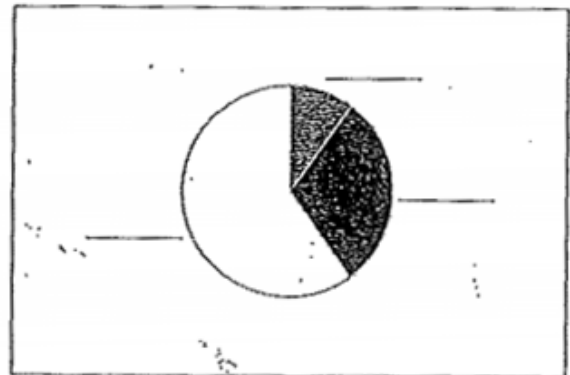


Below is some information about films for the “Best Movie” Academy Award (Oscar) in 2009.

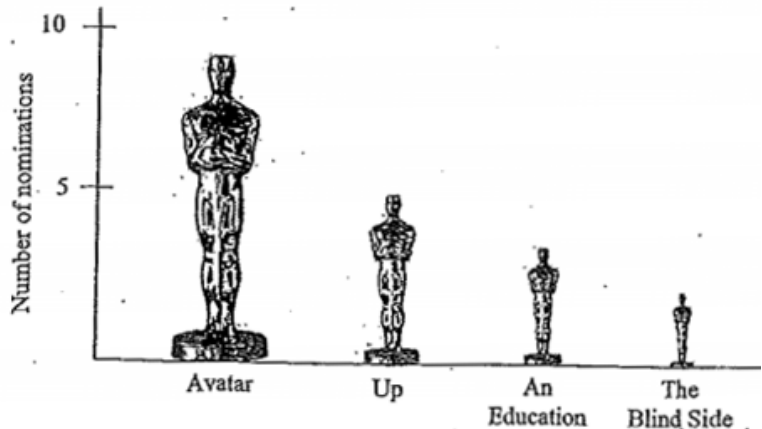
Name	Genre	Budget (millions of dollars)	Total # of Oscar Nominations	Running time (minutes)	MMPA Rating
Avatar	Adventure	237	9	162	PG-13
The Blind Side	Drama	29	2	128	PG-13
District 9	Action	30	4	112	R
An Education	Drama	7	3	95	PG-13
The Hurt Locker	Action	11	9	131	R
Inglourious Basterds	Drama	70	8	153	R
Precious	Drama	10	6	110	R
A Serious Man	Comedy	7	2	106	R
Up	Animated	175	5	96	PG
Up in The Air	Comedy	30	6	109	R

#1. Identify the variables that were recorded, and indicate whether each one is categorical or quantitative.

#2. Here is a pie chart for the distribution of the variable “MMPA rating.” Fill in the blanks with the appropriate values of the variable.



#3. Below is a graph showing the total number of Oscar nominations for the four films that had PG or PG-13 ratings. What’s wrong with the way the information is presented in this graph?



Researchers looking at the relationship between the type of college attended (public or private) and achievement gather the following data on 3265 people who graduated from college in the same year. The variable “management level” describes their job description 20 years after graduating from college.

	Type of College	
	Public	Private
Management level		
High	75	107
Medium	962	794
Low	732	595

#4. Write the marginal distribution of type of college (in counts and in percents).

#5. Write the conditional distribution of management level for each college type (in counts and in percents).

#6. Sketch side-by-side segmented bar graphs for the two conditional distributions in #5.

#7. Write a few sentences summarizing what the segmented bar graphs reveal about the association between management level and type of college.

#8. Popular magazines often rank cities in terms of how desirable it is to live and work there. Identify two categorical variables and two quantitative variables that could be used to measure a city's characteristics. Give a reason for each of your choices.

#9. Each year, the DuPont Corporation publishes the results of a poll of car-color preferences for North American drivers. Here is the distribution of color preference for 2009:

Make a bar graph of these data.



Color	Percentage
White/Pearl	17.8
Black	17
Silver	16.7
Gray	13
Blue	12.4
Red	12
Brown	5.7
Other	5.4

#10. In 2009, DuPont conducted a similar poll worldwide. Here is the distribution for global car color preferences:

Make a bar graph of these data.



Color	Percentage
White/Pearl	16
Black	23
Silver	25
Gray	13
Blue	9
Red	8
Brown	4
Other	2

#11. Comment on the most important differences between these two distributions.

A research study asked children which of four different emotions they associated with the color red. The response and gender of each child are given in the following table.

	Joy	Happiness	Love	Anger
Male	28	20	40	18
Female	61	25	80	60

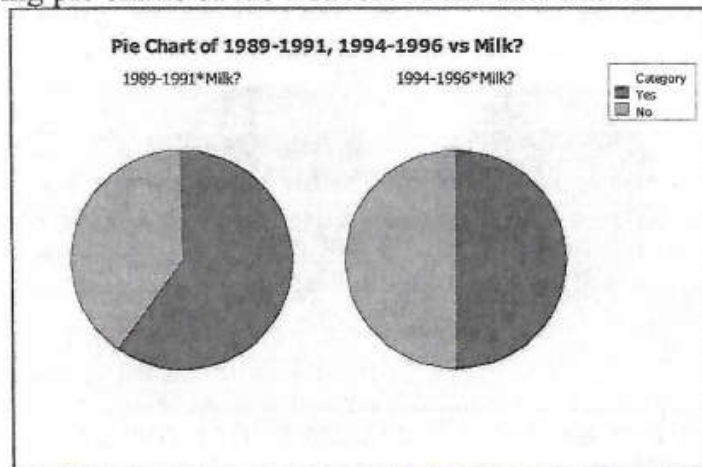
#12. Use the data in this table to discuss the relationship between the emotions children associate with the color red and gender. Use the techniques and language you have learned in this section to support your conclusions. (You must use percentages and segmented bar graphs as part of your analysis, and finish with a paragraph stating something about the association).

Chapter 3 Practice Quiz

Has the percentage of young girls drinking milk changed over time? The following table is consistent with the results from “Beverage Choices of Young Females: Changes and Impact on Nutrient Intakes” (Shanthy A. Bowman, *Journal of the American Dietetic Association*, 102(9), pp. 1234-1239):

		Nationwide Food Survey Years			Total
		1987-1988	1989-1991	1994-1996	
Drinks Fluid Milk	Yes	354	502	366	1222
	No	226	335	366	927
	Total	580	837	732	2149

- Find the following:
 - What percent of the young girls reported that they drink milk? _____
 - What percent of the young girls were in the 1989-1991 survey? _____
 - What percent of the young girls who reported that they drink milk were in the 1989-1991 survey? _____
 - What percent of the young girls in 1989-1991 reported that they drink milk? _____
- What is the marginal distribution of milk consumption?
- Do you think that milk consumption by young girls is independent of the nationwide survey year? Use statistics to justify your reasoning.
- Consider the following pie charts of the a subset of the data above:



Do the pie charts above indicate that milk consumption by young girls is independent of the nationwide survey year? Explain.