

# Algebra 1 – Statistics Questions on Two Way Tables

Name \_\_\_\_\_

Goals: percents, and questions, or questions, conditional questions.

## Two Way Tables

In 1912 the luxury liner *Titanic*, on its first voyage across the Atlantic, struck an iceberg and sank. Some passengers got off the ship in lifeboats, but many died. The two-way table below gives information about adult passengers who lived and who died, by class of travel.

Class of Travel	Survival Status	
	Survived	Died
First class	197	122
Second class	94	167
Third class	151	476

Find the marginal totals

What percent of people survived?

What percent of people were 1<sup>st</sup> class?

What percent of 1<sup>st</sup> class people survived?

Accident victims are sometimes taken by helicopter from the accident scene to a hospital. Helicopters save time. Do they also save lives? Let's compare the percents of accident victims who die with helicopter evacuation and with the usual transport to a hospital by road. Here are hypothetical data that illustrate a practical difficulty:<sup>7</sup>

	Helicopter	Road
Victim died	64	260
Victim survived	136	840

Find the marginal totals

What percent of people survived?

What percent of people were taken in a helicopter?

What percent of helicopter riders survived?

What percent of ambulance riders survived?

Which has more survivors? Explain...

20. **Smoking by students and parents** Here are data from a survey conducted at eight high schools on smoking among students and their parents:<sup>17</sup>

	Neither parent smokes	One parent smokes	Both parents smoke
Student does not smoke	1168	1823	1380
Student smokes	188	416	400

What percent of students who smoke AND both of their parents smoke?

What percent of the people who responded have at least one smoker in their family?

Are students who have parents more likely to smoke? Explain.

## Apply Your Knowledge To The Class Data 10

Create a two-way table comparing males vs. females and academic dishonesty (cheating). Who is more likely to cheat??

Exercises 27 to 32 refer to the following setting. The National Survey of Adolescent Health interviewed several thousand teens (grades 7 to 12). One question asked was "What do you think are the chances you will be married in the next ten years?" Here is a two-way table of the responses by gender.<sup>18</sup>

	Female	Male
Almost no chance	119	103
Some chance, but probably not	150	171
A 50-50 chance	447	512
A good chance	735	710
Almost certain	1174	756

27. The percent of females among the respondents was  
 (a) 2625. (c) about 46%. (e) None of these.  
 (b) 4877. (d) about 54%.
28. Your percent from the previous exercise is part of  
 (a) the marginal distribution of females.  
 (b) the marginal distribution of gender.  
 (c) the marginal distribution of opinion about marriage.  
 (d) the conditional distribution of gender among adolescents with a given opinion.  
 (e) the conditional distribution of opinion among adolescents of a given gender.

T1.7. Forty students took a statistics examination having a maximum of 50 points. The score distribution is given in the following stem-and-leaf plot:

0		28
1		2245
2		01333358889
3		001356679
4		22444466788
5		000

The third quartile of the score distribution is equal to  
 (a) 45. (b) 44. (c) 43. (d) 32. (e) 23.

29. What percent of females thought that they were almost certain to be married in the next ten years?  
 (a) About 16% (c) About 40% (e) About 61%  
 (b) About 24% (d) About 45%
30. Your percent from the previous exercise is part of  
 (a) the marginal distribution of gender.  
 (b) the marginal distribution of opinion about marriage.  
 (c) the conditional distribution of gender among adolescents with a given opinion.  
 (d) the conditional distribution of opinion among adolescents of a given gender.  
 (e) the conditional distribution of "Almost certain" among females.
31. What percent of those who thought they were almost certain to be married were female?  
 (a) About 16% (c) About 40% (e) About 61%  
 (b) About 24% (d) About 45%
32. Your percent from the previous exercise is part of  
 (a) the marginal distribution of gender.  
 (b) the marginal distribution of opinion about marriage.  
 (c) the conditional distribution of gender among adolescents with a given opinion.  
 (d) the conditional distribution of opinion among adolescents of a given gender.  
 (e) the conditional distribution of females among those who said "Almost certain."

Barry Bonds set the major league record by hitting 73 home runs in a single season in 2001. On August 7, 2007, Bonds hit his 756th career home run, which broke Hank Aaron's longstanding record of 755. By the end of the 2007 season when Bonds retired, he had increased the total to 762. Here are data on the number of home runs that Bonds hit in each of his 21 complete seasons:

16 25 24 19 33 25 34 46 37 33 42 40 37 34 49 73 46 45 45 26 28

Find the five number summary of the data and make a box plot.

### Apply Your Knowledge To The Class Data 11

Be creative! Choose two topics from the data collected that you think might show a link.  
 Example: Are students who have visited Indiana more likely to steal?

Create a two-way table comparing your two topics and discuss your findings.