

CHAPTER 4	Investigation 4.B: Finding the Value of the Universal Gas Constant, $R$ Answer Key	BLM 4.2.9A
ANSWER KEY		

### Answers to Analysis Questions

1. The results will vary from group to group.
2. The percentage error is the absolute value of the difference between your result and the predicted result, divided by the predicted result and expressed as a percentage.
3. Possible ideas here could include: using different equipment, repeating measurements several times, taking more care with the measurements, and controlling for unforeseen influences.

### Answers to Conclusions Questions

4. When evaluating an experiment, think about three things:
  - Was the idea a good one?
  - If the idea was good, were the steps chosen the best set of steps to get the measurements?
  - Did you have the skills needed to use the equipment chosen?

Perhaps the same measurements would have worked better if done in a different order. Maybe some steps were not needed.

5. If you have a small mass of gas, you need a scale with the precision to give you a few significant digits, even with this small mass. Thermometers read to the nearest degree and may not be well-calibrated. If you use a barometer, it has to measure the actual pressure in the room. Has the barometer been checked for correct calibration? Mathematical mistakes are not technically an experimental error.
6. The need for safety precautions would come from deciding to use dangerous gases, heating gases in closed containers, or the use of hot plates and hot water. Be sure you have addressed safety concerns in your experiment.
7. Did you appreciate the opportunity to create and carry out your own experiment?