1. (5 points) Identify each of the following as a physical change or a chemical change.
   a. A standing puddle of water evaporates ____________
   
   b. Nitrogen and hydrogen are combined to form ammonia, a key fertilizer component ________
   
   c. A dime is cut in half ________
   
   d. Snow laying on the ground melts ________
   
   e. The element potassium is combined with chlorine to form a salt ________

2. (5 points) Classify all of the properties in the following description as either a chemical property or a physical property.

   Potassium may be obtained from caustic potash (KOH) by using a technique known as electrolysis. It is a metal that is silvery in appearance and is soft enough to be easily cut with a knife. Potassium reacts vigorously with water producing hydrogen gas and flames. Potassium is so reactive it is never found as the free element in nature. The density of potassium is 0.856 g/cm³, it melts at 336.65 K, and boils at 1062 K. On a typically used hardness scale, it rates at 0.5 Mois.

<table>
<thead>
<tr>
<th>Chemical Properties</th>
<th>Physical Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula by electrolysis</td>
<td></td>
</tr>
<tr>
<td>reacts with water</td>
<td>$F_k^+$</td>
</tr>
<tr>
<td>so a reactive metal found in nature</td>
<td>$\rho &gt; 2.52 \text{ g/cm}^3$</td>
</tr>
</tbody>
</table>
3. (5 points) Identify the following as pure substances or mixtures. Further, classify each pure substance as to whether it is an element or a compound and each compound as to whether it is a homogeneous or heterogeneous mixture.

a. 15 g of salt dissolved in 100 mL of water (one can dissolve at most 35 g in 100 mL of water)
   
   \[ \text{heterogeneous mixture} \]

b. 40 g of salt dissolved in 100 mL of water (one can dissolve at most 35 g in 100 mL of water)
   
   \[ \text{heterogeneous mixture} \]

c. The air in this room
   
   \[ \text{homogeneous mixture} \]

d. The contents of a beaker containing water and gasoline
   
   \[ \text{heterogeneous mixture} \]

e. The contents of a helium balloon
   
   \[ \text{element} \]

4. (5 points) Make the following conversions.

a. 35.5 cm = \[ \frac{3.55}{100} \text{ m} \]

b. 12.5 kg = \[ 1.25 \times 10^7 \text{ mg} \]

c. 76.5 mL = \[ \frac{76.5}{1000} \text{ cm}^3 \]

d. \( 3.42 \times 10^8 \text{ s} = \frac{3.42 \times 10^5}{3600} \text{ ks} \)

e. 0.00924 cm = \[ 0.00924 \text{ mm} \]