Elements come in a variety of isotopes, meaning they are made up of atoms with the same atomic number but different atomic masses. These atoms differ in the number of neutrons.

The average atomic mass is the weighted average of all the isotopes of an element.

Example: A sample of caesium is 75.0 % $^{133}_{55}Cs$, 20.0% $^{132}_{55}Cs$ and 5.0% $^{134}_{55}Cs$
What is its average atomic mass?

Answer: .750 x 133 = 99.75
.200 x 132 = 26.4
.050 x 134 = 6.70
Total = 132.9 a.m.u. = average atomic mass

Determine the average atomic mass of the following mixtures of isotopes.

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1. 80.0% $^{127}_{53}I$, 17.0% $^{126}_{53}I$, 3.0% $^{128}_{53}I$

1. _____

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2. 50.0% $^{197}_{79}Au$, 50.0% $^{198}_{79}Au$

2. _____

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3. 15.0% $^{55}_{26}Fe$, 85.0% $^{56}_{26}Fe$

3. _____

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4. 99.0% $^{1}_{1}H$, 0.8% $^{2}_{1}H$, 0.2% $^{3}_{1}H$

4. _____

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5. 95.0% $^{14}_{7}N$, 3.0% $^{15}_{7}N$, 2.0% $^{16}_{7}N$

5. _____

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6. 98.0% $^{12}_{6}C$, 2.0% $^{14}_{6}C$

6. _____

CALCULATING ATOMIC MASS

Samples of an unknown element X were collected and their masses were recorded. Use the information presented in the data table to answer the following questions.

Isotope	Mass (amu)	Percent Abundance (%)	Mass Number
1	37.765	9.67	
2	39.056	78.68	
3	40.003	11.34	
4	41.060	0.31	

1. Fill in the mass number for each sample of element X in the data table.

2. What is the most common isotope of element X ? _____

3. Calculate the average atomic mass of element X

4. Use your periodic table to identify element X based on its average atomic mass._____

5. What is the atomic number of this element?_____

6. Draw one atom of this element. Make sure to correctly represent the number of protons and electrons in the atom.

7. This atom forms an ion with a charge of 1+. Draw a picture representing an ion of this element.