Got It? Do this problem to find out.

a. There are 150 children at summer camp and 71 signed up for swimming. There were a total of 62 children that signed up for canoeing and 28 of them also signed up for swimming. Construct a two-way table summarizing the data.

	Canoeing	No Canoeing	Total
Swimming	28	43	71
No Swimming	34	45	79
Total	62	88	150

Show your work.

Got It? Do this problem to find out.

b. Find and interpret the relative frequencies of students in the survey by column. Round to the nearest hundredth if necessary.

	MP3 Player	No MP3 Player
Cell Phone	$57; \frac{57}{70} \approx 0.81$	$21; \frac{21}{30} \approx 0.70$
No Cell Phone	$13; \frac{13}{70} \approx 0.19$	$9; \frac{9}{30} \approx 0.30$
Total	$70; 1.00$	$30; 1.00$

b. **Sample answer: The relative frequency value of 0.81 in one of the cells strongly suggests that students that own an MP3 player also own a cell phone.**

Guided Practice

1. Eloise surveyed the students in her cafeteria and found that 38 males agree with the new cafeteria rules while 70 do not. There were 92 females surveyed and 41 of them agree with the new cafeteria rules. Construct a two-way table summarizing the data. (Example 1)

	Agree with Rules	Do Not Agree with Rules	Total
Males	38	70	108
Females	41	51	92
Total	79	121	200

2. The two-way table shows how some students get their news. Find and interpret the relative frequencies of students in the survey by row. (Example 2)

Sample answer: Over $\frac{3}{4}$ of 7th and 8th graders get their news by the Internet.

	TV	Internet	Total
7th grade	13; 0.21	49; 0.79	62; 1.00
8th grade	20; 0.23	68; 0.77	88; 1.00
Total	33	117	150

3. **e** **Building on the Essential Question** How is a two-way table used when determining possible associations between two different categories from the same sample group?

Sample answer: You can find the relative frequencies based on the data in the table and use those to draw conclusions about associations.

Rate Yourself!

How well do you understand two-way tables? Circle the image that applies.

Clear   Somewhat Clear   Not So Clear

For more help, go online to [Tutor]

eHelp

1 One hundred customers in a restaurant were asked whether they liked chicken or beef and whether they liked rice or pasta. Out of 30 customers that liked rice, 20 liked chicken. There were 60 customers that liked chicken. Construct a two-way table summarizing the data. (Example 1)

	Chicken	Beef	Total
Rice	20	10	30
Pasta	40	30	70
Total	60	40	100

2. The two-way table shows the number of students that do or do not do chores at home and whether they receive an allowance or not. Find and interpret the relative frequencies of students in the survey by columns. (Example 2)

	Allowance	No Allowance	Total
Chores	13; 0.72	3; 0.43	16
No Chores	5; 0.28	4; 0.57	9
Total	18; 1.00	7; 1.00	25

Sample answer: Most students that receive an allowance do chores. About half of the students that do not receive an allowance do chores.

3 The two-way table shows the number of students that message on a daily basis. Find and interpret the relative frequencies of students in the survey by rows.
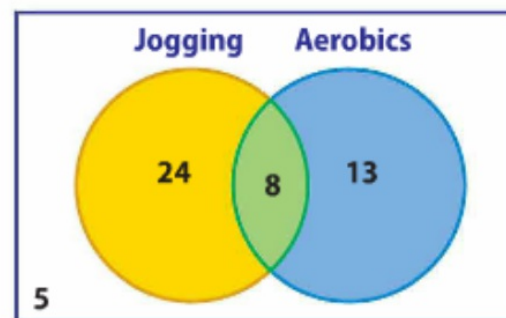(Example 2)

	Text Message	Instant Message	Total
7th graders	59; 0.70	25; 0.30	84; 1.00
8th graders	59; 0.59	41; 0.41	100; 1.00
Total	118	66	184

Sample answer: Many more 7th grade students text message than instant message. The eighth grade is split more evenly.

4. **CCSS** **Use Math Tools** The Venn diagram shows the number of students that exercise in different ways. Construct a two-way table that displays the data. Find and interpret the relative frequencies by column. **Sample answer:**

	Jog	Do not Jog	Total
Aerobics	8; 0.25	13; 0.72	21
No Aerobics	24; 0.75	5; 0.28	29
Total	32; 1.00	18; 1.00	50

Most people that jog tend to not perform aerobics.

H.O.T. Problems Higher Order Thinking

5. **CCSS** **Find the Error** Jasmine is interpreting data about her classmates that have an after-school job and are on the honor role. Out of 100 students that do not have a job, 67 of them are on the honor roll. Find her mistake and correct it.

Sample answer: Jasmine should have said, "More than half of the students that do not have an after-school job are on the honor roll."

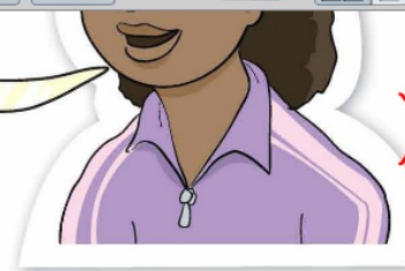> In my class, more than half of the students that are on the honor roll do not have after school jobs.

6. **CCSS** **Use Math Tools** Survey your classmates to find out if they have a curfew and if they have assigned chores at home. On a separate sheet of paper, make a two-way table that displays the results. Then interpret the results.

See students' work.

Sample answer: Jasmine should have said, "More than half of the students that do not have an after-school job are on the honor roll."

> In my class, more than half of the students that are on the honor roll do not have after school jobs.

6. **CCSS** **Use Math Tools** Survey your classmates to find out if they have a curfew and if they have assigned chores at home. On a separate sheet of paper, make a two-way table that displays the results. Then interpret the results.

   See students' work.

7. **CCSS** **Persevere with Problems** The two-way table below shows the number of students with each hair color and eye color.

Hair Color				
Black	Brown	Red	Blond	Total

[Handwritten annotations on right side:]

No curfew, but has no chores

7/10

	curfew	No curfew	Total
Chores	3	7	8, 10
No chores	O	O	O
	3	7	10

7. **CCSS** **Persevere with Problems** The two-way table below shows the number of students with each hair color and eye color.

		Hair Color				
		Black	Brown	Red	Blond	Total
Eye Color	Brown	7	12	3	1	23
	Blue	2	8	2	9	21
	Hazel	2	5	1	1	9
	Green	1	3	1	2	7
	Total	12	28	7	13	60

Which is greater: the percentage of the brown-haired students with blue eyes or the percentage of the red-haired students with brown eyes?

the percentage of red-haired students with brown eyes

8. **CCSS** **Model with Mathematics** The two-way table at the right shows the number of hours students studied and whether they studied independently or with a study group. Write two questions that could be answered using the relative frequencies of the data in the table. Then ask a classmate to solve your questions.

See students' work.

	Studied Less Than 2 Hours	Studied More Than 2 Hours
Studied Independently	12	4
Studied with a Study Group	8	11