Unit 2, Lesson 1

# ¿Qué es el área?

## Standards

| | |
|---|---|
| Addressing | **3.MD.C.5, 3.OA.A.1** |
| Building Toward | **3.MD.C.5** |

## Instructional Routines

- How Many Do You See?

## Goals

- Explain (orally) how to determine if a shape "covers the most space," using informal tools and language.

## Student Facing Learning Goals

Comparemos el tamaño de algunas figuras.

## Lesson Purpose

The purpose of this lesson is for students to recognize that different shapes cover different amounts of space.

## Narrative

In grade 2, students estimated, measured, and compared lengths, using standard units. They learned how the length of the unit affects measurements.

This lesson introduces the concept of **area** as students compare the sizes of different shapes. Students consider what it means for two-dimensional shapes to be larger or cover more space. They measure and describe relative areas with increasing precision as they participate in the activities in this lesson.

Give students access to pattern blocks and scissors during the *Cool-down*.

## Access for Students with Disabilities

- Action and Expression

## Access for English Learners

- MLR8

## Required Materials

**Materials to Gather**

- Scissors: Activity 1, Activity 2
- Pattern blocks: Activity 2

**Materials to Copy**

- Pattern Blocks to Compare Shapes Handout, Spanish (1 copy for every 1 students): Activity 2

## Lesson Timeline

| | |
|---|---|
| Warm-up | 10 min |
| Activity 1 | 15 min |
| Activity 2 | 20 min |
| Synthesis Estimate | 10 min |

## Teacher Reflection Questions

What part of the lesson went really well today in terms of students learning? What did you do that made that part go well?

# Warm-up

10 min

Cuántos ves: Arreglos

## Standards

Addressing **3.OA.A.1**

## Instructional Routines

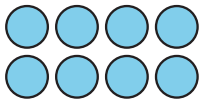
- How Many Do You See?

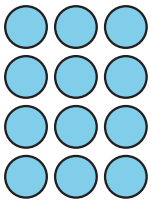
The purpose of this *How Many Do You See?* is for students to subitize or use grouping strategies to describe the images they see. Students may see equal groups in the rows or the columns of the array. Recording the equations for each way of seeing the groups is an opportunity to reinforce the commutative property.

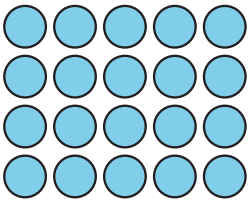
When students use different ways to group dots within the same array to find the total number of dots, they look for and make use of structure (MP7).

## Student Task Statement

¿Cuántos ves? ¿Cómo lo sabes?, ¿qué ves?







## Student Response

Sample responses:

- 8: I counted 4 dots in each row and there are 2 rows, which is 8. There are 2 dots in each column and there are 4 columns.
- 12: I saw 3 dots in each row and there are 4 rows. I

## Launch

- Groups of 2
- *"¿Cuántos ven? ¿Cómo lo saben?, ¿qué ven?"* // "How many do you see? How do you see them?"
- Flash the image.
- 30 seconds: quiet think time

## Activity

- Display the image.
- *"Discutan con su compañero cómo pensaron"* // "Discuss your thinking with your partner."
- 1 minute: partner discussion
- Record responses.
- Repeat for each image.

## Activity Synthesis

- *"¿Cómo nos permitieron los arreglos encontrar el número de puntos de diferentes formas?"* // "How did the arrays allow us to find the number of dots in different ways?" (We were able to look at the number of dots in each row and think about how many rows there were. I counted the number in each column and multiplied it by the number of columns.)
- As students share, record equations to match their thinking.
- Consider asking, *"¿Cómo cambian las ecuaciones si*

saw 4 dots in each column and there are 3 columns.

- 20: I saw two 10-frames, and 10 plus 10 is 20. I saw 4 rows of 5, which is 20. I saw 5 columns of 4, which is 20.

*pensamos que las filas son los grupos o que las columnas son los grupos?"* // "How do the equations change if we think about the rows as the groups or the columns as the groups?" (For the image with 12 dots, if we think about the rows as the groups, we write $4 \times 3 = 12$, but if we think about the columns as the groups, we write $3 \times 4 = 12$. The order of the factors is reversed, but the product stays the same.)

# Activity 1

Comparemos figuras

15 min
PLC Activity

## Standards

Building Toward **3.MD.C.5**

The purpose of this activity is for students to compare shapes to decide which is larger. Given their prior experiences with length, students may initially use length to reason about what it means for a shape to be larger than another shape. The *Activity Synthesis* should bring out the idea that length alone is not enough to compare two-dimensional shapes. Ideas around how much space the shapes cover should be emphasized. If students disagree about which shape is larger, encourage them to share their reasoning so that the class can consider multiple ideas and come to a resolution together (MP3).

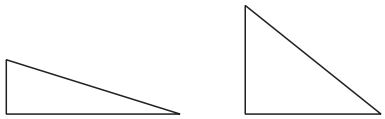
## Required Materials

**Materials to Gather**

- Scissors: Activity 1

## Student Task Statement

1. Estos son 2 triángulos. ¿Cuál triángulo es más grande?



2. En cada pareja de figuras, ¿cuál figura es más grande? Prepárate para explicar tu razonamiento.

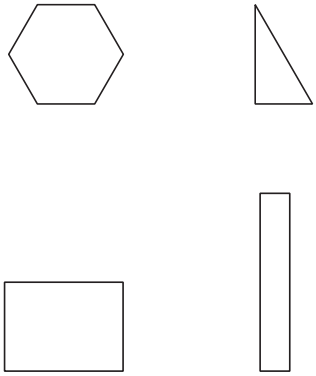
   a.

   b.

## Launch

- Groups of 2
- Display or sketch the two triangles in the first problem.
- *"¿Cuál triángulo creen que es más grande? Prepárense para explicar su razonamiento"* // "Which triangle do you think is larger? Be prepared to explain your reasoning."
- 1 minute: quiet think time
- Share and record responses.
- *"¿Cómo podrían decidir con seguridad cuál figura es más grande?"* // "How could you decide for sure which shape is larger?" (I could think about putting one shape on top of the other. I could measure which is longer. I could cut one shape out to see if it fits inside the other.)

c.



## Student Response

Sample responses:

1. The second triangle is larger because it is taller. The first triangle is larger because it is longer.
2. a. The second oval is larger. I can fit the first one inside it.
   b. The hexagon is larger. The triangle is less than half the size.
   c. The first rectangle is larger. I can fit the second rectangle inside the first if I cut it in half and put the halves next to each other.

- 1 minute: quiet think time
- 1 minute: partner discussion
- Share and record responses.
- Give each group scissors.

## Activity

- *"Ahora van a decidir cuál figura es más grande en cada pareja. Pueden tratar de usar algunas de las estrategias que discutimos"* // "Now you are going to decide which shape in each pair is larger. Consider trying some of the strategies we discussed."
- 3 minutes: independent work time
- *"Díganle a su compañero cuál figura pensaron que era más grande en cada pareja. Expliquen cómo lo decidieron"* // "Tell your partner which shape in each pair you thought was larger. Explain how you decided."
- 3 minutes: partner discussion
- Monitor for justifications of how much space each shape covers and disagreements that students discuss.

## Activity Synthesis

- *"¿Sobre cuáles figuras cambiaron de opinión cuando discutieron sus ideas con su compañero?"* // "Which shapes did you change your mind about as you discussed your ideas with your partner?" (In the last problem, I thought that the skinny rectangle was larger because it was taller. My partner showed me how to cut the rectangles to compare them.)
- *"¿Hay figuras sobre las que todavía no están de acuerdo?"* // "Are there shapes you still disagree about?"
- Have students share their justifications for any lingering disagreements.
- As students share, bring out the idea that the larger shape covers more space.
- Consider asking:
  - *"¿Qué preguntas tienen?"* // "What questions do you have?"
  - *"¿Están de acuerdo con el razonamiento de su compañero?"* // "Do you agree with their reasoning?"

- *"¿Justificaron su elección de otra forma?" //* "Did you justify your choice in a different way?"

# Activity 2

20 min

Fichas geométricas para comparar figuras

## Standards

Addressing **3.MD.C.5**

The purpose of this activity is for students to compare shapes by covering them with pattern blocks. Students experience tiling as a way to see which shape covers the most space. There are several ways to tile the shapes, but it may prove most useful to use the same units, such as triangles. The rectangle can be fully tiled only with square pattern blocks. To compare Shapes B and C, students need to notice that the rectangle and the parallelogram can be made the same length, but the square pattern blocks used to tile the rectangle are taller than the blocks used to tile the parallelogram.

The work here prepares students to tile figures with square tiles in the next lesson and to think of area in terms of square units.

## Access for English Language Learners

*MLR8 Discussion Supports.* Synthesis: Create a display of Shapes A, B, and C. As students discuss their comparisons, annotate the display with their observations. For example, when comparing Shape B to Shape C, write "same length, but taller."
*Advances: Speaking, Listening*

## Access for Students with Disabilities

*Action and Expression: Develop Expression and Communication.* Synthesis: Identify connections between strategies that result in the same outcomes but use different approaches.
*Supports accessibility for: Conceptual Processing*

## Required Materials

**Materials to Gather**

- Pattern blocks: Activity 2
- Scissors: Activity 2

**Materials to Copy**

- Pattern Blocks to Compare Shapes Handout, Spanish (1 copy for every 1 students): Activity 2

## Required Preparation

- Each group of 2 students needs at least 2 hexagons and trapezoids, 4 squares and rhombuses, and 8 triangles.

## Student Task Statement

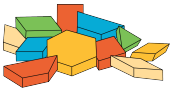
Tu profesor te va a dar unas hojas que tienen

## Launch

- Groups of 2

algunas figuras.

Usa fichas geométricas para decidir cuál figura cubre más espacio. Prepárate para explicar tu razonamiento.



## Student Response

Shape C covers the most space. Sample response: Shape A can be made with 7 triangles. Shape B can be made with 8 triangles. Shape C is the same length as Shape B if I cut the end off and move it to the other side, but Shape C is taller.

- Give each student a copy of the blackline master.
- Give each group pattern blocks.
- Display the first two shapes (the hexagon and the heart-shaped octagon).
- *"¿Qué observan? ¿Qué se preguntan?"* // "What do you notice? What do you wonder?" (Both shapes could be made with pattern blocks. The second shape looks like the first shape, but it's been bent. Which shape covers more space? Which shape is larger?)
- 1 minute: quiet think time
- Share and record responses.
- *"¿Cuál figura cubre más espacio? ¿Cómo lo saben?"* // "Which shape covers more space? How do you know?" (We can cover them with the same blocks, so they cover the same amount of space.)
- 2 minutes: partner discussion
- Share and record responses.

## Activity

- *"Sigamos comparando figuras. Decidan con su compañero cuál figura cubre más espacio. Si les ayuda, usen fichas geométricas"* // "Let's continue comparing shapes. Work with your partner to decide which shape covers the most space. Use pattern blocks if they are helpful."
- 5 minutes: partner work time
- Monitor for students who:
  - Use pattern blocks to determine which shape covers the most space.
  - Notice that Shapes B and C would be the same length if one of the ends of Shape B was moved over, but Shape C covers more space because it is taller.

## Activity Synthesis

- Ask selected students to share strategies for tiling each shape with pattern blocks and how the tiling helped them decide which shape covers the most space.
- *"Cuando decidimos cuál figura cubre más espacio, hablamos del **área** de una figura. Podemos pensar en el área como la cantidad de espacio que cubre una figura"* // "When we decide which shape covers

the most space, we are talking about the **area** of a shape. We can think about the area as the amount of space covered by a shape."

- *"¿Cuál figura tiene la mayor área?"* // "Which shape has the greatest area?" (Shape C takes up the most space, so it has the greatest area.)

## Lesson Synthesis

*"La lección de hoy fue sobre el área. Podemos pensar en el área como la cantidad de espacio que cubre una figura"* // "Today's lesson was about area. We can think about area as the amount of space covered by a shape."

Display the shapes from the first activity.

*"Retomemos las figuras de la primera actividad. En cada una de las parejas, ¿cuál figura tiene mayor área? ¿Cómo lo saben?"* // "Let's revisit the shapes from the first activity. Within each pair, which shape has the greater area? How do you know?" (The shapes we decided were larger have greater areas: the large oval, the hexagon, and the first rectangle. The shapes that covered more space had greater areas.)

### Suggested Centers

- Can You Build It? (3–5), Stage 1: Rectangles (Addressing)
- Five in a Row: Multiplication (3–5), Stage 1: Factors 1–5 and 10 (Supporting)

## Cool-down

5 min

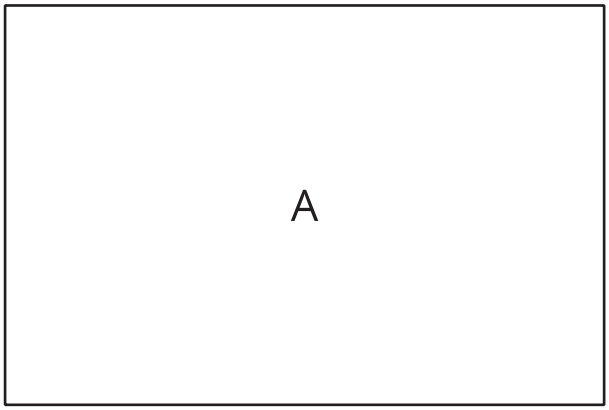
Compara el área

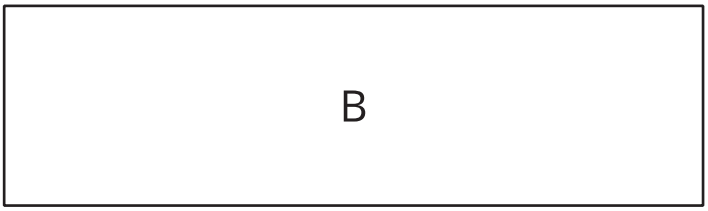
### Standards

Addressing **3.MD.C.5**

### Student Task Statement

¿Cuál rectángulo tiene mayor área? ¿Cómo lo sabes?




## Student Response

Figure A. Sample response: Figure A covers more space. Even if you cut Figure B in half, it would fit in Figure A with leftover space.

## Responding to Student Thinking

Students say that Figure B has the greater area.

Next Day Supports
Before the *Warm-up*, have students discuss which figure has the greatest area.