

**On numbers with a, b, and c do 2 of the 3.**

1. Calculate the number of moles in each of the following:
  - a. 64.1 g of Al
  - b. 28.1 g of Si
2. A chemist has a jar containing 388.2 g of iron filings. How many moles of iron does the jar contain?
3. Calculate the mass of each of the following amounts:
  - a. 1.22 mol Na
  - b. 14.5 mol Cu
  - c. 0.275 mol Hg
4. A student needs 0.366 mol of Zn for a reaction. What mass of Zn in grams should the student obtain?
5. Calculate the amount in moles in each of the following quantities:
  - a.  $3.01 \times 10^{23}$  atoms of Rb
  - b.  $8.08 \times 10^{22}$  atoms of Kr
  - c.  $5.7 \times 10^9$  atoms of Pb
6. Calculate the number of atoms in each of the following amounts:
  - a. 1.004 mol Bi
  - b. 2.5 mol Mn
  - c. 0.000 000 2 mol He
7. How many moles of Li are there in  $1.204 \times 10^{24}$  Li atoms?
8. Calculate the number of atoms in each of the following masses:
  - a. 54.0 g of Al
  - b. 69.45 g of La
  - c. 0.679 g of Ga
9. Calculate the mass of the following numbers of atoms:
  - a.  $6.022 \times 10^{24}$  atoms of Ta
  - b.  $3.01 \times 10^{21}$  atoms of Co
  - c.  $1.506 \times 10^{24}$  atoms of Ar

10. How many B atoms are there in 2.00 g of B?
  
11. How many protons, electrons, and neutrons make up an atom of bromine-80?
  
12. Write the nuclear symbol for carbon-13.
  
13. Write the hyphen notation for the isotope with 15 electrons and 15 neutrons.
  
14. Write the nuclear symbol for oxygen-16.
  
15. Write the hyphen notation for the element whose atoms have 7 electrons and 9 neutrons.
  
16. Naturally occurring boron is 80.02% boron-11 (atomic mass=11.01 amu) and 19.80% of some other isotopic form of boron. What must be the atomic mass of this second isotope be in order to account for the 10.81 amu average atomic mass of boron?