ALBERT

Name _____ Date _____

Two-Way Tables Worksheet

Grade 8 · Common Core 8.SP.A.4

> Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?

Practice

Builds the skill step by step.

1. The two-way table shows survey results from 50 students about curfews on school nights and chores at home. How many students have a curfew?

	Chores	No chores	Total
Curfew	18	6	24
No curfew	8	18	26
Total	26	24	50

2. The two-way table shows survey results from 50 students about curfews on school nights and chores at home. How many students have chores but no curfew?

	Chores	No chores	Total
Curfew	18	6	24
No curfew	8	18	26
Total	26	24	50

3. The two-way table shows survey results from 50 students about curfews on school nights and chores at home. How many students have no chores?

	Chores	No chores	Total
Curfew	18	6	24
No curfew	8	18	26
Total	26	24	50

4. The two-way table shows survey results from 50 students about curfews on school nights and chores at home. Of the students with a curfew, what percent have chores?

	Chores	No chores	Total
Curfew	18	6	24
No curfew	8	18	26
Total	26	24	50

5. What does a two-way table show?

   A. The average of two sets of numbers

   B. How often each combination of two categories occurs in the same group

   C. How one measurement changes over time

   D. A line of best fit for two variables

6. The two-way table shows how many students in two grades have a dog. What number belongs in the empty cell?

	Dog	No dog	Total
7th grade	12	?	30
8th grade	14	16	30
Total	26	34	60

7. The two-way table shows survey results from 50 students about curfews on school nights and chores at home. What percent of all 50 students have both a curfew and chores?

	Chores	No chores	Total
Curfew	18	6	24
No curfew	8	18	26
Total	26	24	50

8. Which pair of variables could be shown in a two-way table?

   A. Height and arm span

   B. Hours of sleep and test score

   C. Favorite sport and grade level

   D. Temperature and ice cream sales

9. In a two-way table, 12 seventh graders and 15 eighth graders chose soccer as their favorite sport. What is the column total for soccer?

10. The two-way table shows survey results from 50 students about curfews on school nights and chores at home. What fraction of the students with no curfew have no chores? Write it in simplest form.

	Chores	No chores	Total
Curfew	18	6	24
No curfew	8	18	26
Total	26	24	50

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On Level

Grade-level practice.

1. The two-way table shows whether 100 students play a sport and whether they play a musical instrument. What percent of the students who play a sport also play an instrument?

	Instrument	No instrument	Total
Plays a sport	15	45	60
No sport	20	20	40
Total	35	65	100

2. The two-way table shows whether 100 students play a sport and whether they play a musical instrument. What percent of the students who don't play a sport play an instrument?

	Instrument	No instrument	Total
Plays a sport	15	45	60
No sport	20	20	40
Total	35	65	100

3. The two-way table shows whether 100 students play a sport and whether they play a musical instrument. Is there evidence of an association between playing a sport and playing an instrument?

	Instrument	No instrument	Total
Plays a sport	15	45	60
No sport	20	20	40
Total	35	65	100

A. Yes; 25% of sport players play an instrument, compared with 50% of other students.

B. No; the same number of students play an instrument in each group.

C. Yes; more students play a sport than an instrument.

D. No; you can't tell anything from a two-way table.

4. In a survey of 95 students, 50 eat breakfast. Of the 50 sixth graders surveyed, 30 eat breakfast. The other students are seventh graders. How many seventh graders eat breakfast?

5. The two-way table shows whether 100 students play a sport and whether they play a musical instrument. Of the students who play an instrument, what percent play a sport? Round to the nearest tenth.

	Instrument	No instrument	Total
Plays a sport	15	45	60
No sport	20	20	40
Total	35	65	100

6. The two-way table shows survey results from 50 students about curfews on school nights and chores at home. Is there evidence that students who have a curfew also tend to have chores? Use relative frequencies to explain.

	Chores	No chores	Total
Curfew	18	6	24
No curfew	8	18	26
Total	26	24	50

7. Of 20 students, 12 like pizza. Of those, 8 also like salad. Of the students who don't like pizza, 5 like salad. How many students like neither pizza nor salad?

8. The two-way table shows whether 100 students play a sport and whether they play a musical instrument. What percent of all 100 students play both a sport and an instrument?

	Instrument	No instrument	Total
Plays a sport	15	45	60
No sport	20	20	40
Total	35	65	100

9. The table shows handedness for 50 boys and 40 girls. Which conclusion is supported?

	Left-handed	Right-handed	Total
Boys	5	45	50
Girls	4	36	40
Total	9	81	90

A. Girls are more likely to be left-handed.

B. Most students are left-handed.

C. Boys are more likely to be left-handed, because 5 is more than 4.

D. There is no association; 10% of each group is left-handed.

10. The two-way table shows survey results from 50 students about curfews on school nights and chores at home. How many more students without a curfew than with a curfew have no chores?

	Chores	No chores	Total
Curfew	18	6	24
No curfew	8	18	26
Total	26	24	50

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Challenge

Multi-step and word problems that stretch it.

1. A school surveyed 120 students: 70 eighth graders and 50 seventh graders. 50 of the students ride the bus, and 30 of them are eighth graders. What percent of the seventh graders ride the bus?

2. In the survey of 120 students, about 42.9% of eighth graders (30 of 70) and 40% of seventh graders (20 of 50) ride the bus. Is there strong evidence of an association between grade and riding the bus? Explain.

3. In Group A, 30 of 100 students said yes. In Group B, 20 of 40 students said yes. Sam says Group A was more likely to say yes because 30 is more than 20. What is his error?

   A. There is no error.

   B. He compared counts instead of relative frequencies; 30% of A and 50% of B said yes.

   C. He should have compared the number who said no.

   D. He should have added the groups together.

4. The two-way table shows survey results from 50 students about curfews on school nights and chores at home. Of the students who have chores, what percent have a curfew? Round to the nearest tenth.

	Chores	No chores	Total
Curfew	18	6	24
No curfew	8	18	26
Total	26	24	50

5. In Group X, 12 of 40 students like a new lunch item. Group Y has 60 students. How many in Group Y would have to like it for there to be no association between group and liking the item?

6. In a survey of 200 people, 40% own a pet. Of the pet owners, 75% walk every day. How many pet owners walk every day?

7. The two-way table shows whether 100 students play a sport and whether they play a musical instrument. Which conclusion does the table support?

	Instrument	No instrument	Total
Plays a sport	15	45	60
No sport	20	20	40
Total	35	65	100

A. Students who don't play a sport were twice as likely to play an instrument as sport players.

B. Playing a sport causes students to quit instruments.

C. Most students play an instrument.

D. Sport players are more likely to play an instrument.

8. The two-way table shows survey results from 50 students about curfews on school nights and chores at home. What percent of all 50 students have neither a curfew nor chores?

	Chores	No chores	Total
Curfew	18	6	24
No curfew	8	18	26
Total	26	24	50

9. The two-way table shows survey results from 50 students about curfews on school nights and chores at home. Suppose 3 of the students with a curfew and no chores start doing chores. What percent of the curfew students would then have chores?

	Chores	No chores	Total
Curfew	18	6	24
No curfew	8	18	26
Total	26	24	50

10. A class has 30 students: 18 boys and 12 girls. 10 boys and 6 girls play soccer. What percent of the girls play soccer?