Chemistry – Chapter 6 Worksheet #1 Name KEY

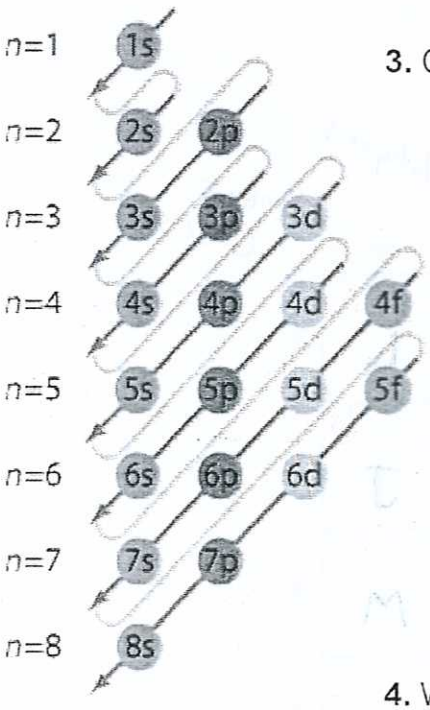
1. Fill in the blank periodic table with the valence electron configurations.

2. Color the s-sublevels red, p-sublevels blue, d-sublevels green and f-sublevels purple. Use the Aufbau diagram as a guide.

1 2 3 4 5 6 7 8

$1s^1$																	$1s^2$
$2s^1$	$2s^2$											$2p^1$					$2p^6$
$3s^1$	$3s^2$											$3p^1$					$3p^6$
$4s^1$	$4s^2$	$3d^1$									$3d^{10}$	$4p^1$					$4p^6$
$5s^1$	$5s^2$	$4d^1$									$4d^{10}$	$5p^1$					$5p^6$
$6s^1$	$6s^2$	$5d^1$									$5d^{10}$	$6p^1$					$6p^6$
$7s^1$	$7s^2$	$6d^1$									$6d^{10}$						

$4f^1$														$4f^{14}$
$5f^1$														$5f^{14}$



3. Complete the chart below

Column	*# of Valence e⁻*
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8 — except He

4. What element is in column 8 but does not have 8 valence e⁻? He

5. What causes elements in the same column to have similar properties?

Elements in the same column have the same number of valence (outer) electrons

6. Use the following clues to place the elements in their proper places in the periodic table provided.

A Has one of the highest electronegativities on the table
B Has one electron in a 3*p* orbital
C Has five electrons in the fourth energy level
D Most electronegative element in column 2A
E Tends to gain one electron ← has to be a halogen
F Electronic configuration is $1s^2 2s^2 2p^6 3s^2 3p^3$
G Is the most electronegative element
H An ion of this element with a 2+ charge has 18 electrons.
I Its second ionization energy is large compared to its first ionization energy. ← Alkali metal column
J Its highest occupied energy level is full. ← has to be a noble gas
K This nonmetal is likely to form an ion with a 3– charge.
L Has the highest first ionization energy in the table
M Has the smallest atomic radius in the third period ← Atomic size ↓ from left to right in any period
N Is the smallest atom in its group ← Atomic size ↑ from top to bottom in any column
O The first element with an electron in the second energy level
P The only nonmetal in a group with highly reactive metals
Q Has eight fewer protons than its "groupmate" H
R The most likely element of the ones included to lose an electron ← the lowest Ionization Energy / in other words
S A metalloid in period 4
T The largest halogen atom.
U The ion with a 2– charge that it forms has 18 electrons.
V Atomic number is 34
W Metalloid that forms an ion with a 3+ charge
X Has characteristics of both a metal and a nonmetal
Y Has a lower first ionization energy than S
Z Has a first ionization energy that is higher than T but lower than M