

1.2 - CONCLUSIONS AND ISSUES

“Female students like school more than male students do.”

What does the statement above mean? Do you agree with it? How do people make statements like this with confidence?

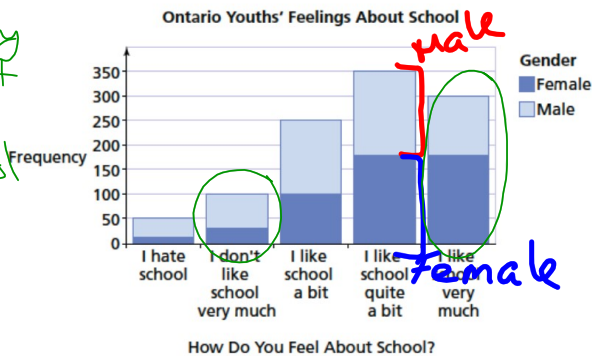
An important step in coming to this conclusion is gathering data. In this case, the data about male and female opinions of school were gathered using a survey and the data were then recorded in a table like the one shown here.

	A	B
1	Ontario Youths	
2	Gender	How do you feel about school?
3	F	3. I like school a bit.
4	F	1. I hate school.
5	F	4. I like school quite a bit.
6	F	5. I like school very much.
7	M	5. I like school very much.
8	F	1. I hate school.
9	M	2. I don't like school very much.
10	M	3. I like school a bit.
11	F	2. I don't like school very much.

Example 1 Do Female Students Like School More Than Male Students Do?

What follows is a **split-bar graph** showing the distribution of the responses to the question *How do you feel about school?* with each bar split by gender. Based on these data, do females like school more than males do?

- 3x as many male student "don't like" or hate school



More females chose "very much"

split-bar graph—a visual way of comparing information in which two different quantities are represented by the lengths of bars

The conclusion in **Example 1**, that females like school more than males do, raises some interesting issues.

One issue is the possible reasons for the results; that is, why do females like school more than males do? One theory is that students who hated school often were not doing well in school.

The students who were asked whether they liked school were also asked how well they were doing in school.

The results were added to the table, which follows (see giant chart on your page)

Example 2 Performance at School

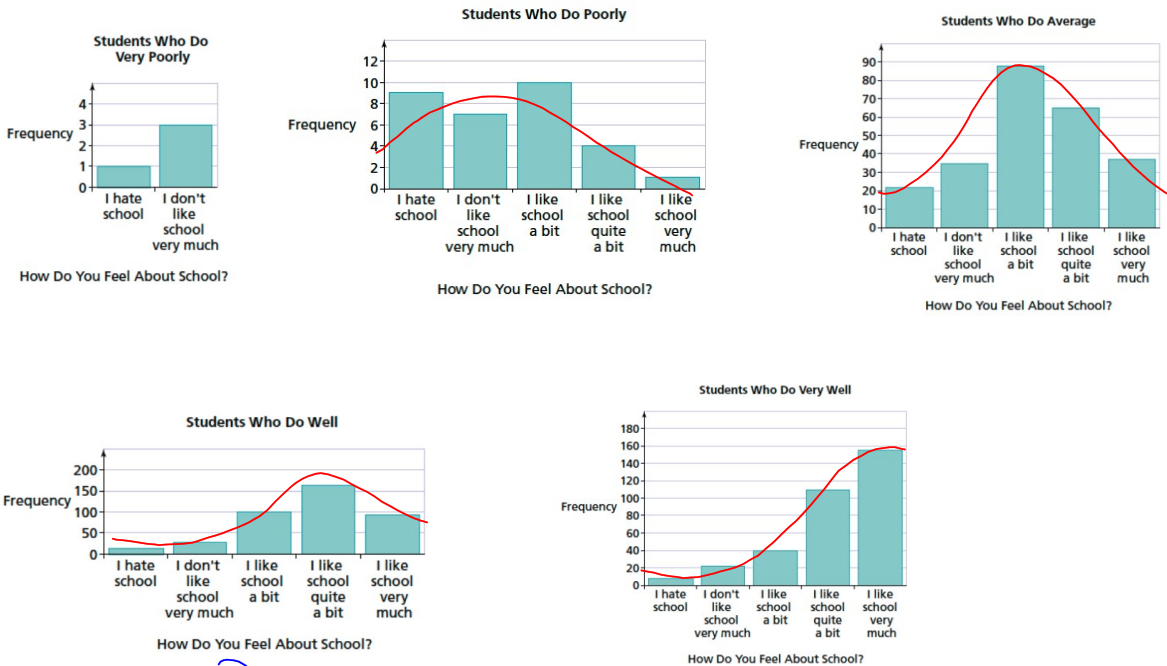
It seems reasonable to expect that students who are not doing well would not like school. Does the data support this conclusion? How confident are you in the results?

Based on these data, one might conclude that students hate school because they are not doing well.

This is, however, a very small sample to say with confidence that a relationship exists between performance at school and feelings about school. More data are needed to draw conclusions with more confidence.

Example 3 Large Amounts of Data to Justify Conclusions: Sample Size

The following graphs were created to show the data from 1046 students. Does the data from the population support the conclusion drawn from the sample?



Relation ≠ Causality

Sample —part of a population selected so as to gain information about the whole population

Causal relationship—where one variable directly affects another. Proving a causal relationship is the result of an in-depth study.

Practice: #1, 3-5, 9, 10, 12, 13