Third grade

Chapter 3

3.1

Count equal groups

Equal groups have the same number in each group.

There are 3 tulips in each of 4 vases. How many tulips are there in all?

Step 1 Think: there are 4 vases, so draw 4 circles to show 4 equal groups.

Step 2 Think: there are 3 tulips in each vase, so draw 3 dots in each group.

Step 3 Skip count by 3s to find how many in all: 3, 6, 9, 12

There are 4 equal groups with 3 tulips in each group.

So, there are 12 tulips in all.

3.2

Algebra- Relate addition and multiplication

You can add to find how many in all.

You can also multiply to find how many in all when you have equal groups.

$3 \times 2 = 6$

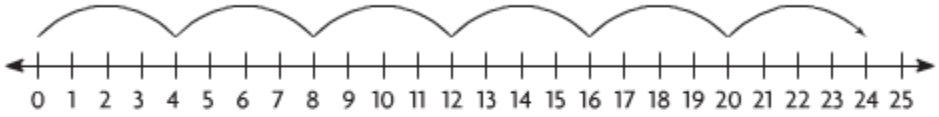
The **factors** are 3 and 2.
The **product** is 6.

So, $2 + 2 + 2 = 6$ and $3 \times 2 = 6$.

3.3

Skip count on a number line

When you have **equal groups**, you can skip count on a number line to find how many in all.



How many jumps are there? 6

How long is each jump? 4 spaces

Think: 6 jumps of 4 shows 6 groups of 4.

Multiply. 6 × 4

6 × 4 = 24

3.4

Problem solving model multiplication

Read the Problem	Solve the Problem
What do I need to find? I need to find how many flute players are in the marching band.	Complete the bar model to show the flute players. Write 7 in each box to show the 7 students in each of the 2 groups.  14 students
What information do I need to use? I know there are 2 rows. There are 7 students in each row.	
How will I use the information? I will draw a bar model to help me see what operation I need to use to solve the problem.	Since there are equal groups, I can multiply to find the number of flute players in the band. 2 × 7 = 14 So, there are 14 flute players in all.

3.5

Model with arrays

An **array** is a set of objects arranged in rows and columns.

Write a multiplication sentence for each array.

This array has 2 rows and 5 columns.

Count by fives.

2 rows of 5 are 10.

The multiplication sentence is $2 \times 5 = 10$.

This array has 5 rows and 2 columns.

Count by twos.

5 rows of 2 are 10.

The multiplication sentence is $5 \times 2 = 10$.

3.6

Algebra commutative property of multiplication

The **Commutative Property of Multiplication** states that you can change the order of the factors and the product stays the same.

There are 4 rows of 5 tiles.

Think: 4 equal groups of 5

$5 + 5 + 5 + 5 = 20$

Multiply. $4 \times 5 = 20$

There are 5 rows of 4 tiles.

Think: 5 equal groups of 4

$4 + 4 + 4 + 4 + 4 = 20$

Multiply. $5 \times 4 = 20$

The factors are 4 and 5. The product is 20.

3.7

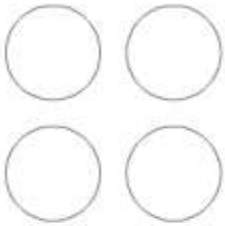
Algebra multiply with 1 and 0

Find the product.

$4 \times 0 = \blacksquare$

Model 4×0.
Each circle contains 0 counters.

4 circles $\times$ 0 counters = 0 counters



Zero Property of Multiplication
The product of zero and any number is zero.

So, $4 \times 0 = 0$ and $0 \times 4 = 0$.

Find the product.

$6 \times 1 = \blacksquare$

Model 6×1.
Each circle contains 1 star.

6 circles $\times$ 1 star = 6 stars

Identity Property of Multiplication
The product of any number and 1 is that number.

So, $6 \times 1 = 6$ and $1 \times 6 = 6$.