

**Mole Problems**

Name \_\_\_\_\_

**Examples**

1.  $.25 \text{ mol Ag} = .25 \text{ mol}(107.9 \text{ g/mol}) = 26.98 \text{ g}$
2.  $.75 \text{ mol Cr} = .75 \text{ mol} (52.0 \text{ g/mol}) = 39 \text{ g}$
3.  $27.93 \text{ g Fe} = 27.93 \text{ g}(1 \text{ mol}/55.85 \text{ g}) = .5 \text{ mol}$
4.  $4.0 \text{ g Ca} = 4.0 \text{ g}(1 \text{ mol}/40.0 \text{ g}) = .1 \text{ mol}$
5.  $3.01 * 10^{23} \text{ atoms K} = 3.01 * 10^{23} \text{ atoms}(1 \text{ mol}/6.02 * 10^{23} \text{ atoms}) = .5 \text{ mol}$
6.  $1.51 * 10^{23} \text{ atoms Fr} = 1.51 * 10^{23} \text{ atoms}(1 \text{ mol}/6.02 * 10^{23} \text{ atoms}) = .251 \text{ mol}$
7.  $.25 \text{ mol Ag} = .25 \text{ mol} (6.02 * 10^{23} \text{ atoms}/1 \text{ mol}) = 1.51 * 10^{23} \text{ atoms}$
8.  $.75 \text{ mol Cr} = .75 \text{ mol}(6.02 * 10^{23} \text{ atoms}/1 \text{ mol}) = 4.52 * 10^{23} \text{ atoms}$

**Part 1: Directions: Determine the number of moles in each sample.**

1. 5.75 g Na
2. 17.6 g K
3. 39.3 g Ca
4. 339.0 g Ra
5. 3.73 g B

**Part 2: Directions: Determine the mass of each sample.**

1. 1.98 mol Zn
2. .57 mol Rb
3. 3 mol Pt
4. 4.5 mol Ga
5. .01 mol Cu

**Part 3: Directions: Determine how many atoms are in each sample.**

1. 1.6 mol Na
2. .016 mol K
3. .963 mol Ca
4. .457 mol Ra
5. .75 mol B

**Part 4: Directions: Determine how many moles of each substance there are.**

1.  $1.19 * 10^{23} \text{ atoms V}$
2.  $3.43 * 10^{23} \text{ atoms Fe}$
3.  $1.81 * 10^{23} \text{ atoms Co}$
4.  $2.71 * 10^{23} \text{ atoms Ga}$
5.  $6.02 * 10^{21} \text{ atoms Cu}$

### Section 1

1.  $5.75 \text{ g Na} = 5.75 \text{ g}/23.0 \text{ g} = .25 \text{ mol}$
2.  $17.6 \text{ g K} = 17.6 \text{ g}/39.1 \text{ g} = .45 \text{ mol}$
3.  $39.3 \text{ g Ca} = 39.3 \text{ g}/41.1 \text{ g} = .96 \text{ mol}$
4.  $339.0 \text{ g Ra} = 339.0 \text{ g}/226 \text{ g} = 1.5 \text{ mol}$
5.  $3.73 \text{ g B} = 3.73 \text{ g}/10.8 \text{ g} = .345 \text{ mol}$

### Section 2

1.  $1.98 \text{ mol N} = 1.98 (14.0 \text{ g}) = 27.7 \text{ g}$
2.  $.57 \text{ mol F} = .57 (19.0 \text{ g}) = 10.8 \text{ g}$
3.  $3 \text{ mol Br} = 3 (79.9 \text{ g}) = 239.7 \text{ g}$
4.  $4.5 \text{ mol Ga} = 4.5 (69.7 \text{ g}) = 313.7 \text{ g}$
5.  $.01 \text{ mol Cu} = .01 (63.6 \text{ g}) = .636 \text{ g}$

### Section 3

1.  $1.6 \text{ mol Na} = 1.6 (6.02 \times 10^{23}) = 9.63 \times 10^{23} \text{ atoms}$
2.  $.016 \text{ mol K} = .016 (6.02 \times 10^{23}) = 9.63 \times 10^{21} \text{ atoms}$
3.  $.963 \text{ mol Ca} = .963 (6.02 \times 10^{23}) = 5.80 \times 10^{23} \text{ atoms}$
4.  $.457 \text{ mol Ra} = .457 (6.02 \times 10^{23}) = 2.75 \times 10^{23} \text{ atoms}$
5.  $.75 \text{ mol B} = .75 (4.52 \times 10^{23}) = 4.52 \times 10^{23} \text{ atoms}$

### Section 4

1.  $1.19 \times 10^{23} \text{ atoms V} = 1.19 \times 10^{23}/6.02 \times 10^{23} = .198 \text{ mol}$
2.  $3.43 \times 10^{23} \text{ atoms Fe} = 3.43 \times 10^{23}/6.028 \times 10^{23} = .570 \text{ mol}$
3.  $1.81 \times 10^{23} \text{ atoms Co} = 1.81 \times 10^{23}/6.028 \times 10^{23} = .301 \text{ mol}$
4.  $2.71 \times 10^{23} \text{ atoms Ga} = 2.71 \times 10^{23}/6.02 \times 10^{23} = .450 \text{ mol}$
5.  $6.02 \times 10^{21} \text{ atoms Cu} = 6.02 \times 10^{21}/6.02 \times 10^{23} = .01 \text{ mol}$