

CHAPTER 4	Investigation 4.A: Finding the Molar Mass of a Gas Answer Key	BLM 4.2.7A
ANSWER KEY		

### Answers to Analysis Questions

1. This is a straightforward step. Each group will have slightly different numbers here.
2. You will subtract the partial pressure of water from the pressure you measured inside your cylinder.
3. The ideal gas law will allow you to solve for the number of moles of gas you have. You will then know the mass and amount of the gas, which will allow you to calculate a molar mass.
4. The actual molar mass of butane is 58.14 g/mol.

### Answers to Conclusion Questions

5. Percentage experimental error will be different for each group. It is calculated by taking the absolute value of the difference between your result and the predicted result, dividing by the predicted result, and multiplying by 100 to express as a percentage.
6. Possible sources of error include:
  - An incorrect temperature caused by the temperature of the gas not being the same as the temperature of the water. (This is a small problem.)
  - An incorrect pressure caused by holding the cylinder at the wrong height in the water container. (This can be a big error if you are not careful.)
  - An incorrect volume caused by careless reading of the cylinder. (This should be a small error.)
  - An incorrect pressure caused by a barometer that has been adjusted to sea level pressure. (Hopefully this will not be a problem at all.)
7. The experimental design here is pretty good. In order to get more accurate results, more sophisticated measuring tools would be needed. For example, a digital thermometer would give results within a tenth of a degree precision.