Atomic Structure Practice

1. Fill in the blanks

Three fundamental particles of the atom are the proton, Neutron, and electron. At the center of each atom lies the atomic Nucleus which consists of p+ and n. The atomic number refers to the number of p+ in the nucleus. All atoms of the same element have the same number of p+, hence, the same atomic number.
Isotopes are atoms that have the same number of p+ but a different number of n°. An isotope is identified by its atomic mass number, which is the total number of n° and p+ in the nucleus. A carbon isotope that has 6 p+ and 6 N is identified as carbon-12, where 12 is the atomic mass number. A carbon isotope having 6 p and 8 n, on the other hand is carbon-14.

2. Fill in the chart.

	Element Name	Symbol	Atomic #	Mass #	# of p^+	# of e^-	# of n°	Net Charge	Atomic Mass
✓	Sulfur	^{32}S	16	32	16	16	16	0	32.06
*	Bromine	Br^{-1}	35	78	35	36	43	-1	79.9
*	lead (II)	Pb^{+2}	82	208	82	80	126	+2	207.2
✓	Platinum	Pt	78	204	78	78	126	0	195.0
✓	Chromium	^{51}Cr	24	51	24	24	27	0	51.98
*	Manganis	Mn	25	42	25	21	17	+3	54.93
*	Nitrogen	N	7	15	7	8	8	-1	14.01
*	Sulfur	S	16	35	16	18	19	-2	32.06
✓	Hydrogen	^{3}H	1	3	1	1	2	0	1.00
*	Chloride	Cl^{-1}	17	25	17	18	19	-1	35.45

3. Circle (or list) all neutral atoms in the chart above.

→ ✓ each Neutral

4. Star (or list) all the ions.

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5. How is a neutral gold atom differ than a neutral copper atom? How are they similar?

same- $p^+ = E^-$ within a Copper atom/or within a gold atom

different = # of P+ N are different

6. If you know the atomic number of an element, what other information can you figure out about the atom?

→ Identity of the atom

→ # of protons

7. What does a net charge of +3 mean?

3 more protons than Electrons

What does a net charge of -3 mean?

3 more e^- than p^+

8. How does an atom differ than an ion?

an atom is an ion, but in an atom #e^- ≠ p^+, so it has a charge.

9. Where do you find the mass in the atom?

in the Nucleus.

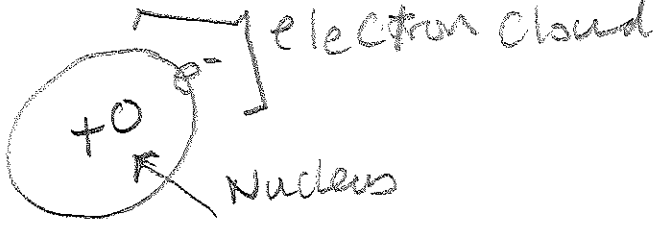
10. How does the mass number of each isotope compare to the atomic mass given on the periodic table?

the average of all 7 isotopes is the atomic mass.

11. How are the following isotopes different? Similar? ^1H ^2H ^3H

- Same # of p^+ & Same element
- different # of neutrons, different mass.

12. Draw a model of ^2H and label the protons, electrons, neutrons, electron cloud, nucleus.



13. Give an example of an atom that is neutral with a mass number of 10. Answers may vary.

Boron or B-10

14. Give an example of an ion that has a charge of +1. How many protons and electrons are in your ion example? Answers may vary.

K^{+1} — 19 p^+, 18 e^-

15. Give an example an ion that has a charge of -3. How many protons and electrons are in your ion example? Answers may vary.

N^{-3} — 10 e^-, 7 p^+