

Two Way Tables

Two way tables are used to display information. They can be used to find probabilities too. The two way table below shows information about the methods people go to school.

	Walk	Bus	Train	Car	Total
Boy	290	131	52	101	574
Girl	408	49	13	144	614
Teacher	2	1	5	32	40
Total	700	181	70	277	1228

Notice that the entries in each row add up to the total in the rightmost column, so that in the row labelled 'Boy', $290+131+52+101=574$ and the entries in each column add up to the total given in the bottom row, so that for the column labelled 'Walk', $290+408+2=700$.

If we wanted to find the probability that a person picked at random was a boy who walked to school, we would divide the

number of boys who walk to schools by the total number of people, obtaining $\frac{290}{1228} = \frac{145}{614}$.

If we wanted to find the probability that a person picked at random travelled by car to school, we would divide the number of

people who travelled by car by the total number of people, obtaining $\frac{277}{1228}$.

If we had a partially completed table, we can often complete it using the fact that the rows add to give the rightmost entry and the columns add to give the entries in the bottom row. Suppose we have the partially completed table below.

	Walk	Bus	Train	Car	Total
Boy	290	131			574
Girl		49	13	144	
Teacher	2			32	40
Total		181	70	277	

We complete the table by looking for rows or columns with single missing entries, one at a time, indicated in green.

	Walk	Bus	Train	Car	Total
Boy	284	136			592
Girl		48	12	149	654
Teacher	2	6		32	46
Total		190	87	284	

	Walk	Bus	Train	Car	Total
Boy	284	136			592
Girl		48	12	149	654
Teacher	2	6	6	32	46
Total		190	87	284	

	Walk	Bus	Train	Car	Total
Boy	284	136	69		592
Girl		48	12	149	654
Teacher	2	6	6	32	46
Total		190	87	284	

	Walk	Bus	Train	Car	Total
Boy	284	136	69	103	592

Girl		48	12	149	654
Teacher	2	6	6	32	46
Total		190	87	284	

	Walk	Bus	Train	Car	Total
Boy	284	136	69	103	592
Girl	445	48	12	149	654
Teacher	2	6	6	32	46
Total		190	87	284	

	Walk	Bus	Train	Car	Total
Boy	284	136	69	103	592
Girl	445	48	12	149	654
Teacher	2	6	6	32	46
Total	731	190	87	284	

	Walk	Bus	Train	Car	Total
Boy	284	136	69	103	592
Girl	445	48	12	149	654
Teacher	2	6	6	32	46

Total	731	190	87	284	1292
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