

## THE MOLE

Directions: Solve each problem below. Be sure you show your work.

$6$ <b>C</b> <i>carbon</i> 12.011	<b>One Mole = <math>6.022 \times 10^{23}</math> particles</b> <i>atomic number = 6</i> <i>mass number = 12</i> <i>atomic mass = 12.011 amu</i> <i>molar mass = 12.011 g</i>
<p>Example 1: How many atoms are in 2.5 moles of titanium? <math>(2.5 \text{ moles}) (6.022 \times 10^{23} \text{ atoms/1mole}) = 1.5 \times 10^{24} \text{ atoms of Ti}</math></p> <p>Example 2: How many grams are in 3.50 moles of iron? <math>(3.50 \text{ moles})(55.85 \text{ g of Fe/1mole of Fe}) = 195.5 \text{ g of Fe}</math></p>	

1. How many atoms are in 1.8 moles of sodium? \_\_\_\_\_
2. How many atoms are in 5.4 moles of silver? \_\_\_\_\_
3. If there exist  $1.81 \times 10^{24}$  atoms of gold, how many moles are present? \_\_\_\_\_
4. If there exist  $1.5 \times 10^{23}$  atoms of bismuth, how many moles are present? \_\_\_\_\_
5. How many grams are in 0.75 moles of radon? \_\_\_\_\_
6. How many grams are in 1.5 moles of helium? \_\_\_\_\_
7. Determine the amount (in moles) of tin present in 352 g of tin? \_\_\_\_\_
8. Determine the amount (in moles) of carbon present in 241 g of carbon? \_\_\_\_\_
9. If there exist  $1.20 \times 10^{23}$  atoms of lithium, how many grams are present? \_\_\_\_\_
10. If there exist  $3.31 \times 10^{24}$  atoms of phosphorous, how many grams are present? \_\_\_\_\_