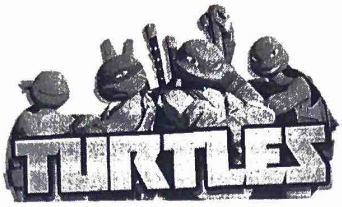
Name: Key Hour: ____ Date: ____

Lesson 1.1: What was your favorite toy as a child?



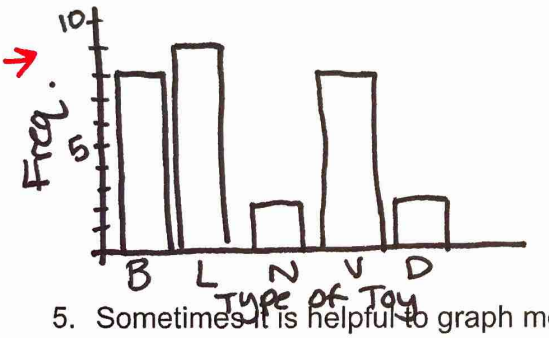
Is gender associated with certain favorite childhood toys? Collect class data using the following options: Barbies, Legos, Ninja Turtles, Video games, or dress-up clothes.

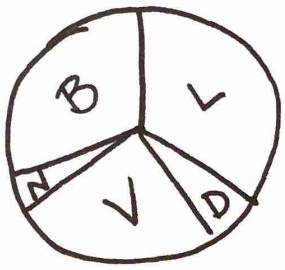
1. Which of the following was your favorite toy as a child? Mark your choice on the board. Females use a red marker. Males use a green marker.

Barbie	Legos	Ninja Turtles	Video games	Dress up clothes
8	9	2	8	2

2. Identify the individuals and variable? Students, toy type
3. Is the variable categorical or quantitative? Categorical
4. Go to stapplet.com to enter the class data. Make a bar graph and a pie chart. Sketch them below.

Must start at 0. Using a scale is fine.





Must include all categories to make a whole.

5. Sometimes it is helpful to graph more than one variable. Complete the table below.

		Gender: Male	Gender: Female
Type of toy	Barbie	1	7
	Legos	5	4
	Ninja Turtles	2	0
	Video games	5	3
	Dress up clothes	0	2

Find each of the following:

% of students who chose Ninja Turtles: $2/29 = 6.9\%$ ← Marginal Rel. Freq.

% of students who are Male and chose Ninja Turtles: $2/29 = 6.9\%$ ← Joint Rel. Freq.

% of Females who chose Legos: $4/16 = 0.25 = 25\%$ ← Conditional Rel. Freq.

Name: _____ Hour: _____ Date: _____

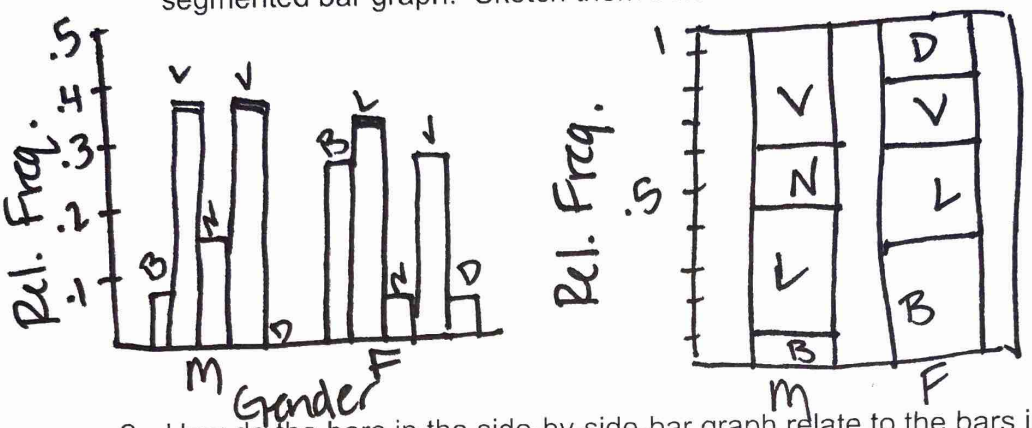
6. How many variables does the table have? Are the variables categorical or quantitative?

2, categorical

7. Which variable would best explain or predict the other variable?

Explanatory → Gender predicts toy choice ← Response

8. Go to stapplet.com and enter the data. Make a side-by-side bar graph and a segmented bar graph. Sketch them below.



9. How do the bars in the side-by-side-bar graph relate to the bars in the segmented bar graph?

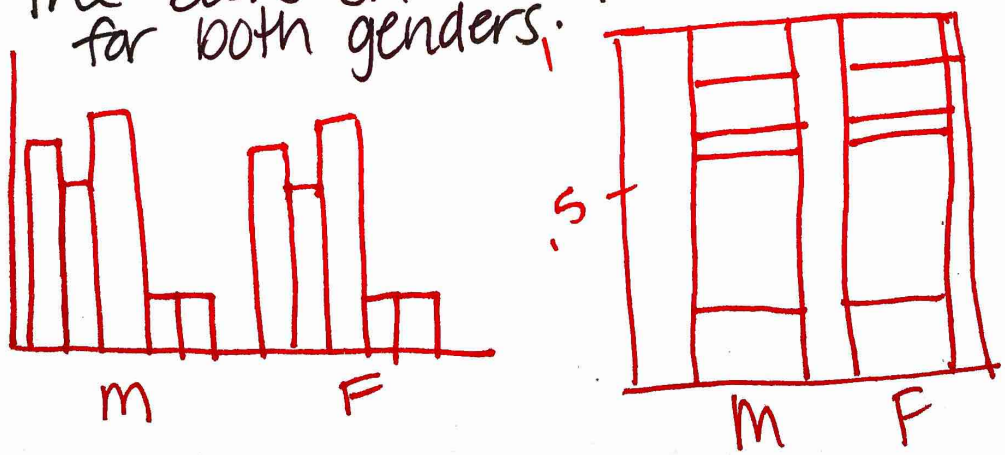
If you stacked all the bars for male from the side-by-side bar graph it would look like the male bar for the segmented bar graph.

10. Is there an association between gender and type of toy? If so, describe it.

Yes, knowing the gender changes the % of toy chosen.

11. If there was not an association between gender and toy, what would the graphs look like?

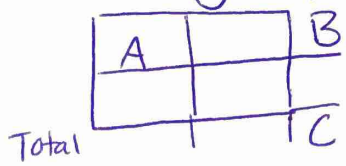
The bars should look the same, for both genders.



Important Ideas:

Categorical variables: Report frequency (counts) and relative freq. (%) in pie charts or bar graphs.

Two way tables



Marginal: $\frac{B}{C}$

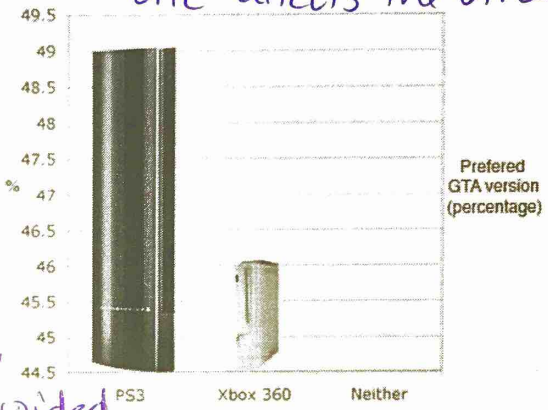
Joint: $\frac{A}{C}$

Conditional: $\frac{A}{B}$

There is an association b/w two variables if knowing the value of one affects the other.

Check Your Understanding:

1. Students at a local high school were asked which gaming system they preferred: the Playstation 3, the Xbox 360 or neither. The graph shown at right shows the results. Explain why the graph may be misleading.



The vertical scale does not start at 0 so the difference in the heights is exaggerated. It is not clear what the height of "neither" is. Pictographs should also be avoided.

2. An article in the Journal of the American Medical Association reports the results of a study designed to see if the herb St. John's wort is effective in treating moderately severe cases of depression. The study involved 338 patients who were being treated for major depression. The subjects were randomly assigned to receive one of three treatments: St. John's wort, Zoloft (a prescription drug), or placebo (an inactive treatment) for an 8-week period. The two way table summarizes the data from the experiment.

		Treatment		
		St. John's wort	Zoloft	Placebo
Change in depression	Full response	27	27	37
	Partial response	16	26	13
	No response	70	56	66

a. What proportion of subjects in the study were randomly assigned to take St. John's wort? Explain why this value makes sense.

113/338 = 0.334, This makes sense because there are 3 treatments so about 1/3 should be assigned.

b. Find the distribution of change in depression for the subjects in this study using relative frequencies.

Full response = 91/338 = 0.269

Partial response = 55/338 = 0.163

No response = 192/338 = 0.568

c. What percent of subjects took Zoloft and showed a full response?

27/338 = 0.08 = 8%