



1 (12 points total). Answer each of the following 3 parts of question 1.

a. Clearly and as completely as possible describe the structure of the following atoms and/or ions. [6 points in total for 1a.]



b. Give the number of significant figures for each of the following clearly describing how you come to this answer. If you wanted to do an accurate calculation, which number would you use (give me your reasoning). [3 points in total for 1b.]

$$5.1 \times 10^{-5} \rightarrow$$

$$512,000 \rightarrow$$

c. Convert the following numbers from scientific notation to conventional numbers or from conventional numbers to scientific notation, as required. [3 points in total for 1c.]

$$3.1 \times 10^5 =$$

$$342 =$$

$$0.000,002,1 =$$

2 (10 points total). A sample of metal ( $S = 0.85 \text{ J/g}^\circ$ ) was heated by 31 J and its temperature subsequently increased from  $146^\circ$  to  $152^\circ$ . What was its weight?

3 (8 points total). Clearly describe the similarity and differences between the liquid and solid phases of matter.