

# Dimensions Math

## Grade 3 Letter Home #4

Chapter 4 Multiplication and Division

Dimensions Math  
Letters Home

### Home Connection

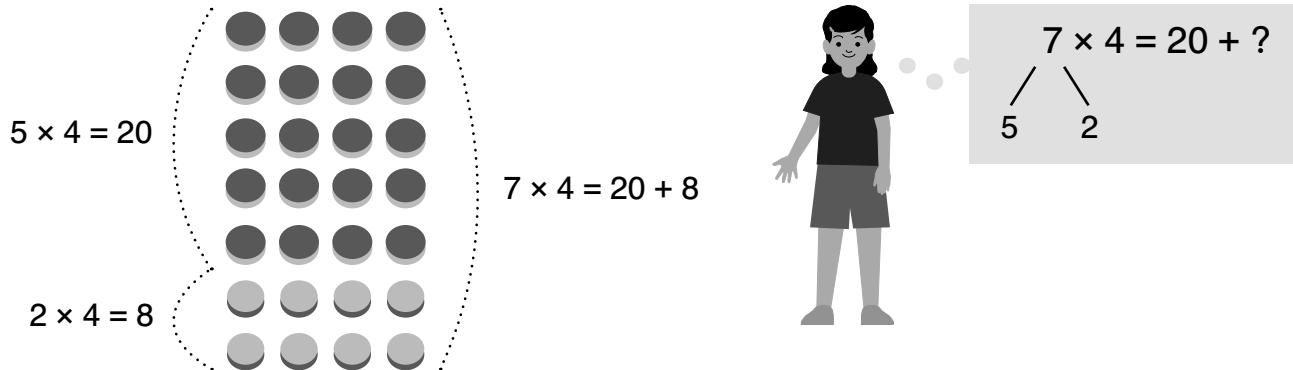
With the lessons in this chapter, your child builds on the foundation of multiplication and division facts for 2, 3, 4, 5, and 10 from Dimensions Math 2A and 2B. Using these facts, students will set the stage for future work with multiplication and division by:

- using known facts to find the answers to facts they don't know
- working with remainders to define odd and even numbers
- drawing bar models with equal units to solve multiplication and division word problems

The combination of multiplication and division concepts in this chapter, along with the conceptual understanding of algorithms in the next chapters, will develop automatically with multiplication and division facts for 0 through 5, and 10. Students will learn the facts for 6 through 9 in Dimensions Math 3B.

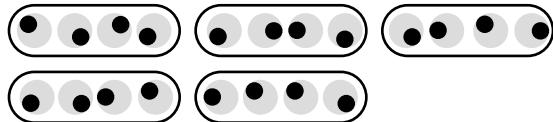
### Deriving Facts

Your child can use the facts that they know to find the facts that they don't know by splitting numbers and multiplying parts. (While you may recall the term “distributive property” from school, this is an informal look at the property, and the actual term will not be used.)



## Division with Remainders

In this chapter, students use multiplication and division facts they know to understand the concept of remainders.



$24 \div 5$  is 4 with a remainder of 4.

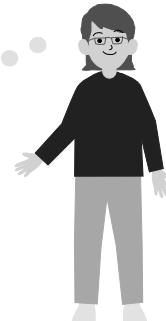
Each child gets 4 googly eyes.

4 googly eyes are left over.

$$5 \times 4 = 20$$

$$5 \times 5 = 25, \text{ too much}$$

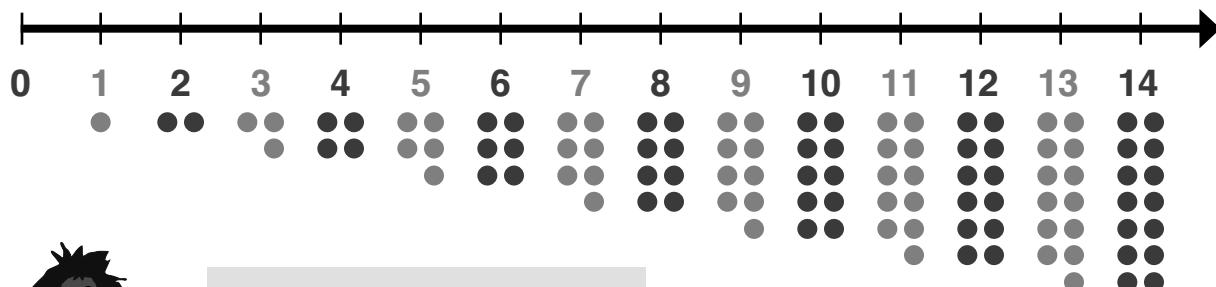
$$\begin{array}{r} 24 \div 5 \\ \swarrow \quad \searrow \\ 4 \quad 20 \end{array}$$



Students will then use division with remainders to define more formally odd and even numbers:

**Even numbers** can be divided by 2 with no remainder.

**Odd numbers** have a remainder of 1 when divided by 2.



0  $\div$  2 = 0,  
so 0 is an even number.

## Multiplication and Division Bar Models

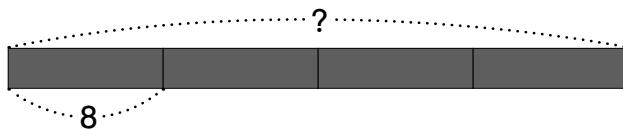
Similar to addition and subtraction bar models, there are two types of models: “part-whole” and “comparison” models.. While models used for addition and subtraction are proportional, multiplication and division bar models divide a quantity into equal parts, called units.

### Part-Whole Models

Mei made 4 spiders.

She used 8 craft sticks for each spider.

How many craft sticks did she use?



$$1 \text{ units} \longrightarrow 8$$

$$4 \text{ units} \longrightarrow 4 \times 8 = 32$$

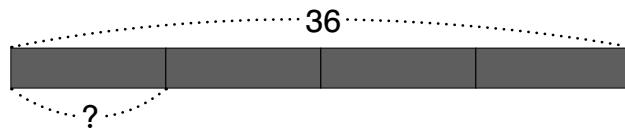
Mei used 32 craft sticks.

Dion made 4 apple trees.

He used 36 pompoms for the apples.

He put the same number of pompoms on each tree.

How many pompoms did he put on each tree?



$$4 \text{ units} \longrightarrow 36$$

$$1 \text{ unit} \longrightarrow 36 \div 4 = 9$$

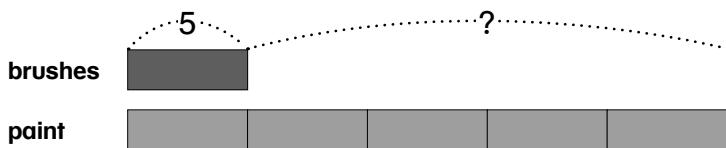
Dion put 9 pompoms on each tree.

### Comparison Models

A set of brushes costs \$5.

An acrylic paint set costs 5 times as much as the brushes.

How much more does the paint set cost than the brushes?



$$1 \text{ unit} \longrightarrow 5$$

$$4 \text{ units} \longrightarrow 4 \times 5 = 20$$

The paint set cost \$20 more than the brushes.

Finally, students will combine these models for all four operations to solve two-step word problems:

Ms. Davis bought 6 skeins of wool yarn for \$5 each and a set of knitting needles for \$12. How much did she spend?



First find the cost of the yarn.

1 unit  $\rightarrow$  5

6 units  $\rightarrow$   $6 \times 5 = 30$

$30 + 12 = 42$

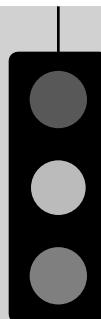
Mrs. Davis spent \$42.

## What can we do at home?

At the end of this chapter, your child should know from memory all multiplication facts for 0 through 5, and for 10. Repetition is the key to mastering these facts. There are many online games or apps available that provide fun practice for children. Consider having your child practice these facts for five to ten minutes each evening. Teachers may provide flash cards, or they can be downloaded from the Dimensions Math website.

### Play Games:

- **Match or Memory:** Using index cards, create a set of multiplication and division fact cards showing an expression only, which does not include the equal sign and answer. Then, make a matching set of cards with the products/quotients only. For example, you might make cards that read, “ $2 \times 5$ ,” “ $7 \times 5$ ,” and “ $30 \div 5$ ,” and corresponding cards with “10,” “35,” and “6.” Arrange the cards faceup for Match or facedown to play a game of Memory.
- **Go, Slow, I Don’t Know:** Print out an image of a traffic light and have your child practice with fact cards. The facts that they know automatically (3-5 seconds) get placed on green. The facts that they know but need to think about longer are placed on yellow, and the facts that they don’t know are placed on red. Keep practicing until all the facts are a “go!”



**I Don’t Know**

**Slow**

**Go!**