

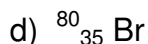
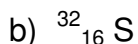
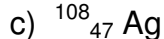
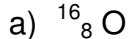
7. How many protons and electrons are in each atom?

Element	Protons	Electrons
Fluorine		
Aluminum		
Calcium		

8. Complete the table:

Element	Atomic #	Protons	Electrons
K	19		19
			5
	16		
		23	

9. How many neutrons are in each atom?



10. Express the composition of each atom in shorthand form.

a) Carbon-12                      C

c) Fluorine-19

d) Beryllium-9

11. For each atom in Problem 9, identify the number of electrons.

a)

b)

c)

d)

13. The three isotopes of chromium are chromium-50, chromium-52, and chromium-53. How many neutrons are in each isotope, given that chromium always has an atomic number of 24?

Chromium-50 has \_\_\_\_\_ neutrons.

Chromium-52 has \_\_\_\_\_ neutrons.

Chromium-53 has \_\_\_\_\_ neutrons.

14. Boron has two isotopes: B-10 and B-11. Which is more abundant, given that the atomic mass of boron is 10.80?

16. The element copper has naturally occurring isotopes with mass number of 63 and 65. The relative abundance and atomic masses are 69.2% for mass = 62.93 amu, and 30.8% for mass 64.93 amu. Calculate the average atomic mass of copper.

17. Calculate the atomic mass of bromine. The two isotopes of bromine have atomic masses and relative abundance of 78.92 amu (50.69%) and 80.92 amu (49.31%).

18. Explain how the atomic number of an element identifies the element.

19. How can atomic number and mass number be used to find the numbers of protons, electrons, and neutrons?

20. An atom is identified as platinum-195.

a) What does the number represent?

b) Symbolize this atom using superscripts and subscripts.

21. How are isotopes of the same element alike? How are they different?

23. List the number of protons, neutrons, and electrons in each pair of isotopes.

Element	Protons	Neutrons	Electrons
${}^6_3\text{Li}$			
${}^7_3\text{Li}$			
${}^{42}_{20}\text{Ca}$			
${}^{44}_{20}\text{Ca}$			
${}^{78}_{34}\text{Se}$			
${}^{80}_{34}\text{Se}$			

24. The atomic masses of elements are generally not whole numbers. Explain why.

25. How is the atomic mass of an element calculated from isotope data?

26. Using the data for nitrogen listed in Table 5.3, calculate the average atomic mass of nitrogen.