Homework Check – Isotopes & Average Atomic Mass **Name** _____

1. Element Q consists of 4 types of atoms with masses 43, 45, 49, and 51. Q-43 and Q-45 each make up 25% of all Q occurring naturally while Q-49 makes up 34% with the remaining atoms being Q-51.

(a) Compare Q-43 and Q-45 in terms of atomic structure. List 2 things that are similar and 2 things that are different about these two atoms.

Similar	Different
Both Q-43 and Q-45 have same # of protons	Q-45 has 2 more neutrons than Q-43
Both isotopes belong to same element.	Q-45 has greater mass than Q-43

(b) Q-43 and Q-45 are _____isotopes_____ of the same atom.

(c) If Q-49 has 27 protons and 26 electrons, fill in the blanks below to show the atomic symbol. ($^{A}_{Z}X$)

$^{49}_{27}Q^{+1}$

(d) Calculate the average atomic mass of element Q. Show all work and round your answer to the appropriate number of significant figures.

$$AAM = (0.25 \times 43) + (0.25 \times 45) + (0.34 \times 49) + (0.16 \times 51) = 46.82 \textbf{ amu}$$

e) Chlorine exists as two stable isotopes. One is Chlorine-35, which makes up 75% of all naturally occurring atoms. What is the mass of the other isotope? Show work for your calculation.

$$35.453 = (0.75 \times 35) + (0.25 \times Mass)$$

$$\frac{35.453 - (0.75 \times 35)}{0.25} = Mass\ of\ Isotope = 36.812 \textbf{ amu}$$

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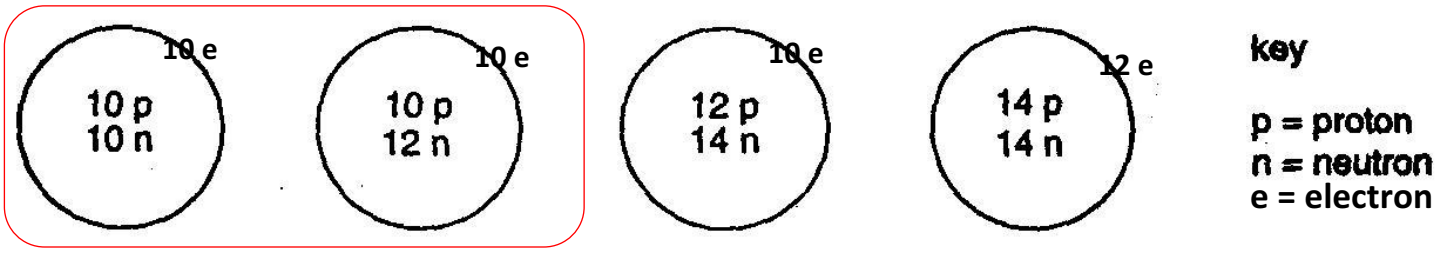
Cl
35.453

f) Which of the following are isotopes of the same element? Circle them.



Homework Check – Isotopes & Average Atomic Mass **Name** _____

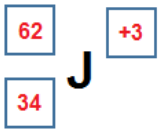
1. Element J consists of 4 types of atoms with masses 60, 62, 63, and 65. J-60 and J-65 each make up 4% of all Element J occurring naturally, while J-62 makes up 81% with the remaining atoms being J-63.

(a) Compare J-60 and J-65 in terms of atomic structure. List 2 things that are similar and 2 things that are different about these two atoms.

Similar	Different
Both J-60 and J-65 have same # of protons	J-65 has 5 more neutrons than J-60
Both isotopes have same electron configuration.	J-65 has greater mass than J-60

(b) J-60 and J-65 are ___isotopes__ of the same atom.

(c) If J-62 has 34 protons and 31 electrons, fill in the blanks below to show the atomic symbol. ($^{A}_{Z}X$)



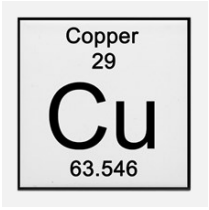
(d) Calculate the average atomic mass of element J. Show all work and round your answer to the appropriate number of significant figures.

$$AAM = (0.04 \times 60) + (0.04 \times 65) + (0.81 \times 62) + (0.11 \times 63) = 62.15\ \boldsymbol{amu}$$

e) Copper exists as two stable isotopes. One is Copper-63, which makes up 69% of all naturally occurring atoms. What is the mass of the other isotope? Show work for your calculation.

$$63.546 = (0.69 \times 63) + (0.31 \times Mass)$$

$$\frac{63.546 - (0.69 \times 63)}{0.31} = Mass\ of\ Isotope = 64.76\ \boldsymbol{amu}$$



f) Which of the following are isotopes of the same element? Circle them.