

Challenge B: Making a Data Set

Use the *Plop-It* software to do this task.

1. Enter the data from Challenge A. As you add each block, watch how the mean, median, and mode change.
2. Once you have entered all 19 elements, try removing some. As you remove each block, observe what happens to the mean, median, and mode.
3. Add or remove data blocks until the value of the mode is 4. How many data elements do you have, and what are they?
4. Add or subtract data blocks until the value of the median is 5 AND the value of the mode is 8. How many data elements do you have? What patterns do you notice in the data, if any?
5. Make a data set that has 20 elements, with a mean of about 6 and a mode of 4. How many data elements do you have, and what are they?

Describe any patterns you noticed to help you solve this problem, and explain your reasoning.

Challenge C: Making Sense of Criteria

Now you will make a data set that has a combination of specific criteria.

1. Make a data set that has 10 elements, and the following characteristics:
 - The **mean** is about 4
 - The **mode** is 5
2. Now modify the data by adding or removing blocks so that the **median** has the same value as the **mode**.
3. Modify the data again, so that the **mean** is two units less than the median. Write your data in the box below.

Your Data:

4. What observations have you made about your data in problems 1-3? Describe any patterns or conclusions you made your data that helped you solve each problem.

Challenge D: A Prescription for Data

Construct a data set with the following characteristics:

- There are 20 elements in the data set.
- The maximum value in the set is 10, the minimum value is 1.
- The median has a value of 9.
- The mode has a value of 9.
- The mean has a value about 6.



Before You Use Plop-It...

1. Predict what this data set will look like. What might some elements in the data set be? How many of each element might you need? Describe your prediction.

Your Prediction:



Now Use Plop-It!

2. Use *Plop-It* to verify your prediction.

Your Data:

Explain how you constructed your data set.

Challenge E: Interpreting the Data

Consider the data set you made in Challenge D.

Imagine that this data came from a trial of 20 patients who took a new medicine for headaches.

The patients who took the medicine rated their pain relief on scale of 1 to 10. A rating of 1 represents no relief at all. A rating of 10 means that the headache was completely gone after they took the medicine.

1. Which of the measures of center (mean, median, or mode) best describes this data? Explain your reasoning.

9	1	2
7	3	3
5	<u>6</u>	5
7	8	<u>6</u>
8	3	1
7	5	7
2		

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