Unit 8

Equal Groups

Essential Questions

- How can we find whether an amount of objects is even or odd?
- How can we use the structure of arrays to find the total amount they represent?
- How can we use what we know about arrays to split a rectangle into equal-sized squares and find the total amount?

Unit Story: On Clementine Court

You can read the Unit Story with your student by visiting the Unit Story page on the Caregiver Hub.

Unit Investigation

Lesson 1 is the Unit Investigation. Students determine possible ways to arrange numbers into equal groups to build curiosity and apply their own knowledge in a variety of ways. Use the **Caregiver Connection** to help students continue to explore the math they will see in the unit.

Caregiver Connection

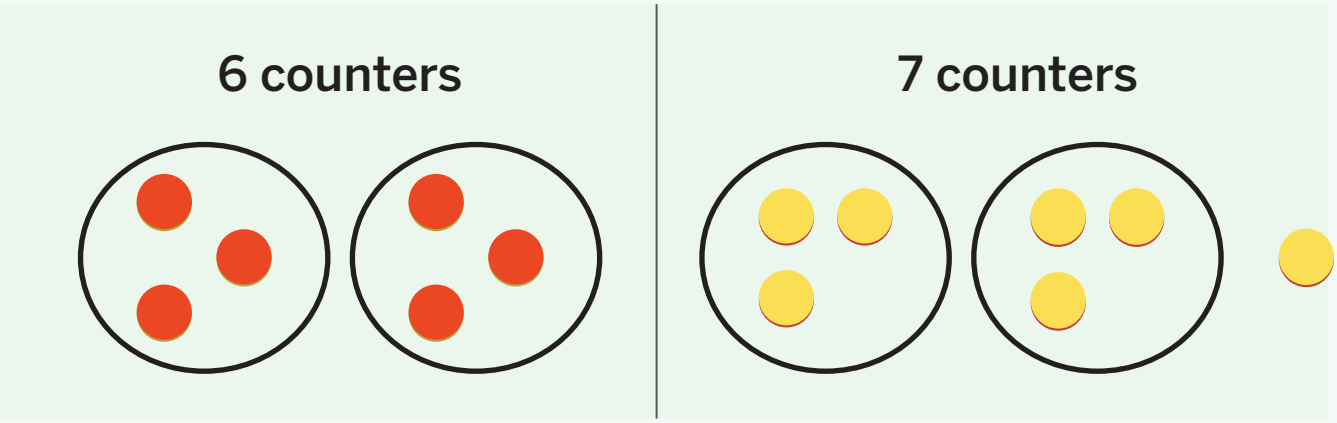
Students may enjoy exploring and creating patterns and designs with equal groups at home. Consider searching for patterns in nature or your environment (e.g., pairs of window panes, spots on a ladybug).

You can ask:

- "What patterns do you notice?"
- "Where do you see equal groups within this number?"
- "What helped you see the equal groups within this number?"

Summary | Lesson 2

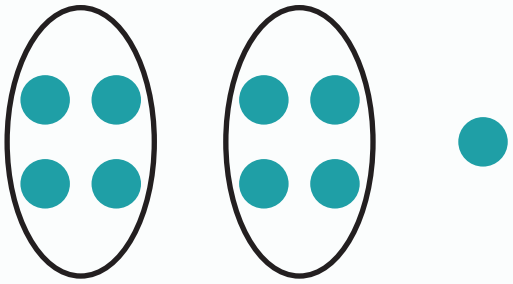
Amounts of objects can be split into 2 equal groups with 0 or 1 leftover.



Try This

1 Circle the work that shows 9 split into 2 equal groups.

9 can be split into equal groups.



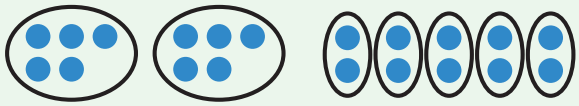
9 is split into 2 equal groups and there is 1 left.

Summary | Lesson 3

Even numbers can be split into 2 equal groups or groups of 2 and have 0 leftovers. **Odd** numbers can be split into 2 equal groups or groups of 2 and have 1 leftover.

10

2 equal groups | Groups of 2



10 is an even number.

11

2 equal groups | Groups of 2

11 is an odd number.

Try This

1 Can 17 students split into groups of 2 to play a game with 0 leftover students? Write *yes* or *no*.

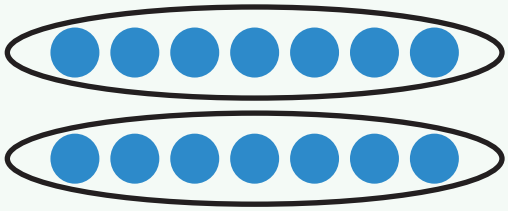
Show or explain your thinking.

answer: _____

Summary | Lesson 4

You can find if a number is *even* or *odd* by representing the number of objects in different ways. Even numbers can be represented as a sum of 2 equal addends. Odd numbers can be represented as the sum of 2 equal addends + 1.

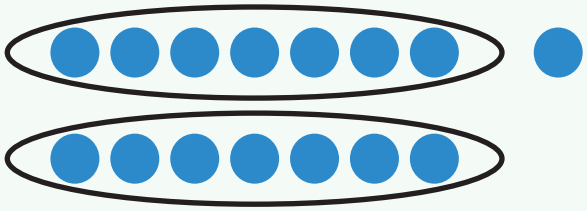
14



$7 + 7 = 14$

even

15



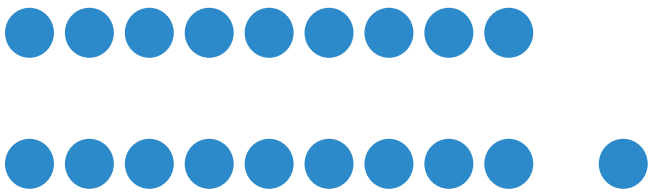
$7 + 7 + 1 = 15$

odd

Try This

1 Find if the number of dots is *even* or *odd*. Write an equation that represents how the dots are grouped.

Show your thinking.



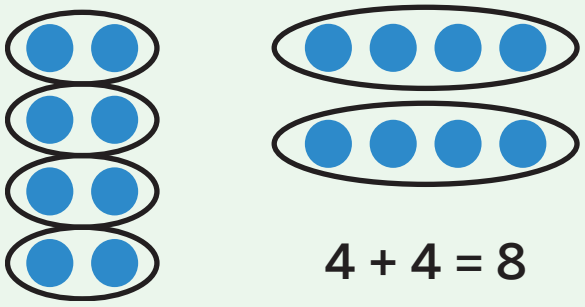
even or odd: _____

equation: _____

Summary | Lesson 5

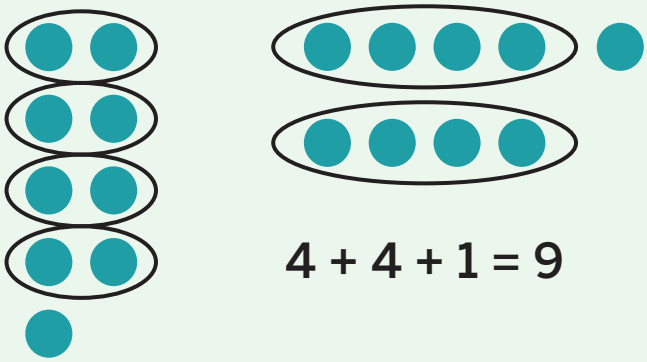
You can justify whether a number is *even* or *odd* by representing the number using diagrams or equations that show if it can be split into 2 equal groups or groups of 2 without a leftover.

even



4 + 4 = 8

odd



4 + 4 + 1 = 9

Try This

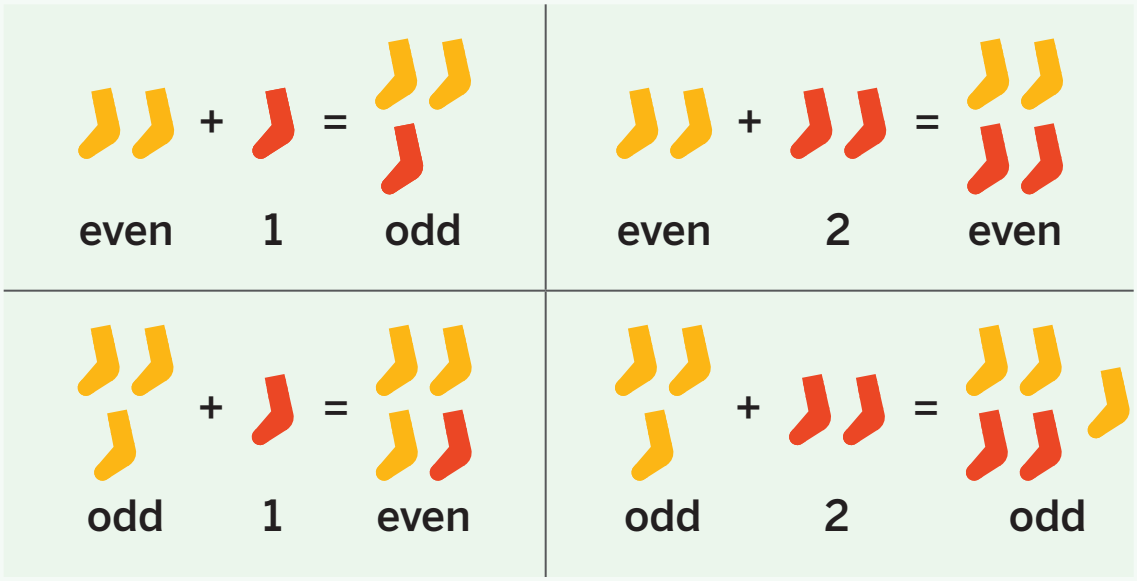
1 Is the number 19 *even* or *odd*?

Show your thinking.

answer: _____

Summary | Lesson 6

When you add 1 to an even number, the sum is odd. When you add 2 to an even number, the sum is even. When you add 1 to an odd number, the sum is even. When you add 2 to an odd number, the sum is odd.



Try This

1 Does the expression 13 + 2 represent an *odd* or *even* number?

Show your thinking.

answer: _____

Summary | Lesson 7

You can use patterns to skip count and to figure out if a number is even or odd.

0, 5, 10, 15, 20, 25, 30

I know 15 is odd because odd numbers have 1, 3, 5, 7, or 9 in the ones place, and 15 has 5 in the ones place.

When I skip count by 5 starting at 0, the digits in the ones place alternate between 0 and 5.

Try This

1 Count by 5.

6, ____, ____, ____, ____

2 Count by 2.

4, ____, ____, ____, ____

3 Count by 10.

27, ____, ____, ____, ____

4 What is one *even* number you counted in Problems 1–3? _____

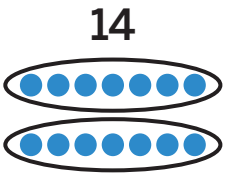
5 What is one *odd* number you counted in Problems 1–3? _____

In this sub-unit . . .

- We discovered that **even** numbers can be split into 2 equal groups or into groups of 2 with 0 leftovers.

- We discovered that when **odd** numbers are split into 2 equal groups or into groups of 2, there is 1 leftover.

- We represented even numbers as the sum of 2 equal addends.

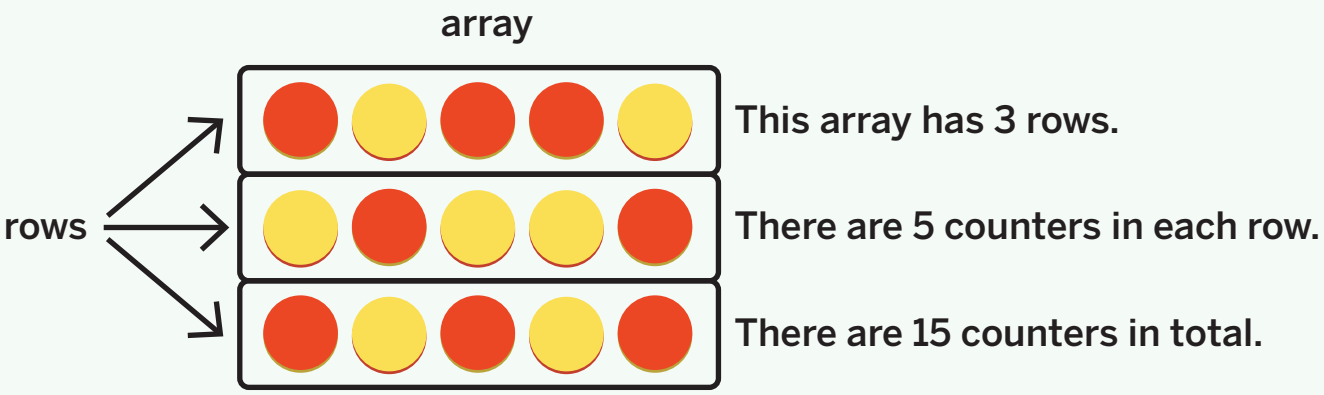


even

Math tip: You can justify that a number is even by using diagrams or equations.

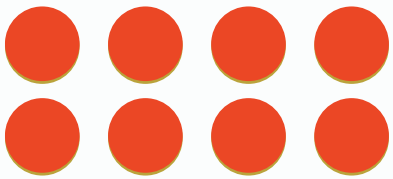
Summary | Lesson 8

An **array** is an arrangement of objects organized into **rows** and columns. In an array, rows go side to side and have an equal number of objects. You can describe an array by identifying the number of rows and the number of objects in each row.



Try This

Use the array for Problems 1–3.



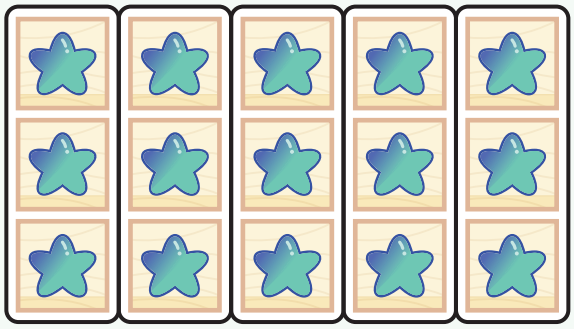
1 There are _____ rows in the array.

2 There are _____ counters in each row.

3 There are _____ counters in total.

Summary | Lesson 9

In an array, **columns** go up and down. The rows and columns represented in an array can be used to describe its structure and find the total amount of objects within the array.

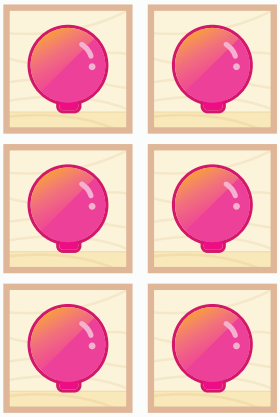


columns

This array has 5 columns.
There are 3 balloons in each column.
The array has 3 rows.
There are 5 balloons in each row.
There are 15 balloons in total.

Try This

Use the array for Problems 1–3.



1 How many balloons are in each row?

_____

2 How many balloons are in each column?

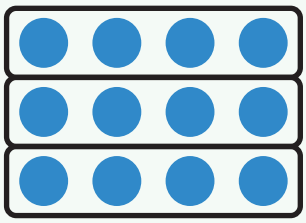
_____

3 How many balloons are there in total?

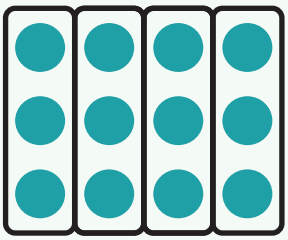
_____

Summary | Lesson 10

You can represent the total number of objects in an array as the sum of equal addends. You can use the number of objects in each row or the number of objects in each column as the addends.



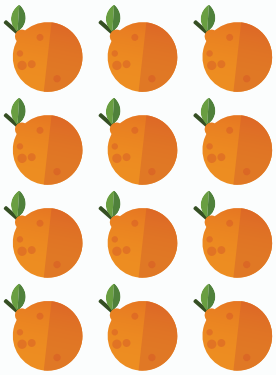
$4 + 4 + 4 = 12$



$3 + 3 + 3 + 3 = 12$

Try This

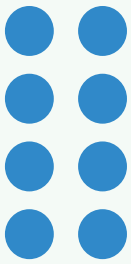
1 Write an equation that represents the total amount of oranges in the array.



equation: _____

Summary | Lesson 11

You can choose whether to add the number of objects in each row or column to find the total number of objects in an array. When an array has the same number of rows and columns, you can write 1 equation to represent it.



$4 + 4 = 8$
$2 + 2 + 2 + 2 = 8$

$2 + 2 = 4$

Try This

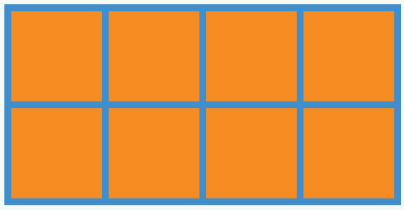
Use the array for Problems 1 and 2.

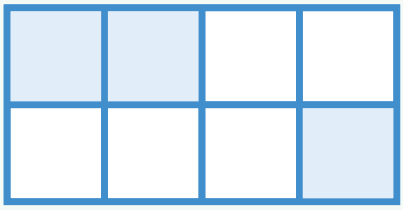
1 Write an equation that represents the total number of potatoes in the array using the number in each *row* as the addends.

2 Write an equation that represents the total number of potatoes in the array using the number in each *column* as the addends.

Summary | Lesson 12

You can compose and split a rectangle into equal rows and equal columns using equal-sized squares to make an array.



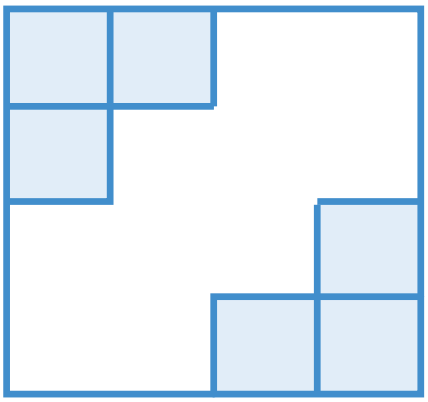


The arrays have 2 rows, 4 columns, and 8 total squares.

Try This

1 Draw lines so that the rectangle has equal rows and equal columns. Find the number of rows, the number of columns, and the total number of squares.

Show your thinking.



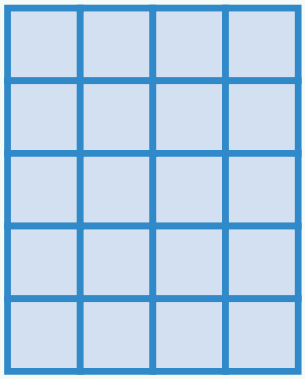
rows: _____ **total:** _____

columns: _____

Summary | Lesson 13

You can split rectangles into equal-sized squares and find the total number of squares by using the structure of an array.

5 rows



4 columns

$5 + 5 + 5 + 5 = 20$

Try This

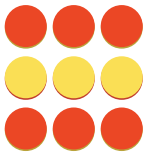
1 Split the rectangle into 3 rows and 4 columns of equal-sized squares.

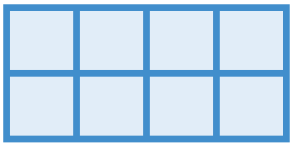
Show your thinking.

Sub-Unit 2 | Summary

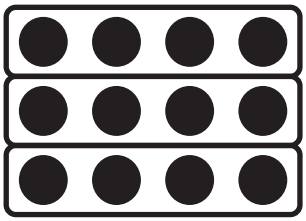
In this sub-unit . . .

- We created **arrays** by:
  - Organizing groups of objects into equal **rows** and equal **columns**.
  - Splitting rectangles into equal rows and equal columns using equal-sized squares.

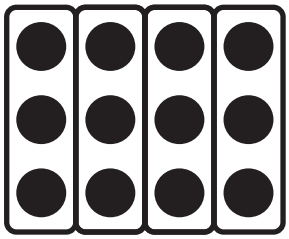




- We represented the total number of objects in arrays as the sum of equal addends.



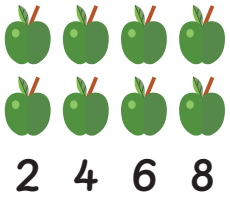
4 + 4 + 4 = 12



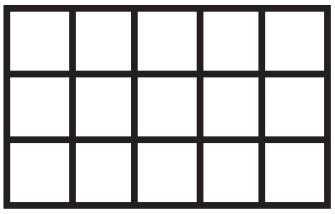
3 + 3 + 3 + 3 = 12

Math tip: We can write an equation to represent the number of objects in each row or in each column.

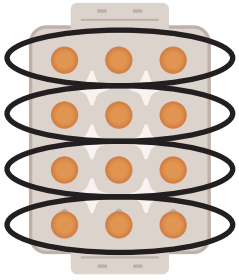
- We figured out the total number represented with an array.



2 4 6 8



5
10
15



3
3
3
3

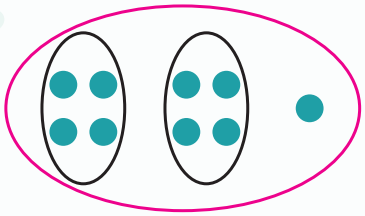
3 + 3 + 3 + 3 = 12

Math tip: We can use the structure of arrays to find the total number of objects represented with an array.

Try This | Answer Key

Lesson 2

1



Lesson 3

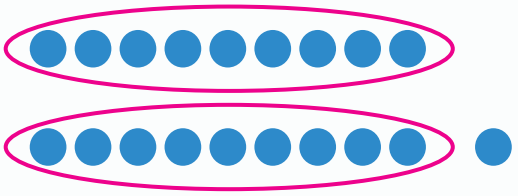
1 Sample work shown.

1 person will not have a partner.

answer: no

Lesson 4

1 Sample work and equation shown.

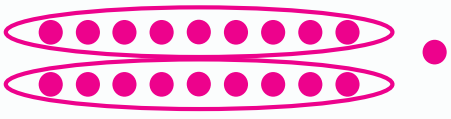


even or odd: odd

equation: 9 + 9 + 1 = 19 or 19 = 9 + 9 + 1

Lesson 5

1 Sample work shown.

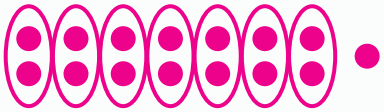


9 + 9 + 1 = 19

answer: odd

Lesson 6

1 Sample work shown.



answer: odd

Try This | Answer Key

Lesson 7

1 11, 16, 21, 26

2 6, 8, 10, 12

3 37, 47, 57, 67

Sample responses shown for Problems 4 and 5.

4 8

5 11

Lesson 8

1 2

2 4

3 8

Lesson 9

1 2

2 3

3 6

Lesson 10

1 Sample equation shown.

equation: 3 + 3 + 3 + 3 = 12

Lesson 11

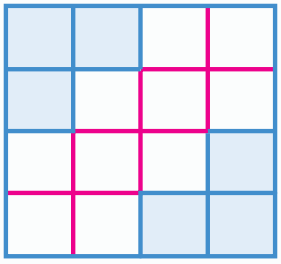
Sample equations shown.

1 3 + 3 = 6

2 2 + 2 + 2 = 6

Lesson 12

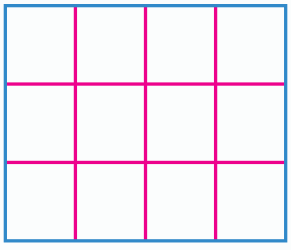
1



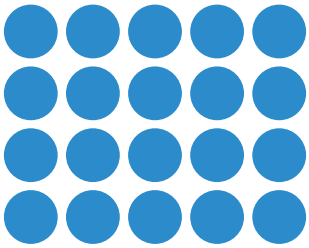
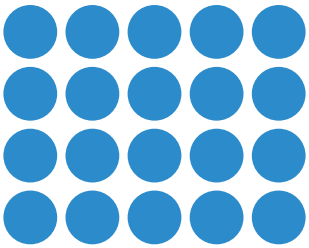
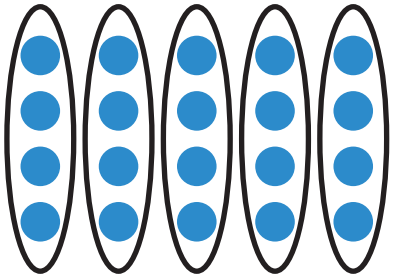
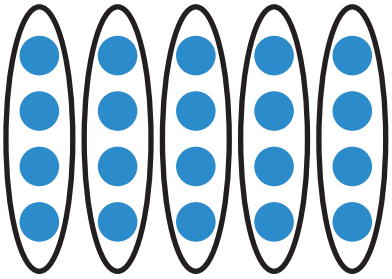
rows: 4 columns: 4 total: 16

Lesson 13

1

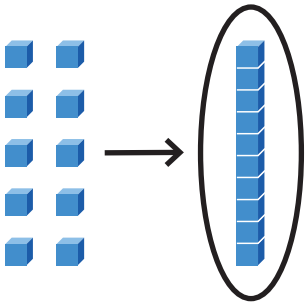


Grade 2 Unit 8 Glossary/2.º grado Unidad 8 Glosario

English	Español
A	
addend One of the numbers added together to find the sum.	**sumando** Uno de los números que se suman para hallar la suma.
$5 + 6 = 11$	$5 + 6 = 11$
array An arrangement of objects in equal rows and equal columns. Each column must contain the same number of objects as the other columns, and each row must have the same number of objects as the other rows.	**disposición, matriz** Una disposición de objetos en filas iguales y columnas iguales. Cada columna debe tener la misma cantidad de objetos que las otras columnas y cada fila debe tener la misma cantidad de objetos que las otras filas.
	
C	
column In an array, a column goes up and down.	**columna** En una disposición, una columna va de arriba a abajo.
	

English

compose Put together.



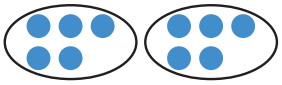
equal The same amount.

equation A statement that includes an equal sign (=). It tells us that what is on one side of the sign is equal to what is on the other side.

$$6 = 4 + 2$$

even A number is even if that number of objects can be split into 2 equal groups or groups of 2 without any objects left over.

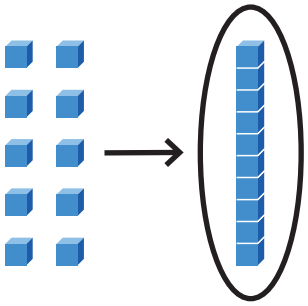
2 equal groups



Groups of 2

Español

componer Juntar.



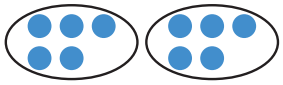
igual La misma cantidad.

ecuación Enunciado que incluye un signo igual (=). Nos indica que lo que está a un lado del signo es igual a lo que está al otro lado.

$$6 = 4 + 2$$

par Un número es par si la cantidad de objetos en cuestión puede dividirse en 2 grupos iguales o grupos de 2 sin que quede ningún objeto adicional.

2 grupos iguales



Grupos de 2

Grade 2 Unit 8 Glossary/2.º grado Unidad 8 Glosario

English

expression A statement with at least 2 numbers and at least 1 math operation (such as addition or subtraction).

$6 + 4$

$3 - 3$

Español

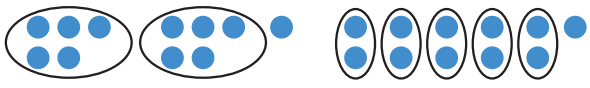
expresión Un enunciado con al menos 2 números y al menos 1 operación matemática (como suma o resta).

$6 + 4$

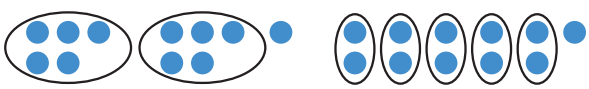
$3 - 3$

O

odd A number is odd if that number of objects cannot be split into 2 equal groups or groups of 2 without any objects left over.

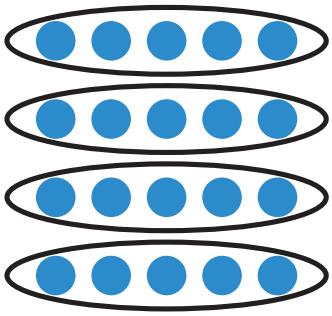


impar Un número es impar si la cantidad de objetos en cuestión no puede dividirse en 2 grupos iguales o grupos de 2 sin que quede ningún objeto adicional.

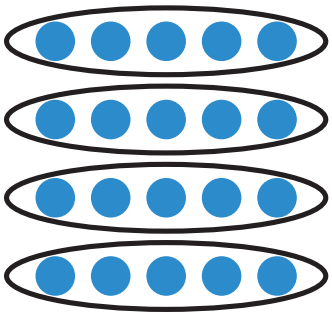


R

row In an array, a row goes side to side.



fila En una matriz, una fila va de lado a lado.



English	Español

S

sum The total when 2 or more numbers are added.

$8 + 6 = 14$

suma El total cuando se suman 2 o más números.

$8 + 6 = 14$