**Honors Chemistry Quiz – KMT and Gas Laws**

1. What are the four postulates of the kinetic molecular theory (i.e. the principles which describe the basic properties of an ideal gas?) (8 pt)
2. Which of the underlying assumptions about the behavior of gas molecules (I’ve been referring to these as “postulates”) of the KMT do you believe is least accurate? Explain your answer. (4 pt)
3. In the review sheet for this quiz we discussed how the volume of an ideal gas at 0 K should be 0. Though it’s impossible to reach a temperature of 0 K in the real world, it has been experimentally determined that a gas simply won’t reach a volume of 0 no matter what you do. Explain this difference between what the KMT predicts and real-world observations. (5 pt)
4. I’ve got a gas that has a pressure of 4750 atm and a temperature of 200oC. If I were to heat this gas by 200o C, what would the new pressure of this gas be? (4 pt)
5. A baby piglet has a lung volume of about 56 mL[[1]](#footnote-1) and a normal body temperature of 39 degrees Celsius, and a lung pressure of 0.015 atm[[2]](#footnote-2). Given that R = 0.08206 Latm/mol K, what is the number of moles of air inside the pig’s lungs? (5 pt)
6. Define “kinetic energy.” (2 pt)

1. ## [Aging of the Normal Lung](https://www.sciencedirect.com/science/article/pii/B9780124045774000138), *Graeme R. Zosky, in* [*Comparative Biology of the Normal Lung (Second Edition)*](https://www.sciencedirect.com/book/9780124045774/comparative-biology-of-the-normal-lung)*, 2015*

   [↑](#footnote-ref-1)
2. E. De Robertis, J.M. Liu, S. Blomquist, P.L. Dahm, J. Thörne, B. Jonson

   European Respiratory Journal 2001 17: 703-711; DOI: 10.1183/09031936.01.17407030 [↑](#footnote-ref-2)