Names_____Period_____

CHEMISTRY LAB BEANIUM – Isotope Analogy

Learning goals: Students will
- explore the concept of isotopes and average atomic mass using an analogy
- use their ideas in other situations

Directions:
Obtain a sample of beanium atoms from stock container. Sort the beanium atoms into three groups, each group representing a different isotope. In the observation section, sketch a picture of each beanium isotope to distinguish between each isotope. Fill out the Recording and Calculations section using appropriate units.

Recording Data and Calculations:
A. Initial observations:

Number of type one Beaniums (isotope-1) _____

Number of type two Beaniums (isotope-2) _____

Number of type three Beaniums (isotope-3) _____

B. **Calculate the total number of beans_____** Sample calculation here:_____

C. **Calculate the percentage of each type of isotope.**
   Percentage of Beanium-1 _____ sample calculation here:_____
   Percentage of Beanium-2 _____
   Percentage of Beanium-3 _____

D. **Calculate the average mass of each isotope.**
   Total mass of type one Beans_____Average mass of Beanium-1 _____
                                        Sample calculation here: _____
   Total mass of type two Beans ___ Average mass of Beanium-2 _____
   Total mass of type three Beans___ Average mass of Beanium-3 _____

Application of isotope type problems

1. 140 students participated in a knowledge retrieval session. 25 scored 90 out of 100; 63 scored 80 out of 100; 31 scored 70 out of 100; 15 scored 60 out of 100; 6 scored 50 on the knowledge retrieval session. Determine the average score on this knowledge retrieval session. Show all work.

2. Magnesium consists of three isotopes with masses of 23.98 (78.6%), 24.98 (10.1%), and 25.98 (11.3%). Calculate the average atomic mass of Mg. Show all work.

3. Copper consists of two isotopes, one with a mass of 62.96 and 70.5% abundant. The other isotope has a mass of 64.96. Determine the atomic mass of Cu. Show all work.