# Isotope and Atomic mass = Worksheet

1. What is an isotope?
2. How can you tell isotopes apart?

**For each of the following isotopes, write the # of protons, neutrons, and electrons, or isotope name and mass number**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | |  | Chromium- 58 | Chromium- 63 | | # of protons |  |  | | # of neutrons |  |  | | # of electrons |  |  | | |  |  |  | | --- | --- | --- | |  | Carbon-12 | Carbon-16 | | # of protons |  |  | | # of neutrons |  |  | | # of electrons |  |  | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | |  | Nitrogen-15 | Nitrogen-20 | | # of protons |  |  | | # of neutrons |  |  | | # of electrons |  |  | | |  |  |  | | --- | --- | --- | |  | Sulfur-23 | Sulfur-25 | | # of protons |  |  | | # of neutrons |  |  | | # of electrons |  |  | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |
| # of protons | 25 |  |  | # of protons | 32 |  |
| # of neutrons | 17 | 15 | # of neutrons | 30 | 32 |
| # of electrons |  |  | # of electrons |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |
| # of protons |  |  | # of protons |  |  |
| # of neutrons | 48 | 51 | # of neutrons | 113 | 111 |
| # of electrons |  | 46 | # of electrons | 55 |  |

**Isotopes & Average Atomic Mass**

1. True or False: Is the mass number of a given isotope the same as the average atomic mass on the periodic table for that element? **Explain!**
2. What is the atomic mass of phosphorous if phosphorous-29 has a percent abundance of 35.5%, phosphorous-30 has a percent abundance of 42.6%, and phosphorous-31 has a percent abundance of 21.9%?
3. Calculate the average atomic mass for the following element given information about the relevant isotopes:

(Isotope 1) Mass = 20 amu; Isotopic abundance = 90.92%

(Isotope 2) Mass = 21 amu; Isotopic abundance = 0.257%

(Isotope 3) Mass = 22 amu; Isotopic abundance = 8.82%

Looking at the periodic table, which element is this most likely? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What is the atomic mass of an element with 3 isotopes with the following information:

Isotope 1 – 42 amu (75% abundance)

Isotope 2 – 44 amu (10% abundance)

Isotope 3 – 45 amu (\_\_\_\_\_% abundance)

1. Sulfur-32 95.0% abundance

Sulfur-33 0.76% abundance

Sulfur-34 4.22% abundance

Sulfur-36 0.014% abundance

1. (Isotope 1) Mass = 35 amu 75.53%

(Isotope 2) Mass = 37 amu 24.47%

Which element is this? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_