

MY DREAM HOME

TEACHER VERSION

Subject Level:
Elemantary School Math

Grade Level:
2

Approx. Time Required:
60 minutes

Learning Objectives:

- Students will be able to interpret data from a bar graph.
- Students will be able to construct a composite shape and describe the attributes of the shapes within it.

Activity Description

Students will analyze and interpret American Community Survey (ACS) data on housing characteristics in the United States, comparing these data with those they collect from their classmates. Students also will determine what their dream home would look like and will use flat, two-dimensional shapes to construct it.

Suggested Grade Level:
2

Approximate Time Required:
60 minutes

Learning Objectives:

- Students will be able to interpret data from a bar graph.
- Students will be able to construct a composite shape and describe the attributes of the shapes within it.

Topics:

- Graphing
- Shapes

Skills Taught:

- Analyzing data
- Recognizing shapes

Materials Required

- The student version of this activity, 6 pages
- Colored construction paper
- Glue
- Rulers
- Scissors
- Teacher computer with Internet access and a projector to display web sites

The picture book "How Much Is a Million?" by David M. Schwartz is optional.

Activity Item

The following item is part of this activity. The item, its source, and any relevant instructions for viewing it online appear at the end of this teacher version.

- Item 1: Number of U.S. Homes by Total Bedroom Units

For more information to help you introduce your students to the U.S. Census Bureau, read "*Census Bureau 101 for Students*." This information sheet can be printed and passed out to your students as well.

Standards Addressed

See chart below. For more information, read "*Overview of Education Standards and Guidelines Addressed in Statistics in Schools Activities*."

Common Core State Standards for Mathematics

Standard	Domain	Cluster
CCSS.MATH.CONTENT.2.G.A.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.	2 G – Geometry	Reason with shapes and their attributes.

Common Core State Standards for Mathematical Practice

Standard
CCSS.MATH.PRACTICE.MP7. Look for and make use of structure. Students will create their dream homes from a collection of shapes. They will sort the shapes by type, recording in a table the number of sides for each.

National Council of Teachers of Mathematics' Principles and Standards for School Mathematics

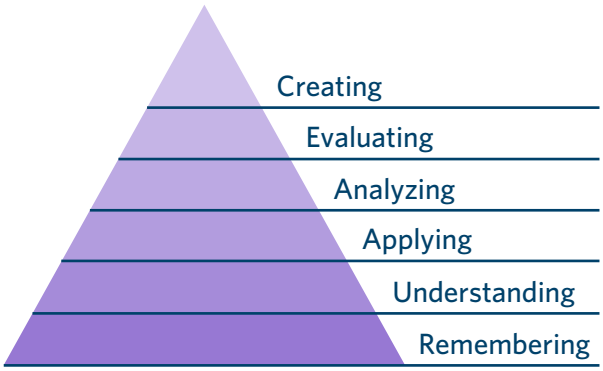
Content Standard	Students should be able to:	Expectation for Grade Band
Number and Operations	Understand numbers, ways of representing numbers, relationships among numbers, and number systems.	Count with understanding and recognize "how many" in sets of objects.
Geometry	Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.	Recognize, name, build, draw, compare, and sort two- and three-dimensional shapes. Describe attributes and parts of two- and three-dimensional shapes.
Data Analysis and Probability	Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.	Pose questions and gather data about themselves and their surroundings. Sort and classify objects according to their attributes and organize data about the objects.

Guidelines for Assessment and Instruction in Statistics Education

GAISE	Level A	Level B	Level C
Formulate Questions	X		
Collect Data	X		
Analyze Data	X		
Interpret Results	X	X	

Bloom's Taxonomy

Students will ***analyze*** a bar graph of census data and a table of data collected from their classroom.



Teacher Notes

Before the Activity

Students must understand the following key terms:

- **Compare** – to find how things are similar
- **Contrast** – to find how things are different
- **Bar graph** – a graph using bars to show amounts of different things so those things can be compared easily
- **Data** – facts usually represented by numbers
- **Less than** – when one amount is smaller than another amount
- **Greater than** – when one amount is larger than another amount
- **Survey** – a way of asking a question and collecting information about that question
- **Tally mark** – a line that is used to keep track of something as it's being counted
- **Square** – a shape with four sides of the same length and all corners are formed by perpendicular lines
- **Rectangle** – a shape with four sides where opposite sides are the same length
- **Trapezoid** – a shape with four sides, with one pair of opposite sides being parallel
- **Parallelogram** – a shape with four sides, with each pair of opposite sides being parallel
- **Quadrilateral** – a shape with four sides, such as a square, rectangle, trapezoid, or parallelogram
- **Triangle** – a shape with three sides
- **Pentagon** – a shape with five sides
- **Hexagon** – a shape with six sides

Students should have a basic understanding of the following ideas and concepts:

- Ability to read a bar graph

Because the data in this activity contain large numbers (millions) that may be unfamiliar to students, teachers could consider opening the activity by sharing a picture book like "How Much Is a Million?" by David M. Schwartz.

During the Activity

Teachers will complete the activity with students as a class, projecting the online teacher version of the activity on a screen so students can follow along.

When discussing **Item 1** with students, teachers should explain that "0 bedrooms" in the bar graph does not necessarily mean that people living there had no bedroom; it could mean that they lived in a one-room house or one-room apartment.

In part 2, teachers will facilitate the survey about students' dream homes and show them how to use tally marks to record the data.

In part 4, teachers will pass out the construction materials and instruct students to draw and cut out different shapes — triangles, quadrilaterals, pentagons, and hexagons — using different colors of construction paper for each. Teachers should model building a dream home out of the paper shapes. Once students have done so on their own, teachers should instruct them to complete the corresponding chart. Teachers should note that all squares are a special instance of both rectangles (four 90-degree angles, and equal sides) and parallelograms (all equal sides).

After the Activity

Teachers will ask students to share their dream homes with the rest of the class and to describe the attributes of the shapes within it.

Extension Idea

- Teachers could ask students to point out shapes from the activity that are also in the classroom.

Student Activity

Click ***here*** to download a printable version for students.

Student Learning Objectives

- I will be able to understand and learn from data in a bar graph.
- I will be able to make a big shape out of small shapes.

In this activity, you will learn how to understand data from the Census Bureau that show the number of bedrooms in people's homes all around the United States. Then you will learn how many bedrooms your classmates would like to have in their dream homes. After that, you will make your dream home out of different paper shapes.

Activity Items

The following item is part of this activity and appears at the end of this student version.

- Item 1: Number of U.S. Homes by Total Bedroom Units

Part 1 – Look at U.S. Data

Let's look at **Item 1: Number of U.S. Homes by Total Bedroom Units** and use the data to answer these questions:

1. What is the most common number of bedrooms in people's homes in the United States? How do you know?

   3 bedrooms. That bar is the tallest.

2. What is the least common number of bedrooms in people's homes in the United States? How do you know?

   0 bedrooms. That bar is the shortest.

Part 2 – Collect Your Own Data

1. In the list below, circle how many bedrooms you would want in your dream home. It could be fun to have a home with lots of bedrooms, but remember that all those bedrooms would need to be kept clean! And having no bedrooms isn't a bad thing. Some really interesting homes — like treehouses or fancy apartments in some cities — have no bedrooms, and a smaller house may mean more money for other things. Be creative.
   - 0 bedrooms
   - 1 bedroom
   - 2 bedrooms
   - 3 bedrooms
   - 4 bedrooms
   - 5 or more bedrooms

   Student answers will vary, but note that the sample answer for the second bullet in question 2 uses "2 bedrooms."

2. Fill in the blanks:
   - In part 1 of this activity, we learned that most homes in the United States have **3** bedrooms.
   - The number of bedrooms in my dream home is **1 less** (*how many more* **or** *how many less*) than the number in most homes in the United States.

3. Now let's survey the class to learn how many bedrooms are in all of your dream homes. Write those data in this tally chart:

Number of Bedrooms	Tally Marks	Total
0	||	2
1	**0**	0
2	|	1
3	||||	4
4	||||	4
5 or more	𝍸 𝍸	10

Part 3 – Look at Your Own Data

Let's answer some questions using the data in the tally chart (from part 2):

Student answers will vary depending on the data collected in part 2.

1. How many bedrooms do most of your classmates want in their dream homes? How do you know?

   5 or more bedrooms. It has the most tally marks and the biggest number.

2. What's the least common number of bedrooms in your classmates' dream homes? How do you know?

   1 bedroom. It has no tally marks/no one gave this answer.

3. Let's look again at **Item 1: Number of U.S. Homes by Total Bedroom Units** and at our tally chart. What do you notice about the number of bedrooms in homes across the United States compared with the number of bedrooms in your dream homes? What is similar? What is different?

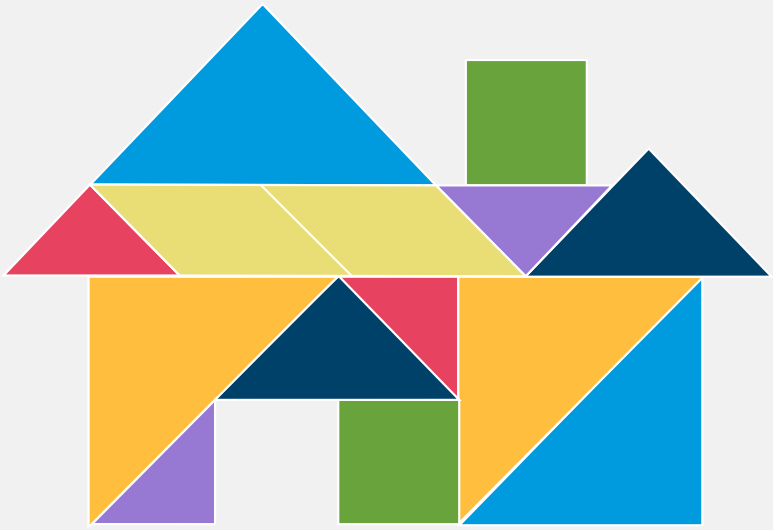
   Student answers will vary but could include the following:

   - **The least common number of bedrooms in homes across the United States is 0 bedrooms. The least common number of bedrooms in my classmates' dream homes is 1 bedroom.**
   - **Most of my classmates want a home with 5 or more bedrooms, but most people in the United States do not have a home with 5 or more bedrooms.**

Part 4 – Create Your Dream Home Using Two-Dimensional Shapes

Connect your two-dimensional shapes — triangles, quadrilaterals, pentagons, and hexagons — on your construction paper in a design you like and glue them in place to make your dream home! (Make sure you use at least three different types of shapes.)

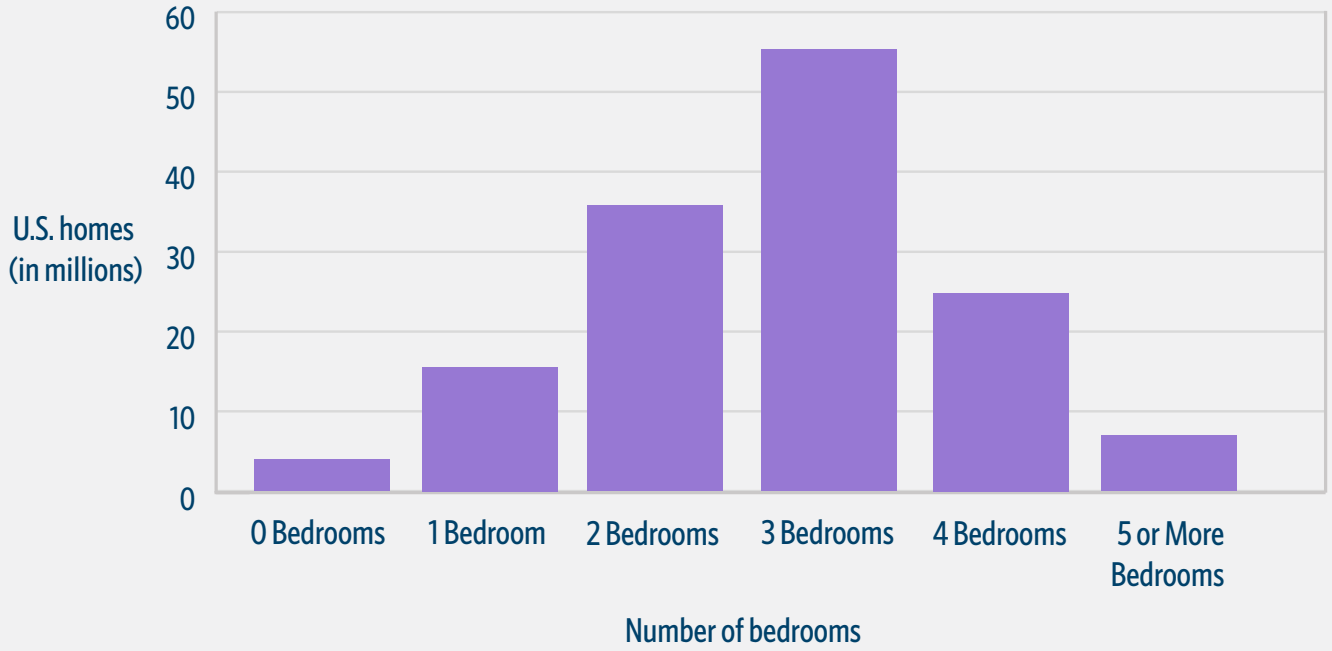
Student creations will vary and do not necessarily need to show the number of bedrooms. Here is an example:



When you're done, fill in the chart below with numbers showing how many of each shape cutout you used to make your dream home. If you did not use a shape cutout in your dream home, write "0."

Two-Dimensional Shape	Number Used to Create My Dream Home
Triangle	10
Quadrilateral: Square	2
Quadrilateral: Parallelogram	2
Quadrilateral: Rectangle	0
Quadrilateral: Trapezoid	0
Pentagon	0
Hexagon	0

Item 1: Number of U.S. Homes by Total Bedroom Units



Source for data:

https://data.census.gov/table/ACSDP5Y2023.DP04?q=DP04

To see the source data, copy and paste the link above into your browser.