

(Z) Atomic #: # of protons ( $p^+$ )

#36/

If they don't tell you, assume atom is neutral.

$n^0 + p^+ = \text{atomic mass (A)}$

Sub - Atomic Particles and Energy

If a neutral atom, electrically

$\# p^+ = \# e^-$

$n_0 = A - Z$

Name \_\_\_\_\_ Atomic mass = atomic #

Date \_\_\_\_\_ Hour \_\_\_\_\_

1. Complete this chart.

	$\# p^+$	use atomic # here	$p^+$	$n^0$	$e^-$	
	Atomic number	Mass number	Number of protons	Number of neutrons	Number of electrons	Symbol of element
Row 1	7	14	7	7	7	N
Row 2	9	19	9	10	10	F <sup>-1</sup>
Row 3	19	39	19	20	19	K
Row 4	27	59	27	32	27	Co
Row 5	8	16	8	8	10	O <sup>-2</sup>
Row 6	4	9	4	5	4	Be

ion, it is charged

2. There are four naturally occurring isotopes of the element chromium. The relative abundance of each is:  $^{50}\text{Cr} = 4.31\%$ ,  $^{52}\text{Cr} = 83.76\%$ ,  $^{53}\text{Cr} = 9.55\%$ ,  $^{54}\text{Cr} = 2.38\%$ . Calculate the average atomic mass of chromium. 24 protons

All Cr CuZ all have same #p<sup>+</sup>

Weighted Avg. CuZ → most likely

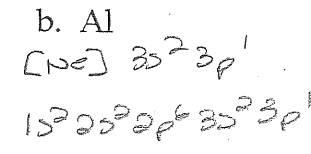
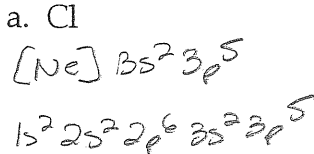
$26n^0$   
 $24p^+$   $50 \text{ amu} \times .0431 = 2.155 \text{ amu}$  different?  
 $28n^0$   
 $24p^+$   $52 \text{ amu} \times .8376 = 43.555 \text{ amu}$   
 $29n^0$   
 $24p^+$   $53 \text{ amu} \times .0955 = 5.062 \text{ amu}$   
 $30n^0$   
 $24p^+$   $54 \text{ amu} \times .0238 = 1.285 \text{ amu}$

not exactly same CuZ roundoff error

$52.057 \text{ amu} \rightarrow \boxed{52.06 \text{ amu}}$

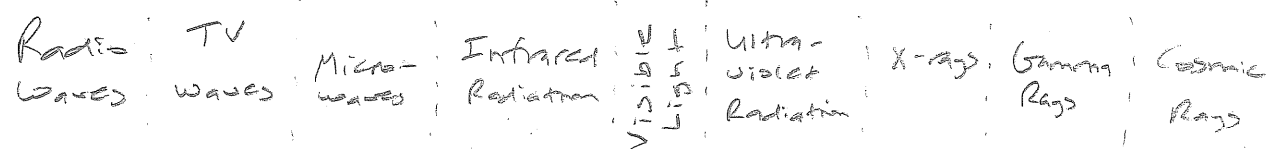
✓ answer on periodic table

3. Write the electron configurations for these atoms.



Ans

4. List, in order, the bands of the electromagnetic spectrum from lowest frequency to highest frequency.



on computer

5. What is the energy of a photon of microwave radiation whose frequency is  $3.20 \times 10^{11} \text{ s}^{-1}$ ? Think Max Plank.

$E = (6.626 \times 10^{-34}) (3.20 \times 10^{11})$

$E = h\nu$   
 Energy ← Planck's constant × frequency  
 $h = 6.626 \times 10^{-34} \text{ J}\cdot\text{s}$   
 Joules × seconds

$E = 2.12 \times 10^{-22} \text{ J}$

Very small energy