Atoms and Elements Worksheet

1. Which statement is not part of Dalton's atomic theory?
   a) Each element is composed of indestructible particles called atoms.
   b) All atoms of a given element have the same mass and other properties.
   c) Atoms are themselves composed of protons, neutrons, and electrons.
   d) Atoms combine in simple whole-number ratios to form compounds.

2. Which statement best summarizes the nuclear model of the atom that emerged from Rutherford's gold foil experiment?
   a) The atom is composed of a dense core that contains most of its mass and all of its positive charge, while low-mass negatively charged particles compose most of its volume.
   b) The atom is composed of a sphere of positive charge with many negatively charged particles within the sphere.
   c) Most of the mass of the atom is evenly distributed throughout its volume.
   d) All of the particles that compose an atom have exactly the same mass.

3. Which English physicist discovered the smaller and more fundamental particle called the electron?
   a) Ernest Rutherford gold foil experiment
   b) John Dalton atomic theory
   c) J.J. Thomson
   d) Antoine Lavoisier law of conservation of mass

4. What discoveries did the aforementioned English physicist discover about the electron?
   1) electrons are negatively charged
   2) electrons are much smaller than subatomic particles
   3) electrons are uniformly present
   4) atoms must have a positive and negative charge (neutral charge = P + E)

5. In the chart below, compare the parts of an atom:

Protons	Neutrons	Electrons
- positive charge - equal to atomic # - 1 amu - dwells in nucleus	- neutral charge - 1 amu - dwells in nucleus - causes isotopes	- negative charge - 1/2000th amu - dwells outside nucleus - causes ions positive = cations (loss of electrons) negative = anions (gain of electrons)

6. How many electrons does the predictable (most common) ion of fluorine contain?

a) 1
b) 4
c) 9
d) 10

7. What is the charge of the Cr ion that contains 21 electrons?

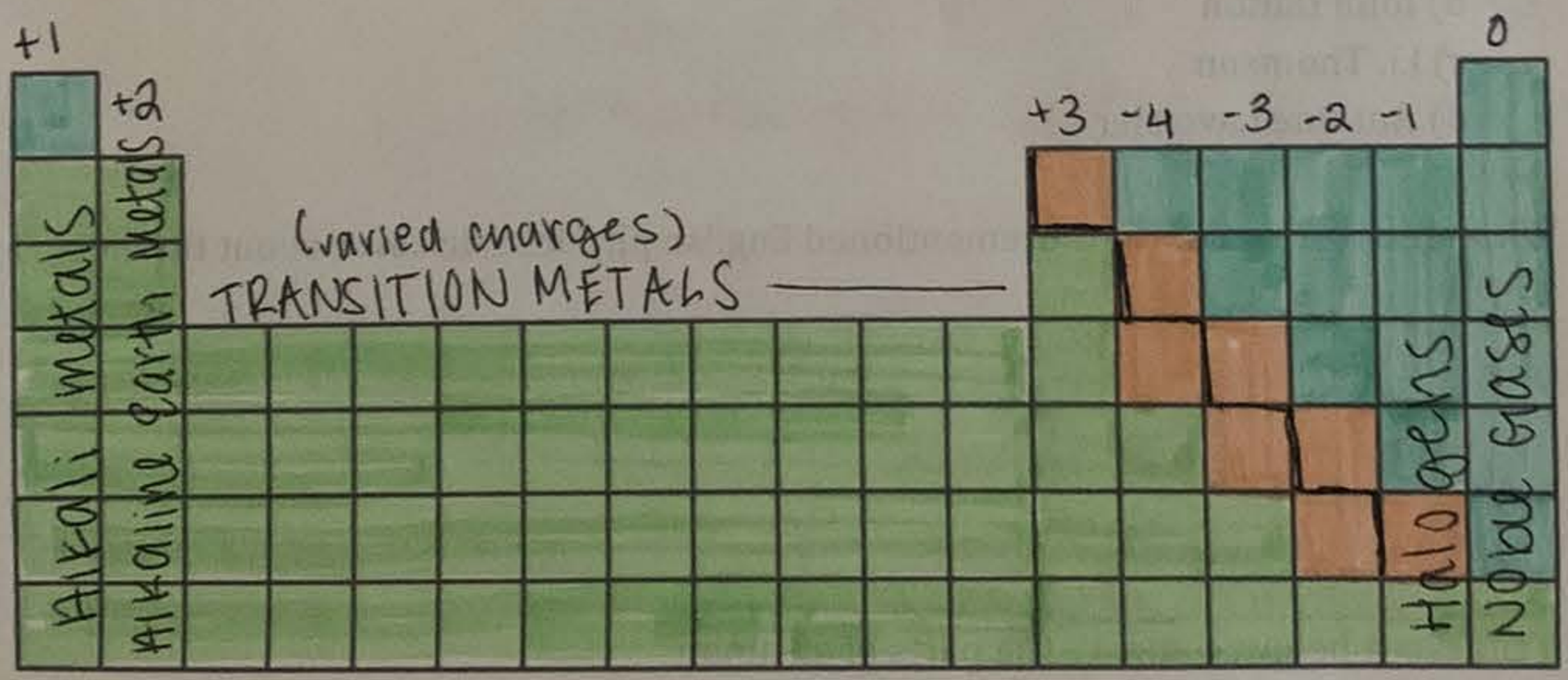
e) 2
f) 3
g) 2+
h) 3+

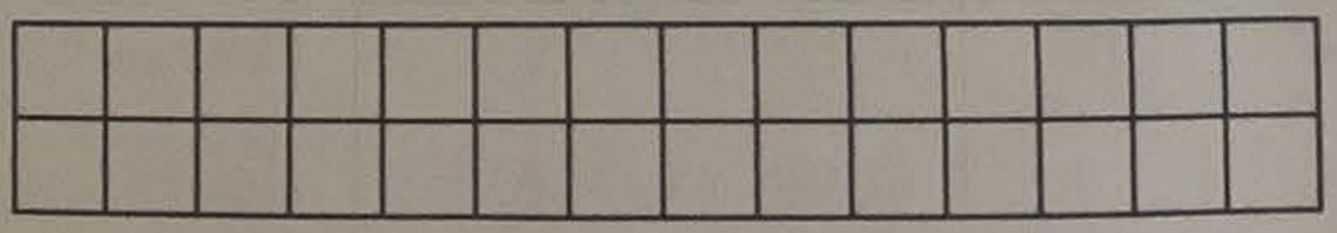
+24 protons
-21 electrons
+3

8. Which element is a main-group metal with an even atomic number?

a) K
b) Ca
c) Cr
d) Se

9. On this periodic table label: 1) family names; 2) charges; 3) metals, nonmetals, and metalloids.





Key
= nonmetals
= metalloids
= metals