

Name: Brandi Richards  
9/11/18

The boron-10 isotope has a mass of 10.0129 amu and boron-11 has a mass of 11.00931 amu. The atomic mass of a sample of boron is 10.811 amu.

Without using a calculator, circle the best estimate among the following for the percentage abundance of the two isotopes of boron in the natural sample:

- a) 40%  $^{10}\text{B}$  and 60%  $^{11}\text{B}$   
b) 80%  $^{10}\text{B}$  and 20%  $^{11}\text{B}$   
 c) 20%  $^{10}\text{B}$  and 80%  $^{11}\text{B}$   
d) 60%  $^{10}\text{B}$  and 40%  $^{11}\text{B}$

Great Answer!

Explain why you chose your answer in 1-2 sentences.

I chose answer C because the atomic mass of the sample is 10.811 amu, which is closer to 11.00931 amu, therefore eliminating choices where the sample had a greater percent <sup>abundance</sup> of boron-10. From there, a 40% - 60% split seemed like a pretty even split, and 10.811 amu is only about 0.2 amu from the mass of boron-11 compared to about 0.8 amu from the mass of boron-10.

$+3/3$ Name: Fiona Reed

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- c) 20%  $^{10}\text{B}$  and 80%  $^{11}\text{B}$
- d) 60%  $^{10}\text{B}$  and 40%  $^{11}\text{B}$

Great Answer!

Explain why you chose your answer in 1-2 sentences.

Since the average atomic mass is 10.811 amu, which is closer to 11.00931 amu than 10.0129 amu, there is more Boron-11 in the sample. If the split was 60-40, you would expect the atomic mass to be between 10.4 and 10.6, but it is more heavily weighted toward 11, so it is probably 80%  $^{11}\text{B}$  and only 20%  $^{10}\text{B}$ .

+ 3/3

Name: Katie Sierchio

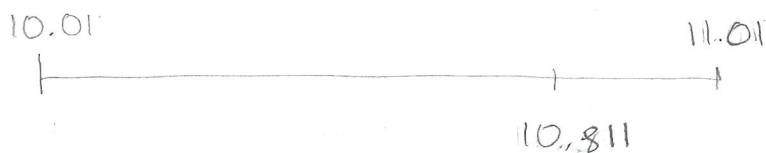
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Explain why you chose your answer in 1-2 sentences.

The atomic mass of a sample is between 10.0129 & 11.00931 amu, but it is much closer to 11.00931 than to 10.0129,



This is a great schematic!