



# Figuras hechas de prismas

## Standards

Building On 5.MD.C.5.a  
Addressing 5.MD.C.5.c

## Instructional Routines

- Which Three Go Together?

## Goals

- Explain (orally) strategies for calculating the volume of a figure composed of rectangular prisms, with visible unit cubes.

## Student Facing Learning Goals

- Encontremos volúmenes de figuras hechas de prismas.

## Lesson Purpose

The purpose of this lesson is for students to recognize the structure of a solid figure made up of two non-overlapping right rectangular prisms and understand that its volume is the sum of the volumes of the two rectangular prisms.

## Narrative

In previous lessons, students found the volumes of right rectangular prisms represented in images in which the cubes were shown or not shown. In this lesson, students build separate rectangular prisms and put them together to emphasize the relationship between the volumes of the individual smaller prisms and the volume of the whole figure. Then they find volumes of figures made from two rectangular prisms, without first building each part. Students recognize that when the figure composed of two rectangular prisms is given, there are different ways to decompose the figure, leading to different calculations of the same volume.

## Access for Students with Disabilities

- Engagement

## Access for English Learners

- MLR7

## Required Materials

### Materials to Gather

- Connecting cubes: Lesson, Activity 1

## Lesson Timeline

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

## Teacher Reflection Questions

What language did students use to demonstrate their understanding that the figures they worked with today were composed of rectangular prisms?



## Warm-up



Cuáles tres van juntos: Distintas figuras

### Standards

Addressing 5.MD.C.5.c

### Instructional Routines

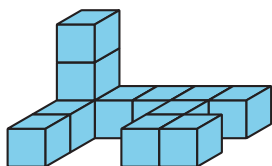
- Which Three Go Together?

This *Warm-up* prompts students to carefully analyze and compare features of figures built from rectangular prisms. In making comparisons, students have a reason to use language precisely (MP6), and refer to different measurements of the figures, their volume, or other characteristics.

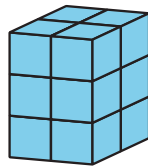
### Student Task Statement

¿Cuáles 3 van juntas?

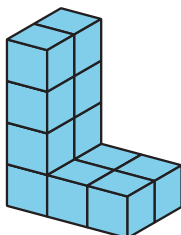
A



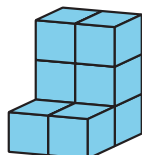
B



C



D



### Student Response

Sample responses:

A, B, and C go together because:

- They have a volume of 12 unit cubes.

A, B, and D go together because:

- They are 3 units high.

A, C, and D go together because:

- They are figures other than rectangular prisms.

### Launch

- Groups of 2
- Display the image.
- “Escojan 3 figuras que vayan juntas. Prepárense para compartir por qué van juntas” // “Pick 3 figures that go together. Be ready to share why they go together.”
- 1 minute: quiet think time

### Activity

- “Discutan con su compañero lo que pensaron” // “Discuss your thinking with your partner.”
- 2–3 minutes: partner discussion
- Share and record responses.

### Activity Synthesis

- Refer to Figure C. “Hoy vamos a encontrar volúmenes de figuras formadas por dos o más prismas rectangulares. ¿Pueden ver dos prismas en la figura C? ¿En dónde?” // “Today we are going to find the volumes of figures made up of two or more rectangular prisms. Where do we see two rectangular prisms. Where do we see two rectangular prisms in Figure C?”
- If possible, draw over the image as students explain where they see the two prisms.
- If no one mentions it, show two different ways that Figure C can be decomposed into two right rectangular prisms, that is, by cutting vertically or horizontally.



B, C, and D go together because:

- They can be cut into 2 equal layers.
- They are made up of 2 rectangular prisms.

## Activity 1

🕒 20 min

Juntémoslos

### Standards

Building On 5.MD.C.5.a

Addressing 5.MD.C.5.c

The purpose of this activity is for students to combine rectangular prisms to make a new figure and understand that the volume of the new figure is the sum of the volumes of the two rectangular prisms. This will be true no matter how they put the two rectangular prisms together.

### Access for Students with Disabilities

*Engagement: Develop Effort and Persistence.* Invite students to generate a list of shared expectations for group work. Record responses on a display to keep visible during the activity.

*Supports accessibility for: Attention, Social-Emotional Functioning*

## Required Materials

### Materials to Gather

- Connecting cubes: Activity 1

## Required Preparation

- Each group of 2 students needs at least 30 connecting cubes.

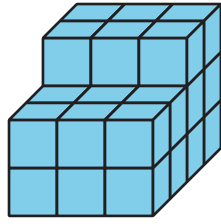
### Student Task Statement

1. Compañero A: construye un prisma rectangular con 12 cubos.
2. Compañero B: construye un prisma rectangular con 10 cubos.
3. Junten sus 2 prismas rectangulares para hacer una figura. ¿Cuál es el volumen de la nueva figura? Expliquen o muestren cómo razonaron.
4. Diego y Jada juntaron 2 prismas rectangulares para hacer esta figura.

### Launch

- Groups of 2
- “Vamos a construir prismas diferentes y los vamos a juntar” // “We are going to build different rectangular prisms and put them together.”
- “Compañeros A, construyan un prisma rectangular con 12 cubos. Compañeros B, construyan un prisma rectangular con 10 cubos” // “Partner A, build a rectangular prism with 12 cubes. Partner B, build a rectangular prism with 10 cubes.”





- a. ¿Cuál es el volumen de la figura que hicieron Diego y Jada?
- b. ¿Cuáles prismas rectangulares pudieron haber construido Diego y Jada por separado? Muestra cómo pensaste. Organiza tu trabajo para que los demás puedan entenderlo.

## Student Response

1. Sample responses include rectangular prisms built from 12 cubes.
2. Sample responses include rectangular prisms built from 10 cubes.
3. Sample response: The volume is 22 cubic units because one part has 10 cubic units and the other part has 12.
4.
  - a. 30 cubic units
  - b. Sample response: Jada could have made the 2-unit-by-3-unit-by-4-unit prism on the bottom, and Diego could have made the 2-unit-by-3-unit-by-1-unit prism on top.

## Advancing Student Thinking

If students count the individual cubes, ask them to build the figure with cubes and consider asking,

- “¿Puedes describir esta figura?” // “Can you describe this figure?”
- “¿Puedes explicar cómo se puede ver que esta figura está formada con prismas rectangulares?” // “Can you explain how this figure is made of rectangular prisms?”

## Activity 2

Veo dos prismas

### Standards

Addressing 5.MD.C.5.c



## Activity

- 10 minutes: partner work time, building prisms and finding volume.
- 2 minutes: partner discussion time
- Monitor for students who build one figure out of two rectangular prisms in different ways.

## Activity Synthesis

- Ask previously identified students to share the individual prisms they built and how they put them together.
- “¿Cuál era el volumen de la figura que hicieron cuando juntaron sus prismas? ¿Cómo lo saben?” // “What was the volume of the shape you made when you put your prisms together? How do you know?” (22 cubic units because I used 12 cubes and my partner used 10 cubes, so that’s 22 cubes altogether.)
- Highlight that the different figures students made all have a volume of 22 cubic units.
- Display the figure that Diego and Jada made.
- “¿Cuál es el volumen de la figura que Diego y Jada hicieron? ¿Cómo lo saben?” // “What is the volume of the figure Diego and Jada made? How do you know?” (30 cubic units. I broke it into two prisms, found their volumes, and added them.)

The purpose of this activity is for students to find the volume of a figure composed of two rectangular prisms and recognize that volume is additive. In the previous activity, students physically put two rectangular prisms together, and then decomposed a figure into two rectangular prisms. In this activity, they are given an image of a figure composed of two rectangular prisms and asked to find the volume. They can do this in many ways. During the *Activity Synthesis*, connect the different strategies students used to the decomposition of the figure into two rectangular prisms.

As students experiment with different ways to group the cubes to efficiently count them, applying what they already know about the volume of a rectangular prism, they are looking for and making use of the structure of geometric objects (MP7). As students begin to generalize the idea that volume is additive, they are looking for and expressing regularity in repeated reasoning (MP8).

## Access for English Language Learners

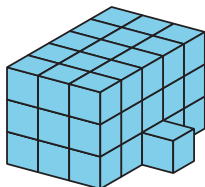
*MLR7 Compare and Connect. Synthesis:* Invite students to prepare a display that shows the strategy they used to find the volume of each figure. Encourage students to include details that will help others interpret their thinking; for example, using specific language, different colors, shading, or arrows. Give students time to investigate each other's work.

*Advances: Representing*

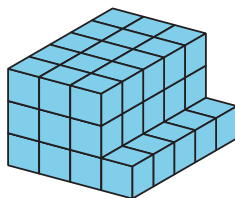
## Student Task Statement

Encuentra el volumen de cada figura. Explica o muestra tu razonamiento.

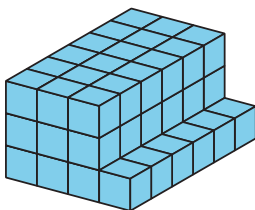
A



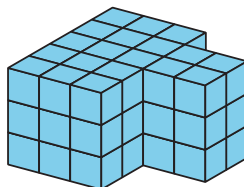
B



C



D



## Student Response

A. 46 cubic units. Sample response: There is a 3-unit-by-3-unit-by-5-unit rectangular prism, so that's 45 cubes, and there is 1 more cube, so that's 46.

B. 50 cubic units. Sample response: There is a 3-unit-by-3-unit-by-5-unit prism, like in the first problem, so that's 45 cubes, and there is a row of 5 more cubes, so

## Launch

- Groups of 2

## Activity

- 5 minutes: individual work time
- 5 minutes: partner discussion
- Monitor for students who:
  - Find two (or more) rectangular prisms that can be put together to make the figure and add their volumes.
  - Find the number of cubes in a base layer and multiply by the number of layers, even though the base layer is not a rectangle (Figure D).

## Activity Synthesis

- Display Figures C and D.
- Ask selected students to share their way of splitting each figure.
- “¿Quién partió la figura de la misma manera? ¿Quién la partió de una manera diferente?” // “Who broke the figure up the same way? Who broke it up in a different way?”
- “¿Pueden pensar en otras maneras en las que se pueden partir estas figuras?” // “Can you think of other ways you could break up these figures?” (I can cut them into several layers—3 horizontal layers for

that makes 50.

C. 60 cubic units. Sample response: There is a 3-unit-by-3-unit-by-6-unit prism, so that's 54 cubes and there is a row of 6 cubes, so that's 60.

D. 57 cubic units. Sample response: There is a 3-unit-by-3-unit-by-5-unit prism, so that's 45 cubes, and then a 2-unit-by-2-unit-by-3-unit prism, so that's 12 more cubes.

C, and 5 vertical layers for D. Each layer is a rectangular prism.)

## Lesson Synthesis

*"Hoy encontramos volúmenes de figuras construidas usando 2 o más prismas rectangulares. Cuando se construye una figura usando 2 o más prismas rectangulares, se puede encontrar su volumen sumando el volumen de esos dos prismas rectangulares" // "Today we found the volumes of figures built from 2 or more rectangular prisms. When a figure is built from 2 or more rectangular prisms, its volume can be found by adding the volumes of those rectangular prisms."*

*"¿En qué parte de su trabajo de hoy usaron multiplicaciones? ¿En qué parte usaron sumas?" // "Where did you use multiplication in your work today? Where did you use addition?" (I used multiplication when I found the volume of a prism. I used addition when I broke up the figure and added up the cubes in the different parts.)*

## Suggested Centers

- Five in a Row: Multiplication (3–5), Stage 4: Three Factors (Addressing)
- Capture Squares (1–5), Stage 7: Multiply with 6–9 (Supporting)

## Cool-down

🕒 5 min

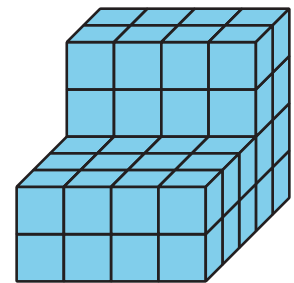
Volumen de una figura hecha de prismas

### 📖 Standards

Addressing 5.MD.C.5.c

### 👤 Student Task Statement

Encuentra el volumen de la figura. Explica o muestra tu razonamiento.



## Student Response

56 cubic units. Sample response: I cut the shape horizontally to make a 2-unit-by-2-unit-by-4-unit prism and a 4-unit-by-2-unit-by-5-unit prism. So that's 16 and 40 more, making 56 unit cubes altogether.

## Responding to Student Thinking

Students did not decompose figures into two rectangular prisms.

Next Day Supports

Give students access to connecting cubes to build the figures.

