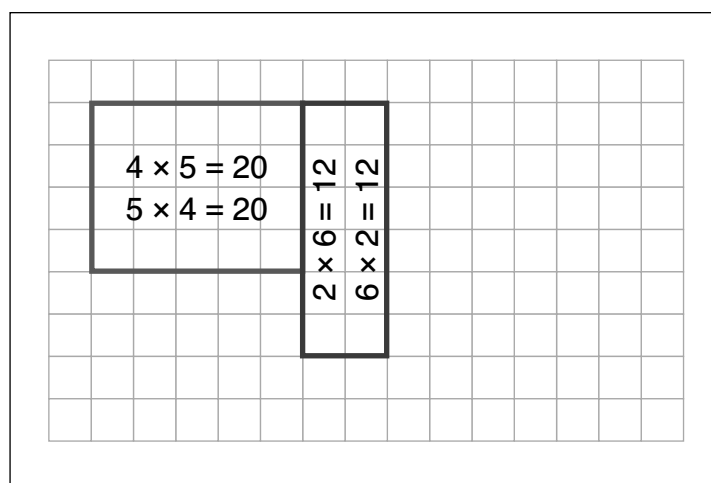
What can we do at home?

- Ask your child to share or group objects equally. You might ask, "If 6 cookies are shared between 3 people, how many cookies will each person get?" You might also ask, "If there are 12 baby carrots to pack into baggies for lunch, how many baggies can we fill if we put 4 carrots into each baggie?"
- Provide your child with a word problem and have them draw or make it with blocks, then find the total. For example, build 2 groups of 8, 3 sixes, etc.
- Provide your child with a word problem and have them draw or make it with blocks, then find the groups. For example, 15 in 3 groups, 18 in groups of 6, etc.

Play Games

- Fences

  <u>Materials</u>: Graph paper (you can print centimeter graph paper from the internet), two dice, and two colors of markers or crayons

  <u>To play</u>: On each turn, a player rolls the dice and fences in their land on the graph paper game board by outlining an array with the same number of spaces as the dice roll. The players write two multiplication equations on their newly acquired land:

$$4 \times 5 = 20$$
$$5 \times 4 = 20$$
$$2 \times 6 = 12$$
$$6 \times 2 = 12$$

Player 1 (blue) rolled 5 and 4 and fenced in a 5 × 4 array.

Player 2 (red) rolled 2 and 6 and fenced in a 2 × 6 array.

Play stops when a player cannot fit their array on the board. Each player adds up the total amount of land (or boxes) they have fenced in. The player with the most land is the winner.