

8-SP.4 What's Your Favorite Subject?

Alignments to Content Standards: 8.SP.A.4

Task

All the students at a middle school were asked to identify their favorite academic subject and whether they were in 7th grade or 8th grade. Here are the results:

Grade	Favorite Subject by Grade				Totals
	English	History	Math/Science	Other	
7th Grade	38	36	28	14	116
8th Grade	47	45	72	18	182
Totals	85	81	100	32	298

Is there an association between favorite academic subject and grade for students at this school? Support your answer by calculating appropriate relative frequencies using the given data.

IM Commentary

Either row percentages or column percentages are appropriate for the solution, since there is no clear explanatory/response relationship between the variables. Whether the student sees a strong association or not is less important than whether his or her answer uses the data appropriately and understands that an association means that the distribution of favorite subject is different for 7th graders and 8th graders.

Another approach is to observe that 39% of the students are 7th graders. If grade is not associated with favorite subject, you would expect about 39% of the students picking a particular subject as their favorite to be 7th graders.

[Edit this solution](#)

Solution

Row relative frequencies (that is, distribution of the variable “Favorite Subject” for each grade) are given in the table below.

Grade	Favorite Subject by Grade			
	English	History	Math/Science	Other
7th Grade	0.328	0.310	0.241	0.121
8th Grade	0.258	0.247	0.396	0.099

There is some association between favorite subject and grade. A higher percentage of 7th graders than 8th graders prefer English and History (and - to a lesser extent - “other” subjects), while a higher percentage of 8th graders than 7th graders prefer Math/Science.



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