Name _____ Date _____

Could You Participate in Our Survey?
Interpreting Frequency Distributions

Vocabulary

Match each definition to its corresponding term.

1. displays the total of the frequencies of the rows or columns of a frequency distribution
2. displays the frequencies for categorical data in a two-way table
3. non-numerical data that can be grouped into categories
4. displays categorical data by representing the number of occurrences that fall into each group for two variables
5. any frequency you record within the body of a two-way frequency table

a. categorical data
b. two-way frequency table
c. frequency distribution
d. joint frequency
e. frequency marginal distribution

Problem Set

Organize each data set into a two-way frequency table. Then complete the frequency marginal distribution for the data set.

1.

Class	Favorite Color
A	Red
A	Blue
B	Red
B	Purple
B	Blue
A	Red
B	Green
B	Green
A	Blue
B	Purple

Class	Favorite Color
B	Blue
A	Blue
A	Green
A	Red
B	Blue
B	Blue
A	Purple
B	Green
A	Red
B	Purple

Two-way frequency table:

Favorite Color of Students

Class	Red	Blue	Purple	Green
Class A	////	///	/	/
Class B	/	////	///	///

Frequency marginal distribution:

Favorite Color of Students

Class	Red	Blue	Purple	Green	Total
Class A	4	3	1	1	9
Class B	1	4	3	3	11
Total	5	7	4	4	20

Name _____ Date _____

2.

Class	Favorite Sport to Watch on TV
11th Grade	Football
11th Grade	Baseball
12th Grade	Football
12th Grade	Football
11th Grade	Basketball
12th Grade	Football
11th Grade	Baseball
11th Grade	Football
12th Grade	Basketball
11th Grade	Baseball

Class	Favorite Sport to Watch on TV
12th Grade	Football
11th Grade	Basketball
11th Grade	Basketball
12th Grade	Football
12th Grade	Baseball
11th Grade	Football
12th Grade	Basketball
12th Grade	Baseball
11th Grade	Basketball
12th Grade	Football

Two-way frequency table:

		Favorite Sport to Watch on TV		
Class				

Frequency marginal distribution:

		Favorite Sport to Watch on TV			
Class					

3.

Class	Favorite Fruit
5th Grade	Apple
6th Grade	Banana
5th Grade	Apple
5th Grade	Apple
5th Grade	Banana
6th Grade	Grapes
6th Grade	Orange
6th Grade	Apple
5th Grade	Orange
5th Grade	Banana

Class	Favorite Fruit
5th Grade	Banana
6th Grade	Apple
6th Grade	Orange
6th Grade	Apple
6th Grade	Banana
5th Grade	Grapes
5th Grade	Banana
5th Grade	Apple
6th Grade	Orange
5th Grade	Grapes

Two-way frequency table:

Favorite Fruit of Students

Class				

Frequency marginal distribution:

Favorite Fruit of Students

Class					

Name _____ Date _____

4.

Class	Favorite Sports Boys Play
A	Soccer
A	Baseball
C	Basketball
B	Soccer
B	Soccer
C	Basketball
B	Football
C	Baseball
A	Baseball
C	Basketball

Class	Favorite Sports Boys Play
C	Soccer
A	Basketball
A	Baseball
B	Soccer
B	Football
B	Football
C	Baseball
A	Football
A	Soccer
C	Basketball

Two-way frequency table:

		Favorite Sports Boys Play			
Class					

Frequency marginal distribution:

		Favorite Sports Boys Play				
Class						

5.

Class	Favorite Sports Girls Play
A	Basketball
B	Soccer
B	Swimming
C	Basketball
C	Softball
A	Soccer
B	Soccer
A	Softball
C	Basketball
C	Swimming

Class	Favorite Sports Girls Play
A	Basketball
A	Basketball
B	Soccer
C	Basketball
B	Softball
B	Swimming
A	Swimming
A	Softball
C	Soccer
A	Softball

10

Two-way frequency table:

Favorite Sports Girls Play

Class				

Frequency marginal distribution:

Favorite Sports Girls Play

Class					

Name _____ Date _____

6.

Class	Favorite Subject
A	Algebra
A	English
B	History
B	History
B	Algebra
A	Algebra
A	English
B	English
A	English
B	History

Class	Favorite Subject
B	History
B	Algebra
A	English
B	Algebra
A	English
A	History
B	Algebra
B	Algebra
A	History
A	English

Two-way frequency table:

Favorite Subject of Students

Class			

Frequency marginal distribution:

Favorite Subject of Students

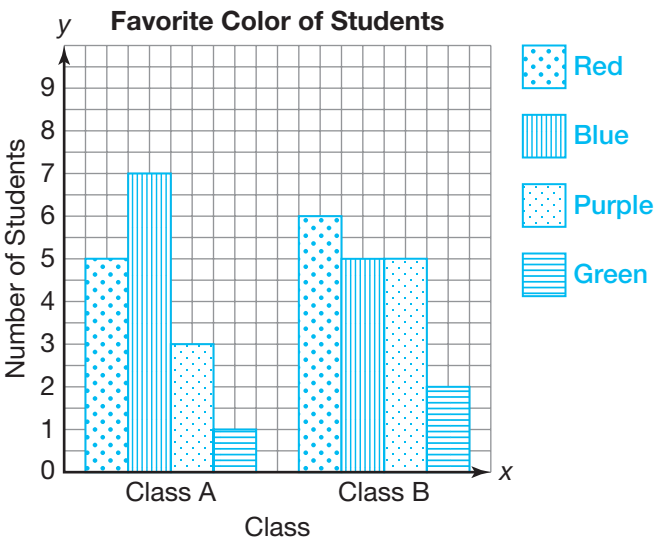
Class				

Construct a bar graph to represent each data set shown in the frequency marginal distribution table.

7.

Favorite Color of Students

Class	Red	Blue	Purple	Green	Total
Class A	5	7	3	1	16
Class B	6	5	5	2	18
Total	11	12	8	3	34

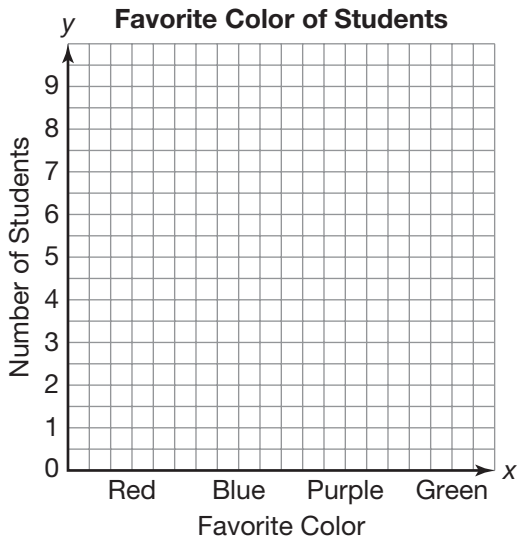


Name _____ Date _____

8.

Favorite Color of Students

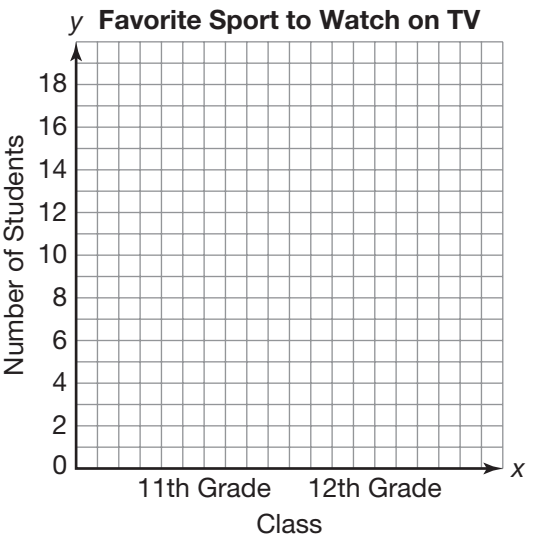
Class	Red	Blue	Purple	Green	Total
Class A	5	7	3	1	16
Class B	6	5	5	2	18
Total	11	12	8	3	34



9.

Favorite Sport to Watch on TV

Class	Football	Baseball	Basketball	Total
11th Grade	16	7	12	35
12th Grade	13	5	18	36
Total	29	12	30	71

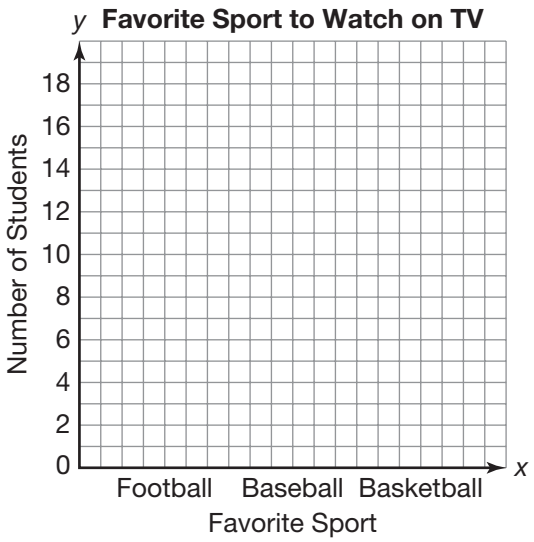


Name _____ Date _____

10.

Favorite Sport to Watch on TV

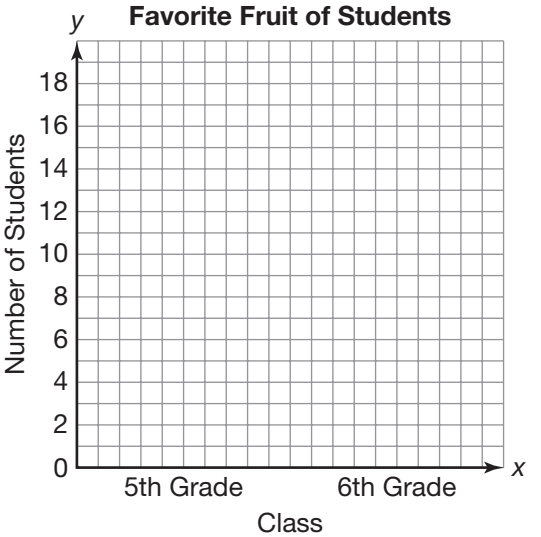
Class	Football	Baseball	Basketball	Total
11th Grade	16	7	12	35
12th Grade	13	5	18	36
Total	29	12	30	71



11.

Favorite Fruit of Students

Class	Apple	Banana	Grapes	Orange	Total
5th Grade	17	15	8	6	46
6th Grade	12	11	3	9	35
Total	29	26	11	15	81

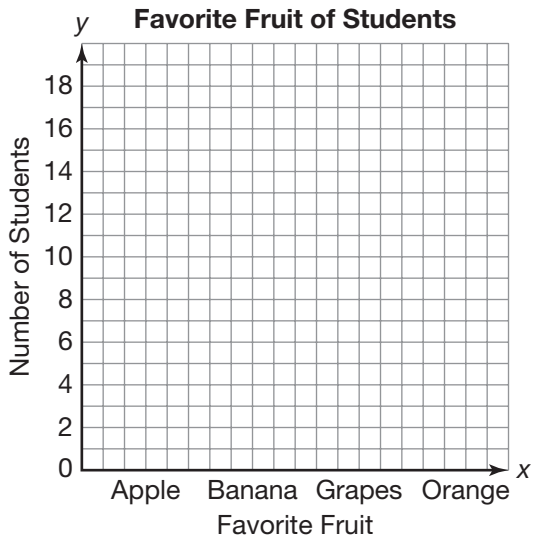


Name _____ Date _____

12.

Favorite Fruit of Students

Class	Apple	Banana	Grapes	Orange	Total
5th Grade	17	15	8	6	46
6th Grade	12	11	3	9	35
Total	29	26	11	15	81



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10

Name _____ Date _____

It's So Hot Outside!
Relative Frequency Distribution

Vocabulary

Write a brief explanation of the difference between a relative frequency distribution and a relative frequency marginal distribution.

Problem Set

Complete the relative frequency distribution and relative frequency marginal distribution for each frequency marginal distribution.

1.

Favorite Music of Students

Class	Pop	Rap	Country	Rock	Total
Class A	15	10	4	7	36
Class B	12	17	6	5	40
Total	27	27	10	12	76

Favorite Music of Students

Class	Pop	Rap	Country	Rock	Total
Class A	$\frac{15}{76} \approx 0.197$	$\frac{10}{76} \approx 0.132$	$\frac{4}{76} \approx 0.053$	$\frac{7}{76} \approx 0.092$	$\frac{36}{76} \approx 0.474$
Class B	$\frac{12}{76} \approx 0.158$	$\frac{17}{76} \approx 0.224$	$\frac{6}{76} \approx 0.079$	$\frac{5}{76} \approx 0.066$	$\frac{40}{76} \approx 0.526$
Total	$\frac{27}{76} \approx 0.355$	$\frac{27}{76} \approx 0.355$	$\frac{10}{76} \approx 0.132$	$\frac{12}{76} \approx 0.158$	$\frac{76}{76} = 1$

2.

Favorite Books of Students

Class	Biography	Mystery	Romance	Historical	Total
Class A	7	12	5	9	33
Class B	11	3	9	12	35
Class C	12	14	6	8	40
Total	30	29	20	29	108

Favorite Books of Students

Class	Biography	Mystery	Romance	Historical	Total
Class A					
Class B					
Class C					
Total					

3.

Favorite Movies of Students

Class	Comedy	Drama	Horror	Total
Class A	20	8	3	31
Class B	18	6	9	33
Total	38	14	12	64

Favorite Books of Students

Class	Comedy	Drama	Horror	Total
Class A				
Class B				
Total				

Name _____ Date _____

4.

Favorite Subject of Students

Class	Biology	History	Geometry	Total
Class A	13	8	9	30
Class B	8	15	5	28
Class C	4	11	14	29
Total	25	34	28	87

Favorite Subject of Students

Class	Biology	History	Geometry	Total
Class A				
Class B				
Class C				
Total				

10

5.

Favorite Vegetable of Students

Class	Green Beans	Broccoli	Carrots	Corn	Total
Class A	9	4	12	8	33
Class B	10	7	6	11	34
Total	19	11	18	19	67

Favorite Vegetable of Students

Class	Green Beans	Broccoli	Carrots	Corn	Total
Class A					
Class B					
Total					

6.

Favorite Winter Sport of Students

Class	Skiing	Tubing	Sledding	Skating	Total
Class A	13	7	9	4	33
Class B	11	5	14	9	39
Total	24	12	23	13	72

Favorite Winter Sport of Students

Class	Skiing	Tubing	Sledding	Skating	Total
Class A					
Class B					
Total					

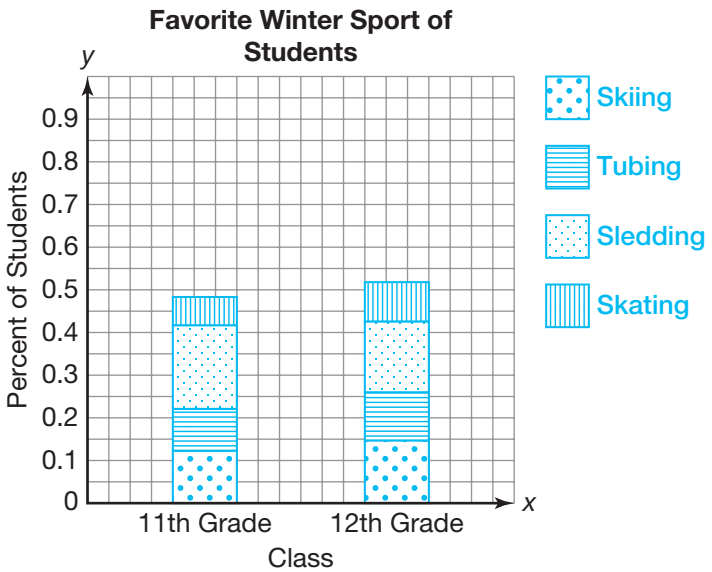
Name _____ Date _____

Construct a stacked bar graph of each relative frequency distribution.

7.

Favorite Winter Sport of Students

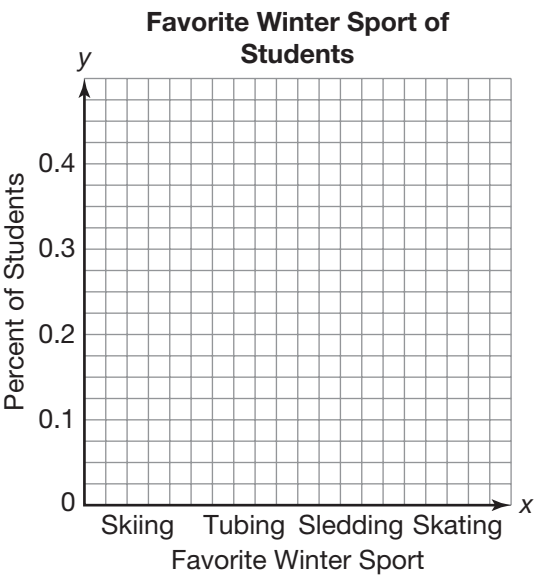
Class	Skiing	Tubing	Sledding	Skating	Total
11th Grade	$\frac{20}{163} \approx 0.123$	$\frac{16}{163} \approx 0.098$	$\frac{32}{163} \approx 0.196$	$\frac{11}{163} \approx 0.067$	$\frac{79}{163} \approx 0.485$
12th Grade	$\frac{24}{163} \approx 0.147$	$\frac{18}{163} \approx 0.110$	$\frac{27}{163} \approx 0.166$	$\frac{15}{163} \approx 0.092$	$\frac{84}{163} \approx 0.515$
Total	$\frac{44}{163} \approx 0.270$	$\frac{34}{163} \approx 0.209$	$\frac{59}{163} \approx 0.362$	$\frac{26}{163} \approx 0.160$	$\frac{163}{163} = 1$



8.

Favorite Winter Sport of Students

Class	Skiing	Tubing	Sledding	Skating	Total
11th Grade	$\frac{20}{163} \approx 0.123$	$\frac{16}{163} \approx 0.098$	$\frac{32}{163} \approx 0.196$	$\frac{11}{163} \approx 0.067$	$\frac{79}{163} \approx 0.485$
12th Grade	$\frac{24}{163} \approx 0.147$	$\frac{18}{163} \approx 0.110$	$\frac{27}{163} \approx 0.166$	$\frac{15}{163} \approx 0.092$	$\frac{84}{163} \approx 0.515$
Total	$\frac{44}{163} \approx 0.270$	$\frac{34}{163} \approx 0.209$	$\frac{59}{163} \approx 0.362$	$\frac{26}{163} \approx 0.160$	$\frac{163}{163} = 1$

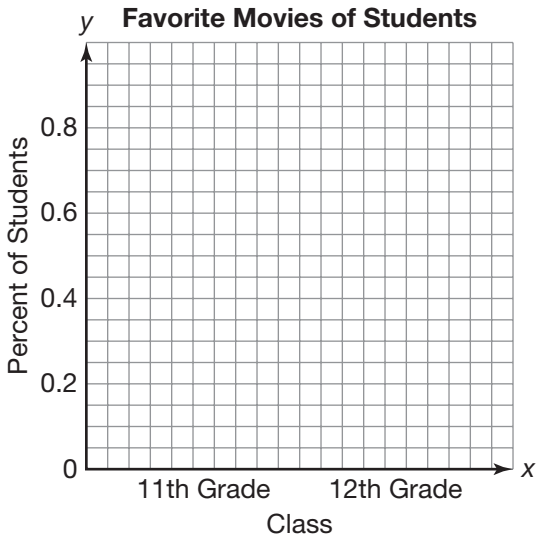


Name _____ Date _____

9.

Favorite Movies of Students

Class	Comedy	Drama	Horror	Total
11th Grade	$\frac{42}{164} \approx 0.256$	$\frac{15}{164} \approx 0.091$	$\frac{27}{164} \approx 0.165$	$\frac{84}{164} \approx 0.512$
12th Grade	$\frac{40}{164} \approx 0.244$	$\frac{22}{164} \approx 0.134$	$\frac{18}{164} \approx 0.110$	$\frac{80}{164} \approx 0.488$
Total	$\frac{82}{164} = 0.5$	$\frac{37}{164} \approx 0.226$	$\frac{45}{164} \approx 0.274$	$\frac{164}{164} = 1$



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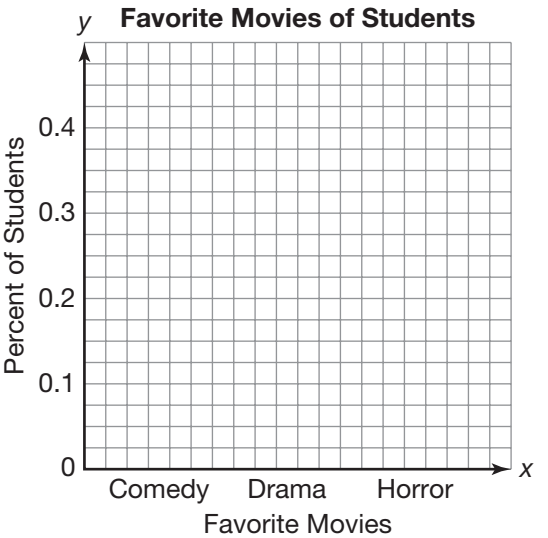
10.

Favorite Movies of Students

Class	Comedy	Drama	Horror	Total
11th Grade	$\frac{42}{164} \approx 0.256$	$\frac{15}{164} \approx 0.091$	$\frac{27}{164} \approx 0.165$	$\frac{84}{164} \approx 0.512$
12th Grade	$\frac{40}{164} \approx 0.244$	$\frac{22}{164} \approx 0.134$	$\frac{18}{164} \approx 0.110$	$\frac{80}{164} \approx 0.488$
Total	$\frac{82}{164} = 0.5$	$\frac{37}{164} \approx 0.226$	$\frac{45}{164} \approx 0.274$	$\frac{164}{164} = 1$

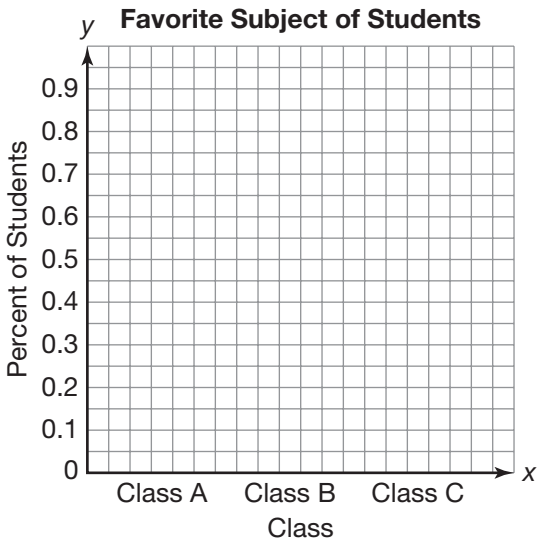


Name _____ Date _____

11.

Favorite Subject of Students

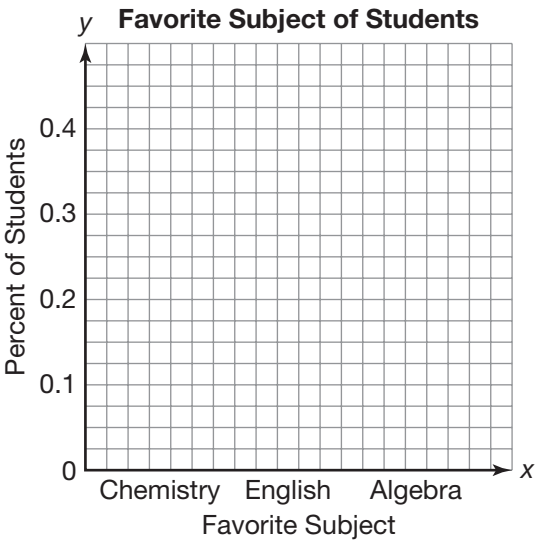
Class	Chemistry	English	Algebra	Total
Class A	$\frac{10}{108} \approx 0.093$	$\frac{17}{108} \approx 0.157$	$\frac{8}{108} \approx 0.074$	$\frac{35}{108} \approx 0.324$
Class B	$\frac{13}{108} \approx 0.120$	$\frac{9}{108} \approx 0.083$	$\frac{15}{108} \approx 0.139$	$\frac{37}{108} \approx 0.343$
Class C	$\frac{8}{108} \approx 0.074$	$\frac{12}{108} \approx 0.111$	$\frac{16}{108} \approx 0.148$	$\frac{36}{108} \approx 0.333$
Total	$\frac{31}{108} \approx 0.287$	$\frac{38}{108} \approx 0.352$	$\frac{39}{108} \approx 0.361$	$\frac{108}{108} = 1$



12.

Favorite Subject of Students

Class	Chemistry	English	Algebra	Total
Class A	$\frac{10}{108} \approx 0.093$	$\frac{17}{108} \approx 0.157$	$\frac{8}{108} \approx 0.074$	$\frac{35}{108} \approx 0.324$
Class B	$\frac{13}{108} \approx 0.120$	$\frac{9}{108} \approx 0.083$	$\frac{15}{108} \approx 0.139$	$\frac{37}{108} \approx 0.343$
Class C	$\frac{8}{108} \approx 0.074$	$\frac{12}{108} \approx 0.111$	$\frac{16}{108} \approx 0.148$	$\frac{36}{108} \approx 0.333$
Total	$\frac{31}{108} \approx 0.287$	$\frac{38}{108} \approx 0.351$	$\frac{39}{108} \approx 0.361$	$\frac{108}{108} = 1$



Name _____ Date _____

She Blinded Me with Science!

Relative Frequency Conditional Distribution

Vocabulary

Define the term in your own words.

1. relative frequency conditional distribution

Problem Set

Complete the relative frequency conditional distribution for each two-way table.

1.

Class \ Grades of Students	A	B	C	D	F
Algebra	6	4	8	1	1
Geometry	6	11	9	2	2
Trigonometry	3	7	12	5	3

Class \ Grades of Students	A	B	C	D	F	Total
Algebra	$\frac{6}{20} = 30\%$	$\frac{4}{20} = 20\%$	$\frac{8}{20} = 40\%$	$\frac{1}{20} = 5\%$	$\frac{1}{20} = 5\%$	$\frac{20}{20} = 100\%$
Geometry	$\frac{6}{30} = 20\%$	$\frac{11}{30} \approx 36.7\%$	$\frac{9}{30} = 30\%$	$\frac{2}{30} \approx 6.7\%$	$\frac{2}{30} \approx 6.7\%$	$\frac{30}{30} = 100\%$
Trigonometry	$\frac{3}{30} = 10\%$	$\frac{7}{30} \approx 23.3\%$	$\frac{12}{30} = 40\%$	$\frac{5}{30} \approx 16.7\%$	$\frac{3}{30} = 10\%$	$\frac{30}{30} = 100\%$

2.

Grades of Students

Class	A	B	C	D	F
Computer Programming	7	13	12	1	2
Journalism	8	11	4	1	0
Cinematography	15	9	8	1	0

Grades of Students

Class	A	B	C	D	F	Total
Computer Programming						
Journalism						
Cinematography						

3.

Student's Choice of Shakespeare Play to Study

Class	Hamlet	Macbeth	King Lear	Othello
Class A	9	10	13	5
Class B	14	8	7	8

Student's Choice of Shakespeare Play to Study

Class	Hamlet	Macbeth	King Lear	Othello
Class A				
Class B				
Total				

Name _____ Date _____

4.

Student's Choice of Musical to Perform

Class	Carousel	South Pacific	The King and I	The Sound of Music
Class A	8	5	14	9
Class B	11	8	12	4

Student's Choice of Musical to Perform

Class	Carousel	South Pacific	The King and I	The Sound of Music
Class A				
Class B				
Total				

5.

Favorite Lunch Item of Students

Class	Pizza	Salad	Chicken	Burger
Class A	12	3	10	8
Class B	9	8	13	5
Class C	7	9	7	12

Favorite Lunch Item of Students

Class	Pizza	Salad	Chicken	Burger	Total
Class A					
Class B					
Class C					

6.

Favorite Gym Activity of Students

Class	Volleyball	Basketball	Softball	Flag Football
Class A	9	10	4	12
Class B	12	5	7	6
Class C	9	3	14	6

Favorite Gym Activity of Students

Class	Volleyball	Basketball	Softball	Flag Football	Total
Class A					
Class B					
Class C					

Name _____ Date _____

The relative frequency conditional distribution shows the sports that female and male students choose to participate in. Use the relative frequency conditional distribution to answer each question.

Favorite Sports of Students

Class	Basketball	Soccer	Track & Field	Swimming	Total
Female Students	$\frac{18}{85} \approx 21.2\%$	$\frac{14}{85} \approx 16.5\%$	$\frac{22}{85} \approx 25.9\%$	$\frac{31}{85} \approx 36.5\%$	$\frac{85}{85} = 100\%$
Male Students	$\frac{24}{97} \approx 24.7\%$	$\frac{19}{97} \approx 19.6\%$	$\frac{20}{97} \approx 20.6\%$	$\frac{34}{97} \approx 35.1\%$	$\frac{97}{97} = 100\%$

7. What percent of female students participate in track & field?

Of the female students, 25.9% participate in track & field.

8. What percent of male students participate in basketball?

9. Which sport is the most popular among female students?

10. Which sport is the least popular among male students?

11. Which sport is the least popular among female students?

12. Which sport is the most popular among male students?

10

Name _____ Date _____

Oh! Switch the Station!

Drawing Conclusions from Data

Problem Set

A student committee at South Park High School must decide on a location for this year's senior picnic. They take a survey of three senior classes to help make their decision. The data from the survey is shown in the table. For each question, create a distribution to support your answer.

Class	Location
Class A	Beach
Class A	Beach
Class A	Water Park
Class B	Water Park
Class B	Beach
Class B	Beach
Class B	Amusement Park
Class C	Amusement Park
Class C	Amusement Park
Class A	Beach
Class A	Beach
Class A	Beach
Class C	Amusement Park
Class C	Amusement Park
Class B	Water Park
Class B	Amusement Park
Class A	Amusement Park
Class B	Water Park
Class C	Water Park
Class B	Water Park
Class C	Amusement Park

Class	Location
Class C	Amusement Park
Class B	Water Park
Class B	Water Park
Class C	Amusement Park
Class A	Beach
Class A	Water Park
Class B	Water Park
Class B	Water Park
Class B	Beach
Class C	Beach
Class A	Beach
Class A	Beach
Class C	Beach
Class B	Water Park
Class C	Water Park
Class B	Beach
Class C	Beach
Class B	Water Park
Class C	Water Park
Class A	Amusement Park
Class A	Beach

1. Which location is most popular among all three classes?

Frequency marginal distribution table:

Favorite Senior Picnic Location of Students

Class	Beach	Amusement Park	Water Park	Total
Class A	## //// 9	/// 2	// 2	13
Class B	//// 4	// 2	## ## 10	16
Class C	/// 3	## // 7	/// 3	13
Total	16	11	15	42

The beach is the most popular location among all three classes.

2. Which location is least popular among all three classes?

Name _____ Date _____

3. Which location is most preferred by Class B?

4. Which location is least preferred in Class A?

5. Which class had the highest percentage of students prefer the water park as the location for the senior picnic?

6. Which class least preferred the amusement park as the location for the senior picnic?

Name _____ Date _____

7. Which class had the most students in agreement as to their preferred location within the class?

8. Which class made up the smallest percentage of the students who supported the most popular overall location, the beach?

9. Which class made up the highest percentage of the students who supported the least popular overall location, the amusement park?

10. Which class made up the highest percentage of the students who supported the water park as their favorite senior picnic location?
