

CW# _____

Name: _____

Math 3 / One-Variable Data / Calculator Commands

Period: A1 A2 A3 B1 B3

Beanie Babies™!!

From wikipedia: “Although created in 1993, during the last half of the 1990s, Beanie Babies emerged as a major fad and collectable. They have been cited as being the world's first Internet sensation in 1995. They were collected not only as toys, but also as a financial investment, due to the high resale value of particular ones.” Today we will investigate Mrs. Shanahan’s collection of Beanie Babies as a sample of all Beanie Babies.



1. Below are the weights of all 34 of Mrs. Shanahan’s Beanie Babies in ounces:

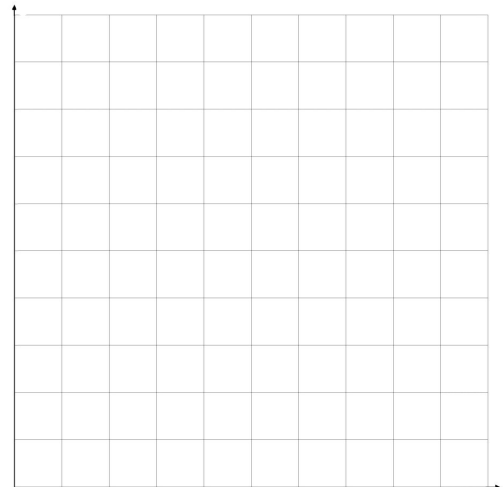
3.7	4.1	4.1	4.7	4.8	5	5	5	5.1	5.2		
5.6	5.6	5.9	6	6	6	6.1	6.4	6.5	6.8		
6.8	6.9	6.9	7	7	7.1	7.2	7.2	7.2	7.6		
8.2	8.4	8.8	9	<i>checksum = 212.9</i>							

- a. Enter this data as a **list** in your calculator. Then calculate the **1-variable statistics**. Make sure to check that the sum is 212.9 ounces ($\sum x=212.9$).

Minimum = _____ Q1 = _____ Median = _____ Q3 = _____ Maximum = _____

Mean (\bar{x}) = _____ Standard Deviation (Sx) = _____

- b. Use your calculator to construct a **histogram** of this data. Use an interval width of 1 ounce (oz.) starting with 3 oz. Adjust the **window** settings of your calculator and use the **trace** feature to create an accurate sketch of your histogram below.
- c. Now add a **boxplot** to your histogram. Adjust the window to show higher **yMax** so your boxplot will fit on the graph. Sketch the boxplot above your histogram the way it appears on the calculator screen. This is a “combination boxplot histogram.”
- d. Describe the distribution of Beanie Baby weights. Remember to describe the shape, center, variability, and outliers *in context*.



2. Below are the approximate values of all 34 of Mrs. Shanahan’s Beanie Babies rounded to the nearest dollar, based on recent eBay sales of comparable Beanie Babies.

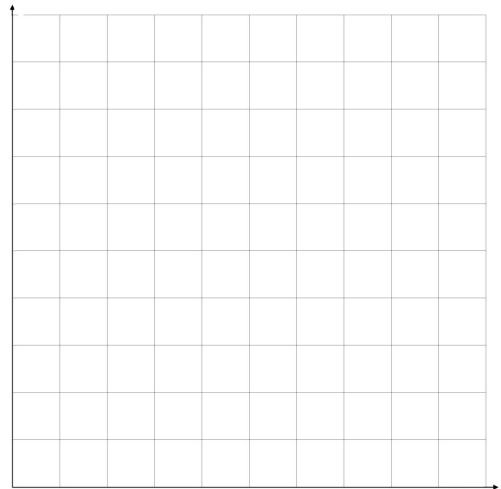
5	6	6	6	6	6	6	6	6	6
6	7	8	8	8	8	9	9	9	9
9	9	9	10	10	12	15	15	15	18
20	30	85	120	<i>checksum=515</i>					

- a. Enter this data as a **list** in your calculator. Then calculate the **1-variable statistics**. Make sure to check the sum.

Minimum = _____ Q1 = _____ Median = _____ Q3 = _____ Maximum = _____

Mean (\bar{x}) = _____ Standard Deviation (S_x) = _____

- b. Use your calculator to construct a combination boxplot histogram. Use an interval width of \$15 starting with \$0.
- c. Your calculator makes 2 types of boxplot. One of them shows outliers as separate dots beyond the lines. According to your calculator, which values are outliers? (Use the trace button.)
- d. Verify that those values are outliers using the IQR rule.



- e. Describe the distribution of Beanie Baby weights. Remember to describe the shape, center, variability, and outliers *in context*.

3. **Extension.** Categorical variables are those that represent non-numeric information (or numbers that can serve as categories). We can't use histograms or boxplots to represent categorical data, but we can use pie charts, bar graphs, and dot plots to represent this information.

Mrs. Shanahan's husband, Mr. Shanahan also collects Beanie Babies. When all their animals are combined, they have 92 Beanie Babies!! The types of animals represented in the Shanahan's Beanie Baby collection are shown below.

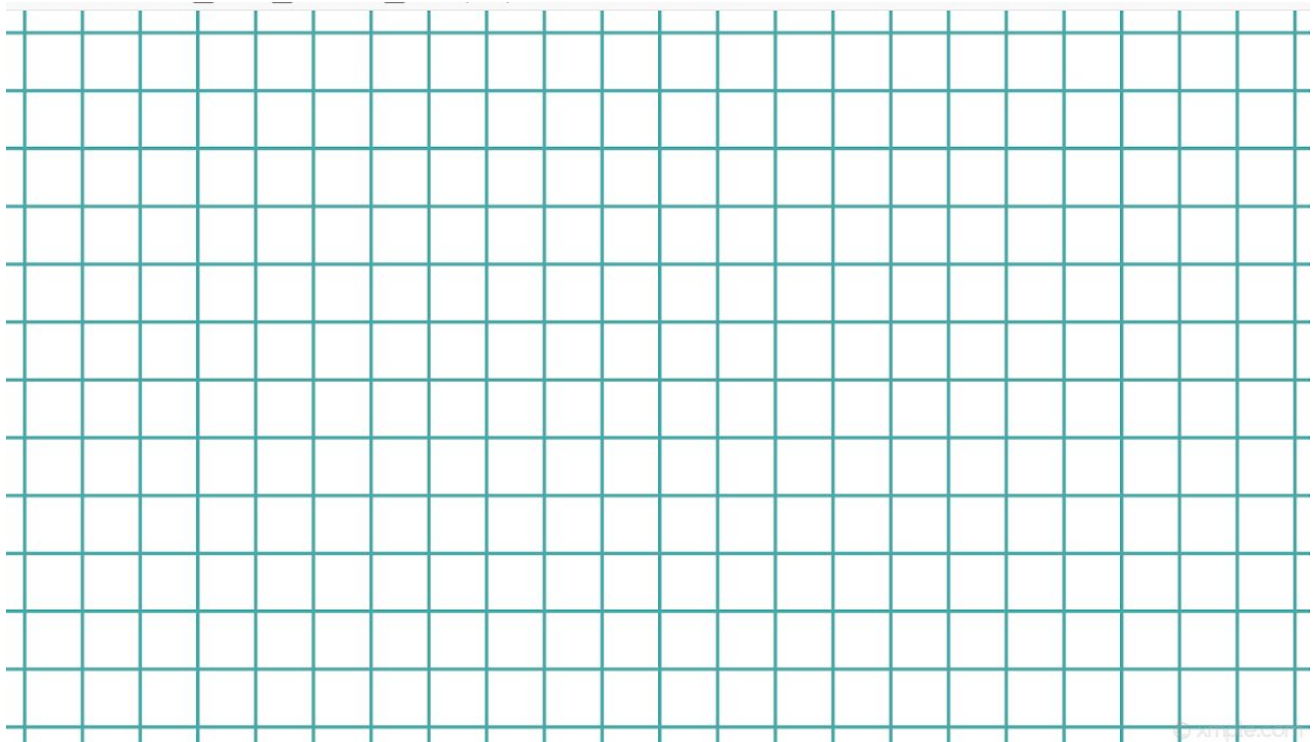
Type	Bears	Dogs	Cats	Reptiles & Amphibians	Sea Creatures	Foxes	African Savannah	Dinosaurs	Dragons	skunks	Birds	Farm Animals	Bats
Frequency	32	12	6	5	5	3	8	1	4	2	10	4	1

Choose *one* of the following ways to display this categorical data:

- I. DOTPLOT: Just like the dotplots we made for quantitative data, but the labels are words instead of numbers.
- II. PIE CHART: Calculate the proportion of Beanie Babies represented in each category. Multiply the proportion by 360° to determine how much of the pie it will be. Draw a circle and mark the center (trace something if you don't have a compass). Use a protractor to measure the correct angle for each category.

Ex. Bears = $\frac{32}{92} = 0.35 \rightarrow (0.35)(360^\circ) = 125^\circ$

- III. BAR GRAPH: These are very similar to histograms. There is a bar to represent each category and the vertical axis can represent frequency or relative frequency (%). They are different because the horizontal axis does not represent a numerical scale and we leave gaps between the bars.



(WARNING: If you are ever asked to describe a distribution that is categorical, don't be misled by the similarities of histograms and dot plots. Since categorical variables don't represent measurements or counts, there is no mean, median, standard deviation, etc. Since you can choose which order to put the bars in, the shape of the distribution is meaningless. Instead, you can describe which categories have the greatest or the lowest frequency or any categories that are very different from the others.)