Dalton's Postulates

Name: _____

Show all work. Use scientific notation for any numbers over 1000.

1) Laughing gas is a compound formed from nitrogen and oxygen in which there are 1.75g of nitrogen for every 1.00g of oxygen. The composition of several nitrogen-oxygen compounds follows. Which of these is laughing gas?
   a) 6.35g nitrogen, 7.26g oxygen

   b) 4.63g nitrogen, 10.58g oxygen

   c) 8.84g nitrogen, 5.05g oxygen

   d) 9.62g nitrogen, 16.5g oxygen

   e) 14.3g nitrogen, 40.9g oxygen

2. The mass in grams of 1 atomic mass unit is $1.6605402 \times 10^{-24}$g. Use this value to calculate the average mass (in grams) of one atom of sodium.

3. Rust contains an iron-oxygen compound in which there are three oxygen atoms for every iron atom. In this compound, the iron to oxygen mass ratio is 2.325g Fe to 1.000g O. Another compound of iron and oxygen contains these elements in the ratio 2.616g Fe to 1.000g O. What is the ratio of iron to oxygen atoms in this second compound?

4.