Cardboard Backboard Statistics Data Sheet





Mark a spot directly in front of your backboard roughly three big steps away from the hoop. This will be your "free-throw" spot. Next, find a small ball or a balled-up sock to use as your tiny basketball. With your ball, take <u>five</u> shots from the "free-throw" spot and record the number of successful shots.



Take five more shots and record the number of successful shots.

/ 5
How many shots did you make?

Do this three more times: take five more shots and record the number of successful shots.

/ 5	/ 5	/ 5
How many	How many	How many
shots did	shots did	shots did
you make?	you make?	you make?

The numbers you recorded are **data**. Data is information we can organize and study. When we collect multiple points of data, we create a **data set**. Your number of successful shots make up a data set. List the five numbers of successful shots in a list:

_____, ____, ____, ____, ____, (example: 3, 4, 3, 5, 2)

Since you have collected this information, you can now analyze this data. Collecting and analyzing data is the study of **statistics**.

Let's start by putting all of the numbers from your data set in order from smallest to largest:

_____, ____, ____, ____, ____, (example: 2, 3, 3, 4, 5)

Statistical Analysis Table:

Mode:			
Write down the number, or numbers, from your list that occurs most often.	Example A: 2, 3, 3 , 4, 5 Mode: <u>3</u>		
This is your mode, the data point with the greatest frequency. If two numbers appear most often, your data set has two modes.	Example B: 2, 2 , 3, 5, 5 Mode: <u>2 & 5</u>		
Median:			
With your numbers listed in order from smallest to largest, write down the middle number.	Example: 2, 3 , 3, 4, 5 Median: <u>3</u>		
This is your median, the middle data point of your set	Example: 2, 3 , 4, 4, 5, 5 : 4+4= 8		
If you have an even number of data points in a set, take the sum of the middle numbers and divide them by two.	8/2=4 Median: <u>4</u>		
Range:			
Find the largest and smallest values from your data set. Subtract the largest number from the smallest number.	Example: 2, 3, 3, 4, 5		
This is the range of your data set. This tells you how much your data varies. For this experiment, a range of 0-2 means your data doesn't vary much, while a range of 4-5 means your data varies greatly.	Largest value: 5 Smallest value: 2 $5 - 2 = 3$ $\underline{3}$ Range: $\underline{3}$		
Mean:	<u> </u>		
Let's calculate your average, or mean , of your successful free throw shots for every five shots.			
Add all the numbers together to find the sum:	Example: 2, 3, 3, 4, 5 2 + 3 + 3 + 4 + 5 = 17		
Next, we count the number of values we have in or set, or the number of times we shot the ball five times. That number is 5.	Number of items in the set = 5		
Finally, we will divide the sum of our set by the number of items in the set. $_{5}$	Example: 17 (sum) /5 (data points) = <u>3.4</u> Median: <u>3.4</u>		

Additional Data:

In order to graph this data, you'll want to collect a few more pieces of data. Shoot five more sets of five shots and record your results here:

Results from first five sets of five shots (ex. 3, 4, 3, 5, 2):							
,,,,,							
/ 5	/ 5	/ 5	/ 5	/ 5			
How many shots did you make?	How many shots did you make?	How many shots did you make?	How many shots did you make?	How many shots did you make?			
Results from all ten sets of five shots (ex. 3, 4, 3, 5, 2, 4, 3, 0, 2, 2):							
; ; ; ;							

Frequency Tables:

With this new additional data, you can create a **Frequency Table**. This is a method of representing data as a table of potential outcomes. For example, the data set (3, 4, 3, 5, 2, 4, 3, 0, 2, 2) would be expressed as the following frequency table:

Example Data:

Possible Outcome of 5 shots	0	1	2	3	4	5
Times possible outcome occurred	Ι	-	III	III	II	Ι

Your Data:

Possible Outcomes	0	1	2	3	4	5
Occurrences						

Make a Dot Plot

Transfer the data from your Frequency Table to the final graph, a **Dot Plot**. This graph uses circles to represent frequency of outcomes, similar to another type of graph called a histogram.

Example Dot Plot:



Successful Shots for Every Five Attempts

Your Dot Plot:



Successful Shots for Every Five Attempts

Share what you made with your family, classmates, or teachers!