

Be sure to show all work, use the correct number of significant figures, circle final answers and use correct units in all problems.
ANSWERS appear in BOLD.

1. Match the term on the left with the correct phrase on the right (7 points)

- | | | |
|------------------|-----------------|---|
| A. Isotope | <u>F</u> | Smallest subatomic particle; negative charge |
| B. Atomic Number | <u>A</u> | Same atomic number, different mass number |
| C. Neutron | <u>E</u> | Positive subatomic particle |
| D. Mass Number | <u>G</u> | Bartender from Star Trek: Deep Space Nine, or something we didn't talk about in lecture |
| E. Proton | <u>C</u> | Largest subatomic particle |
| F. Electron | <u>B</u> | Number of protons |
| G. Quark | <u>D</u> | Number of protons and neutrons |

2. Calculate the atomic number and mass number for an atom with 24 protons, 28 neutrons and 21 electrons. What element is it? What is the atom's symbol? Give the symbol for this isotope in the form ${}^A_Z\text{X}$. (5 points)

This is chromium-52, or ${}^{52}_{24}\text{Cr}^{3+}$.

3. Classify each of the statements below as being True (T) or false (F). (1 point each, 8 points total)

- | | |
|--|-----------------|
| An elemental symbol is a capital letter, sometimes followed by a small letter | <u>T</u> |
| The properties of compounds are always the same as the properties of the elements from which they are formed | <u>F</u> |
| Two objects, both having a negative charge, repel each other | <u>T</u> |
| Two atoms of silicon each with a different number of neutrons can have the same mass number | <u>F</u> |
| The atomic number for each isotope of an element will be the same | <u>T</u> |
| Neutrons were the easiest of the subatomic particles to detect | <u>F</u> |
| Coulomb determined that most of the atom was empty | <u>F</u> |
| An isotope of titanium with 22 neutrons is written as titanium-22 | <u>F</u> |