

## Average Atomic Mass Worksheet

- 1) Rubidium has two common isotopes,  $^{85}\text{Rb}$  and  $^{87}\text{Rb}$ . If the abundance of  $^{85}\text{Rb}$  is 72.2% and the abundance of  $^{87}\text{Rb}$  is 27.8%, what is the average atomic mass of rubidium?
  
- 2) Uranium has three common isotopes. If the abundance of  $^{234}\text{U}$  is 0.01%, the abundance of  $^{235}\text{U}$  is 0.71%, and the abundance of  $^{238}\text{U}$  is 99.28%, what is the average atomic mass of uranium?
  
- 3) Titanium has five common isotopes:  $^{46}\text{Ti}$  (8.0%),  $^{47}\text{Ti}$  (7.8%),  $^{48}\text{Ti}$  (73.4%),  $^{49}\text{Ti}$  (5.5%),  $^{50}\text{Ti}$  (5.3%). What is the average atomic mass of titanium?
  
- 4) Explain why atoms have different isotopes. In other words, how is it that helium can exist in three different forms?

## Average Atomic Mass Worksheet – Solutions

- 1) Rubidium has two common isotopes,  $^{85}\text{Rb}$  and  $^{87}\text{Rb}$ . If the abundance of  $^{85}\text{Rb}$  is 72.2% and the abundance of  $^{87}\text{Rb}$  is 27.8%, what is the average atomic mass of rubidium?

**85.56 amu**

- 2) Uranium has three common isotopes. If the abundance of  $^{234}\text{U}$  is 0.01%, the abundance of  $^{235}\text{U}$  is 0.71%, and the abundance of  $^{238}\text{U}$  is 99.28%, what is the average atomic mass of uranium?

**237.98 amu**

- 3) Titanium has five common isotopes:  $^{46}\text{Ti}$  (8.0%),  $^{47}\text{Ti}$  (7.8%),  $^{48}\text{Ti}$  (73.4%),  $^{49}\text{Ti}$  (5.5%),  $^{50}\text{Ti}$  (5.3%). What is the average atomic mass of titanium?

**47.92 amu**

- 4) Explain why atoms have different isotopes. In other words, how is it that helium can exist in three different forms?

**Neutrons exist to stabilize the nucleus – without them, the nucleus would consist of nothing but positively-charged protons in close proximity to one another. Because there are different ways of stabilizing the protons, there are different isotopes.**