Name _____ Date _____

Two-Way Tables
For use with Exploration 11.4

Essential Question   How can you read and make a two-way table?

1   EXPLORATION: Reading a Two-Way Table

Work with a partner. You are the manager of a sports shop. The two-way tables show the numbers of soccer T-shirts in stock at your shop at the beginning and end of the selling season. (a) Complete the totals for the rows and columns in each table. (b) How would you alter the number of T-shirts you order for next season? Explain your reasoning.

Beginning of season		S	M	L	XL	XXL	Total
	blue/white	5	6	7	6	5	
	blue/gold	5	6	7	6	5	
Color	**red/white**	5	6	7	6	5	
	black/white	5	6	7	6	5	
	black/gold	5	6	7	6	5	
	Total						**145**

(Column header "T-Shirt Size" spans S, M, L, XL, XXL)

End of season		S	M	L	XL	XXL	Total
	blue/white	5	4	1	0	2	
	blue/gold	3	6	5	2	0	
Color	**red/white**	4	2	4	1	3	
	black/white	3	4	1	2	1	
	black/gold	5	2	3	0	2	
	Total						

(Column header "T-Shirt Size" spans S, M, L, XL, XXL)
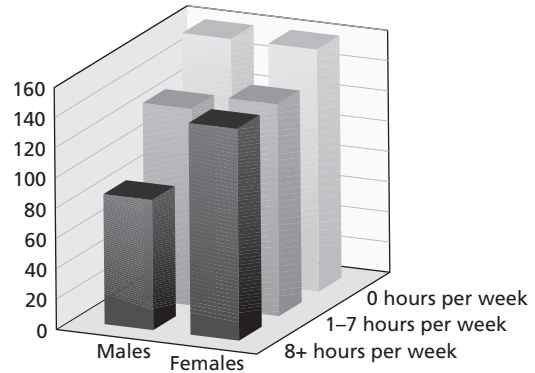
11.4 Two-Way Tables (continued)

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2 **EXPLORATION:** Making a Two-Way Table

Work with a partner. The three-dimensional bar graph shows the numbers of hours students work at part-time jobs.

  a. Make a two-way table showing the data. Use estimation to find the entries in your table.

Part-Time Jobs of Students at a High School

  b. Write two observations that summarize the data in your table.

Communicate Your Answer

  3. How can you read and make a two-way table?

11.4 Notetaking with Vocabulary
For use after Lesson 11.4

In your own words, write the meaning of each vocabulary term.

two-way table

joint frequency

marginal frequency

joint relative frequency

marginal relative frequency

conditional relative frequency

Core Concepts

Relative Frequencies

A **joint relative frequency** is the ratio of a frequency that is not in the "total" row or the "total" column to the total number of values or observations.

A **marginal relative frequency** is the sum of the joint relative frequencies in a row or column.

When finding relative frequencies in a two-way table, you can use the corresponding decimals or percents.

Notes:

11.4 **Notetaking with Vocabulary** (continued)

Conditional Relative Frequencies

A **conditional relative frequency** is the ratio of a joint relative frequency to the marginal relative frequency. You can find a conditional relative frequency using a row total or a column total of a two-way table.

Notes:

Extra Practice

In Exercises 1 and 2, find and interpret the marginal frequencies.

1.

		Attend College	
		Yes	**No**
Gender	**Male**	98	132
	Female	120	88

2.

		Own a Car	
		Yes	**No**
Gender	**Male**	54	136
	Female	45	137

3. You conduct a survey that asks 85 students in your school whether they are in Math Club or Chess Club. Thirty-five of the students are in Math Club, and 20 of those students are also in Chess Club. Thirty-eight of the students are not in Math Club or Chess Club. Organize the results in a two-way table. Include the marginal frequencies.

11.4 **Notetaking with Vocabulary (continued)**

4. Make a two-way table that shows the joint and marginal relative frequencies.

		Read *Catcher in the Rye*	
		Yes	**No**
Gender	**Male**	96	80
	Female	54	88

5. A company is organizing a baseball game for their employees. The employees are asked whether they prefer to attend a day game or a night game. They are also asked whether they prefer to sit in the upper deck or lower deck. The results are shown in a two-way table. Make a two-way table that shows the conditional relative frequencies based on the row totals. Given that an employee prefers to go to a day game, what is the conditional relative frequency that he or she prefers to sit in the lower deck?

		Seat	
		Upper	**Lower**
Game Time	**Day**	28	34
	Night	22	52