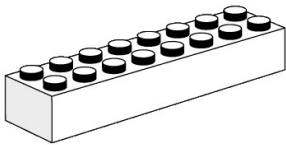


Exploring Mean, Median, Mode, and Range with LEGOS

Mean, median, and mode are three different ways to describe the average of a set of numeric data. They are statistical ways to describe the “centrality” of the data set.

Lego Terminology Tip: A round peg on top of a Lego is called a “stud.” We can name Lego bricks by their stud dimensions.



Warm up:

This piece has _____ studs. It is a ___ by ___ brick.

👉 Take a bag of Lego bricks.

Sort the bricks by the number of studs and fill in the table below.

# of Studs	1	2	3	4	6	8	10	12	14	16
# of Pieces										

Which number of studded pieces do you have the most of in your bag? _____

This is the **mode** for your Lego data. The mode is the value that appears the most frequently.

👉 Find the piece in your bag that has the most studs.

How many studs does this piece have? _____

This is the **maximum**. The maximum is the greatest number in a set of data.

👉 Find the piece in your bag that has the fewest studs.

How many studs does this piece have? _____

This is the **minimum**. The minimum is the smallest number in a set of data.

What is the difference between the maximum and the minimum?

$$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Maximum – Minimum = Range

The difference between the biggest and the smallest numbers in your data set is called the **range**. You subtract the minimum from the maximum of your data set.

☞ List of all your Lego pieces by the number of studs on the lines below, in order from the least studs to the most studs. If you have more than one piece with the same number of studs, list each of those pieces separately.



The number in the middle of your list is the **median**.

When you have an odd number of data points, there will be one number in the middle as the median. When you have an even number of data points, you will have two numbers as the median.

☞ Seal and put away your bag of Lego bricks.

☞ Take a bag of **Lego towers**.

Draw each of your towers in the space below. Make sure your drawing shows the number of Lego bricks in each tower. Label your towers Tower A, Tower B, Tower C, and so on.

I have _____ towers.
Tower A has _____ bricks.
Tower B has _____ bricks.
Tower C has _____ bricks.
Tower D has _____ bricks.
Tower E has _____ bricks.

☞ Move the tower pieces around until all of the towers are the exact same height but you still have the same number of towers.

Draw how your five towers now look below.

How many bricks are in each tower? _____ bricks


This number tells you the **mean** number of bricks in the towers. No, we're not saying that the Lego bricks are cranky and mean. In math, the *mean* is the *arithmetic average* for a set of numbers. That is, it is how much will be in each set if you spread the amounts out evenly.

You could also calculate the mean number of bricks in your collection of towers:

☞ Combine all of the pieces in your Lego towers together to make one big tower. You just added together all of the data values in your set of data. Record the addition below.

$$\begin{array}{l} \underline{\quad\quad} + \underline{\quad\quad} + \underline{\quad\quad} + \underline{\quad\quad} + \underline{\quad\quad} = \underline{\quad\quad} \text{ bricks} \\ \text{Tower A} + \text{Tower B} + \text{Tower C} + \text{Tower D} + \text{Tower E} = \text{Giant "Sum" Tower Height} \end{array}$$

☞ Now break your Giant "Sum" Tower into five even towers. You just divided the sum of the towers by the number of towers.

$$\underline{\quad\quad} \text{ in the giant tower} \div 5 = \underline{\quad\quad} \text{ bricks}$$


This is the mean.

The mean is the total of the data sets divided by how many data sets there are.

☞ Rebuild the towers the way you originally received them in your bag. Each tower should be a different height, and you will have five towers in total.

☞ Take a second bag of towers to practice finding the mean.

What is the sum of all of the bricks in the towers?

_____ bricks

What is the total number of towers?

_____ towers

_____ ÷ _____ = _____

The mean of the number of bricks in the towers.

Move the tower pieces around until all of your towers are the same exact height. Do the heights of the towers match the mean that you calculated?

☞ Rebuild the towers the way you originally received them in your bag. Return your bag of towers.

Review

Eight children each have a bag of Legos. This chart shows how many bricks each child has.

Child	Josephine	Ming	Lauren	Nathaniel	Chloe	Colin	Maya	Rowan
# of Bricks	7	6	15	4	14	12	16	6

➤ Which number of bricks is the **mode**? _____

Arrange the numbers of bricks in order from fewest to greatest:

➤ Which two numbers are the **median** of your data set? _____ and _____

Who has the most Lego bricks? _____ How many? _____

Who has the fewest Lego bricks? _____ How many? _____

➤ What is the **range** of the data set ? _____
 (Hint: greatest number of bricks – fewest number of bricks = range)

Add up the total number of bricks among all eight children.

_____ + _____ + _____ + _____ + _____ + _____ + _____ + _____ = _____ bricks in total

Divide by the number of children.

➤ What is the **mean** of the data set? _____

