Here are some extra problems to practice.

1a. Define the term *valence electron(s)*.

b) How many valence electrons do each of the following elements have?

   Na _____  Sr _____  P _____  I _____  Kr _____

2. Predict the formula of the ionic compound formed between the following pairs of elements.
   a) Na and Br
   b) Al and O
   c) Ba and S
   d) Fe and Cl
   e) gallium and oxygen
   f) aluminum and sulfate
   g) magnesium and chlorine
   h) calcium and phosphate
   i) iron and nitrate

3. Predict the formula of the covalent compound formed between the following pairs of elements.
   a) H and O
   b) H and Br
   c) C and O
   d) N and Cl
   e) nitrogen and oxygen
4. Complete the following table:

<table>
<thead>
<tr>
<th>Name of the compound</th>
<th>Formula of the compound</th>
</tr>
</thead>
<tbody>
<tr>
<td>NaOH</td>
<td></td>
</tr>
<tr>
<td>silver chloride</td>
<td>Li₃N</td>
</tr>
<tr>
<td>aluminum oxide</td>
<td>KNO₃</td>
</tr>
<tr>
<td>barium sulfate</td>
<td></td>
</tr>
<tr>
<td>potassium phosphate</td>
<td>NH₃</td>
</tr>
<tr>
<td>sulfur trioxide</td>
<td>CO₂</td>
</tr>
<tr>
<td>barium carbonate</td>
<td>Pb(NO₃)₂</td>
</tr>
</tbody>
</table>

5. Predict whether the following compounds are ionic or covalent.

SiCl₄, MgBr₂, PH₃, NH₄Cl, HCl, Al₂O₃

6. Draw the Lewis (electron) structure for the following ions or molecules.

a) HBr

b) PCl₃
6. (CONTINUED)

e) \(\text{C}_2\text{H}_4\)

f) \(\text{CH}_2\text{Cl}_2\)

g) \(\text{Cl}_2\text{CO}\)

h) \(\text{HCN}\)

7. What are ‘normal’ hydrocarbons? What are branched-chain hydrocarbons? In each case site at least three examples.
8. Name the following compounds:

a) \( CH_3CH_2CH_2CH_3 \)

b) 

\[
\begin{align*}
\text{Structure A} & \quad \text{Structure B} \\
\text{Molecule A} & \quad \text{Molecule B}
\end{align*}
\]

c) 

\[
\begin{align*}
\text{Structure C} & \quad \text{Structure D} \\
\text{Molecule C} & \quad \text{Molecule D}
\end{align*}
\]

d) \( CH_3CH(CH_3)C(CH_3)_2CH_2CHCH_2 \)
9. Draw the structure that corresponds with each of the following names.

   a) 3-ethyloctane

   b) 2,2,4,4-tetramethylhexane

   c) 2,3-dimethyl-4-ethynonane

   d) 2,2,4-trimethylpentane
9. CONTINUED

e) 3-ethyl-2-methylpentane

f) 4-ethyl-2,4-dimethyldecane

10. What are structural isomers? Draw and name all (part a) of the structural isomers for each of the following compounds;

a) C$_5$H$_{12}$

b) 5 isomers of C$_{10}$H$_{22}$