

INTERPRETING RESULTS

Drawing Conclusions

After collecting, organizing, and presenting the data from a scientific investigation, it is necessary to determine what the results mean. The goal of any experiment is to generate data that either support or fail to support your hypothesis. Nothing is proved by an experiment, but you can interpret the data and draw some conclusions from them. Any conclusions that you make must be supported by your results.

Use the tips below to develop your conclusions.

- First, write your results, and then compare your results to your hypothesis.
- Be careful not to make inferences about factors that you did not test.
- Make sure you have enough data before attempting to draw conclusions about your experiment. If your data sample is too small, your conclusions may be faulty.
- Be careful not to conclude a cause-and-effect relationship exists just because one event happened after another, especially if there are alternate ways to explain the second event.

Two groups of students carried out investigations based on the same hypothesis: If a bigger jar is placed over a candle, then the candle will burn longer, because more air is available. Use the data from each group, as shown below, to answer the following questions.

Group A**Table 1. Available Air and Combustion**

Jar Size	Time for Flame to Burn Out (sec)
Small	0.3
Medium	0.1
Large	0

Group B**Table 1. Available Air and Combustion**

Jar Size	Time for Flame to Burn Out (sec)			
	Trial 1	Trial 2	Trial 3	Trial 4
Small	0.2	0.5	0.6	0.4
Medium	0.1	0.9	0.9	0.8
Large	0.1	1.2	1.3	1.2

1. What do you think each group's conclusion would be from these data?

2. Which group's conclusion do you think is more reliable? Explain.

3. Why might Group A's data have turned out the way it did?

A student who owned a pet iguana noticed that it seemed to shed its skin more often when it spent more time under the heat lamp in its aquarium. The student tested the following hypothesis: If an iguana spends more time under a heat lamp, then it will shed more skin, because the heat lamp dries the iguana's skin. The student collected the data below.

Table 1. Skin Shed by Iguana

Time (days)	Skin Shed (cm ²)	Time (days)	Skin Shed (cm ²)
1	0	7	No data
2	0	8	2.0
3	0	9	3.5
4	0	10	3.5
5	1.5	11	4.0
6	No data	12	4.0

4. The student concluded that the data supported the hypothesis. What is wrong with that conclusion? Explain.

Challenge Another student looked at the iguana data and wrote a different conclusion: "If a wet sponge had been left in the aquarium, the iguana's skin would have stayed on." What is wrong with this conclusion?
