

### ATOMIC SIZE MATH Q's

- 1) The mass of an electron is  $9.1 \times 10^{-28}$  g. Convert to mg
- 2) You have 5 grams of protons. How many protons is that?
- 3) The radius of a neutron is  $8.4 \times 10^{-16}$  m. Convert to km
- 4) What is the equation for density? (there are lots of resources to help you find this equation if you don't know!)
- 5) What is the density of a carbon nucleus in g/mL, if the mass of a C atom is  $1.994 \times 10^{-23}$ g, and the volume of a C atom is  $9.9 \times 10^{-39}$ mL?
- 6) Looking at your answer to Q5 – was Rutherford right in thinking the nucleus was very small but very dense?
- 7) The radius of a carbon atom is  $7 \times 10^{-11}$  m and the mass is  $1.994 \times 10^{-23}$ g. What is the density of the carbon atom? \*Remember that volume of a sphere is  $V = \frac{4}{3}\pi r^3$
- 8) Comparing your answer to Q5 and Q7, summarize what Rutherford discovered with his gold foil experiment. Use your numerical answers as evidence to support his theory of the structure of the atom. Use full sentences!

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