

KEY

Two-Way Table
Classwork

45.

	Have a Cell Phone	Don't Have a Cell Phone	Total
Have a Landline Phone	26	5	31
Don't have a Landline Phone	35	3	38
Total	61	8	69

a. Fill in the totals.

How many people were surveyed?
How can you check your answer?

- b. How many people have a cell phone but don't have a landline phone? 35
- c. How many people don't have a cell phone but have a landline phone? 5
- d. How many people don't have a cell phone nor a landline phone? 3
- e. How many people have a landline phone? 31
- f. How many people don't have a landline phone? 38

46. Using the table above, find the relative frequencies by row and by column.

	Have a Cell Phone	Don't Have a Cell Phone	Total
Have a Landline Phone	$\frac{26}{31}$ (.84)	$\frac{5}{31}$ (.16)	$\frac{31}{31}$ (1)
Don't have a Landline Phone	$\frac{35}{38}$ (.92)	$\frac{3}{38}$ (.08)	$\frac{38}{38}$ (1)
Total	$\frac{61}{69}$ (.88)	$\frac{8}{69}$ (.12)	$\frac{69}{69}$ (1)

For those who have a landline 84% also have a cell phone
For those who don't have a landline 92% have a cell phone

	Have a Cell Phone	Don't Have a Cell Phone	Total
Have a Landline Phone	$\frac{26}{61}$.43	$\frac{5}{8}$.625	$\frac{31}{69}$.45
Don't have a Landline Phone	$\frac{35}{61}$.57	$\frac{3}{8}$.375	$\frac{38}{69}$.55
Total	$\frac{61}{61}$ 1	$\frac{8}{8}$ 1	$\frac{69}{69}$ 1

- a. What is the relative frequency of people who have a cell phone but do not have a landline phone to all people that have a cell phone? 0.57 (use column)

- b. What is the relative frequency of people that have a have a cell phone and have a landline phone to all people who have a landline phone? 0.84 (use row)

47. Sam surveyed his classmates to find out if they played a sport after school or practiced in the school band. Fourteen of his classmates played a sport. Of those 14, only 5 participated in the school band. Eight students played in the school band, out of those 8, 3 did not play sports. There were ten students who did not play a sport nor participate in the school band.

Identify categorical data!

- a. Fill out a two-way table using the data.

	Play a Sport	No Sport	Total
Play in Band	5	3	8
No Band	9	10	19
Total	14	13	27

- b. Find the relative frequencies by row.

	Play a Sport	No Sport	Total
Plays in Band	$\frac{5}{8}$.625	$\frac{3}{8}$.375	$\frac{8}{8}$ 1
No Band	$\frac{9}{19}$.47	$\frac{10}{19}$.53	$\frac{19}{19}$ 1
Total	$\frac{14}{27}$.52	$\frac{13}{27}$.48	$\frac{27}{27}$ 1

- c. Find the relative frequencies by column.

	Play Sport	No Play	Total
Play Band	$\frac{5}{14}$.36	$\frac{3}{13}$.23	$\frac{8}{27}$.30
No Band	$\frac{9}{14}$.64	$\frac{10}{13}$.77	$\frac{19}{27}$.70
Total	$\frac{14}{14}$ 1	$\frac{13}{13}$ 1	$\frac{27}{27}$ 1

- d. How many people are in a band and play sports after school? 5
- e. How many people play sports but do not participate in band? 9
- f. How many people do not play sports but are in band? 3
- g. What is the relative frequency of students who do not play sports and are in the band to all students who play sports? .23 (column)
- h. What is the relative frequency of students who are in band and play sports to all students who practice in band? 0.625 (row)

Homework

48.

	Computer Games	Video Games	Total
Elementary School Students	23	46	69
High School Students	56	27	83
Total	79	73	152

- a. Fill in the totals.
- b. How many elementary students play computer games? 23
- c. How many high school students play video games? 27
- d. How many elementary school students participated in this survey? 69
- e. How many high school students participated in this survey? 83

49. Using data from the previous table, calculate the relative frequencies by row and by column.

	Computer Games	Video Games	Total
Elementary School Students	$\frac{23}{69} .33$	$\frac{46}{69} .67$	$\frac{69}{69} 1$
High School Students	$\frac{56}{83} .67$	$\frac{27}{83} .33$	$\frac{83}{83} 1$
Total	$\frac{79}{152} .52$	$\frac{73}{152} .48$	$\frac{152}{152} 1$

33% elem play comp
67% elem play video

Row

Column

	Computer Games	Video Games	Total
Elementary School Students	23/79 .29	46/73 .63	69/152 .45
High School Students	56/79 .71	27/73 .37	83/152 .55
Total	79/79 1	73/73 1	152/152 1

a. What is the relative frequency of elementary students that play computer games to all students that play computer games? 0.29 (column)

b. What is the relative frequency of high school students that play computer games to the total number of high school students? 0.67 (row)

c. What is the relative frequency of high school students that play video games to the total number of students that play video games? 0.37 (column)

50. The school district's records show that there are 90 elementary students. A total of 175 students attend the middle school and elementary school. The students either walk or ride the bus to school. There are 30 elementary students that walk to school, and there are 10 middle school students that take the bus to school. There are a total of 70 students that take the bus to school. There are 75 middle school students that walk to school.

a. Fill out the two-way table with the information given.

	Walk	Ride bus	Total
Elementary	30	60	90
Middle	75	10	85
Total	105	70	175

b. Find the relative frequencies by row.

	W	B	Total
E	30/90 .33	60/90 .67	90/90 1
M	75/85 .88	10/85 .12	85/85 1
Total	105/175 .60	70/175 .40	175/175 1

c. Find the relative frequencies by column.

	W	R	T
E	$\frac{30}{105} .29$	$\frac{60}{70} .86$	$\frac{90}{175} .51$
M	$\frac{75}{105} .71$	$\frac{10}{70} .14$	$\frac{85}{175} .49$
T	$\frac{105}{105} 1$	$\frac{70}{70} 1$	$\frac{175}{175} 1$

- d. How many students walk to school? 105
- e. How many elementary students ride the bus to school? 60
- f. How many middle school students are in the school district? 85
- g. What is the relative frequency of elementary students that walk to school to the total number of students that walk to school? 0.29 (column)
- h. What is the relative frequency of elementary students that walk to school to the total number of elementary students? 0.33 (row)
- i. What is the relative frequency of middle school students that walk to school to the total number of middle school students? 0.88 (row)
- j. Is there an association between grade level and how students get to school? yes

More younger students ride the bus than walk.

Why do you think this is so?

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