

Name: \_\_\_\_\_  
period: \_\_\_\_\_ Date: \_\_\_\_\_

## Chemistry: *Atoms, Mass, and the Mole*

Use appropriate conversion factors and unit cancellation to solve the following problems. In order to get full credit, you must show the set-up and include units in all quantities.

1. Find the number of atoms of phosphorus (P) in 3.44 moles of phosphorus.
2. What is the mass of 0.38 moles of cobalt (Co)?
3. How many moles of nickel (Ni) is  $3.88 \times 10^{25}$  atoms of nickel?
4. How many atoms is 3.75 moles of iron (Fe)?
5. Find the number of moles of sodium (Na) in 145 g of sodium.
6. How many moles is 0.55 g of magnesium (Mg)?
7. If you have  $7.22 \times 10^{23}$  atoms of chromium (Cr), how many moles of chromium do you have?
8. What mass of tungsten (W) is 35 moles of tungsten?
9. How many atoms is 5.2 moles of titanium (Ti)?

10. How many moles of iron (Fe) is  $5.98 \times 10^{24}$  atoms of iron?
  
11. What mass of molybdenum (Mo) is 6.68 moles of molybdenum?
  
12. How many moles is 586 g of rhenium (Re)?
  
13. How many atoms of palladium (Pd) is 400 g of palladium?
  
14. Find the mass of  $4.55 \times 10^{28}$  atoms of vanadium (V).
  
15. Find the mass of  $4.77 \times 10^{22}$  atoms of scandium (Sc).

Answers:

1.  $2.07 \times 10^{24}$  atoms P
2. 22.4 g Co
3. 64.4 mol Ni
4.  $2.26 \times 10^{24}$  atoms Fe
5. 6.3 mol Na
6. 0.023 mol Mg

7. 1.20 mol Cr
8. 6433 g W
9.  $3.13 \times 10^{24}$  atoms Ti
10. 9.93 mol Fe
11. 641 g Mo
12. 3.15 mol Re

13.  $2.26 \times 10^{24}$  atoms Pd
14.  $3.85 \times 10^6$  g V
15. 3.6 g Sc
16.  $3.0 \times 10^{23}$  atoms Ge
17.  $6.48 \times 10^{25}$  atoms Se
18.  $4.96 \times 10^6$  g Po