Skim Before you read Section 1, skim the headings, illustrations, and captions. Write three questions you have about what may be discussed in this section.

1. 
2. 
3. 

**Review Vocabulary**

covalent bond

**Define** covalent bond.

**New Vocabulary**

organic compound

hydrocarbon

saturated hydrocarbon

unsaturated hydrocarbon

isomer

benzene

**Academic Vocabulary**

Use a dictionary to define complex.
Section 1 Simple Organic Compounds (continued)

Main Idea

**Organic Compounds**

I found this information on page __________.

Details

Compare organic and inorganic compounds. Give examples of each type.

<table>
<thead>
<tr>
<th>Organic</th>
<th>Inorganic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Complete the concept map by describing how carbon can form so many organic compounds through bonding and arrangement.

- Reasons that carbon can form many organic compounds
  - Bonding
  - Arrangement

Create Draw the structural formula for one of the hydrocarbons in this section. Name the hydrocarbon and explain why it is a hydrocarbon on the lines below.

---

Hydrocarbons

I found this information on page __________.
Section 1 Simple Organic Compounds (continued)

Main Idea

Bonding in Hydrocarbons
I found this information on page

Details

Complete the graphic organizer about isomers.

Isomers have

- identical __________
  __________.
- different _________ and
  _________.
- different and _______ points.

Identify the type of bonds in each hydrocarbon. Make a sketch of each molecule. Then categorize each hydrocarbon as being saturated or unsaturated.

<table>
<thead>
<tr>
<th>Hydrocarbon</th>
<th>Type of Bond</th>
<th>Sketch</th>
<th>Saturated or Unsaturated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethene</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethyne</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Propene</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Propene</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CREATE IT

Develop a model of a saturated hydrocarbon using toothpicks and colored marshmallows. Draw and describe your model below. Describe how the model shows it is a saturated hydrocarbon.
Organic Compounds
Section 2 Substituted Hydrocarbons

Predict Before you read Section 2, look at the headings in the section. Write two predictions about what you will learn in this section.

1. 
2. 

Review Vocabulary

Define acid.

acid

New Vocabulary

Use your book to define each of the following terms.

substituted hydrocarbon

alcohol

ester

amine

aromatic compound

Academic Vocabulary

Use a dictionary to define framework.

framework
Section 2 Substituted Hydrocarbons (continued)

Main Idea

Replacing Hydrogen

I found this information on page ___________.

Substituting Oxygen Groups

I found this information on page ___________.

Substituting Other Elements

I found this information on page ___________.

Details

Evaluate two ways that chemists can change hydrocarbons into other compounds.

1. ___________________________

2. ___________________________

Compare alcohols and organic acids using the table below.

<table>
<thead>
<tr>
<th></th>
<th>How are they formed?</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohols</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organic Acids</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Esters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amines</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Identify five elements other than carbon, hydrogen, and oxygen that can be added to hydrocarbons.

1. ___________________________

2. ___________________________

3. ___________________________

4. ___________________________

5. ___________________________
### Main Idea

**Aromatic Compounds**

I found this information on page ________

### Details

Complete the table about aromatic compounds.

<table>
<thead>
<tr>
<th>Definition</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure found in all aromatic compounds</td>
<td>Examples</td>
</tr>
</tbody>
</table>

Model the structural formula and symbol for benzene. Place a C at each of the six corners of the symbol, then add the single and double bonds between the carbon atoms. Use the figures in your book to help you.

### Summarize It

Write a journal entry about some organic compounds you use. Identify at least one aromatic compound, one alcohol, and one acid.
Scan Use the checklist below to preview Section 3 of your book.

- Read all section titles.
- Read all bold words.
- Read all charts and graphs.
- Look at all the pictures and read their captions.
- Think about what you already know about petroleum.

Write two facts you discovered about petroleum as you scanned the section.

1. 

2. 

Define condense.

Read the definitions below. Then write the key term on the blank in the left column.

- a very large molecule made from small molecules that link together
- a small molecule that forms a link in the polymer chain
- a process that uses heat or chemicals to break long polymer chains into monomer fragments

Use a dictionary to define link.
Main Idea

What is petroleum?
I found this information on page _________.

Processing Crude Oil
I found this information on page _________.

Details

Define fraction. Define distill. Use a dictionary to help you. Then describe what fractional distillation does to petroleum molecules.

Sequence the steps in fractional distillation until the first fraction is separated. One step has been completed for you.

1. _________.

2. _________.

3. The hydrocarbons start to turn into vapor and the vapors rise up inside the tower.

4. _________.

5. _________.

Model a fractionating tower. Use the figure in your book for help. Next to the tower, draw an arrow from the bottom to the top. Along the arrow, show where the higher-boiling fractions condense, the middle-boiling fractions condense, and the lowest-boiling fractions condense.
**Main Idea**

**Uses for Petroleum Compounds**
I found this information on page ________

**Details**

Organize information about the uses of petroleum compounds. In the middle column of boxes, describe the fractions. In the right column, tell what each fraction is used to make.

- Uses for Petroleum
  - Lightest fractions
  - Kerosene and jet fuel
  - Paving asphalt

**Polymers**
I found this information on page ________

Model a polymer if one paper clip is a monomer.

**Describe** at least one benefit and one challenge associated with depolymerization.

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Challenge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Connect It**
Consider how your life today would be different without petroleum products. Hypothesize what might be used to replace the petroleum products you use.
Organic Compounds
Section 4 Biological Compounds

Skim Before you read Section 4, skim the headings, illustrations, and captions. Write three questions you have about what may be discussed in this section.

1. 
2. 
3. 

Review Vocabulary

Define base.

base

New Vocabulary

Use your book to define the following key terms.

protein

carbohydrate

lipid

nucleic acid

deoxyribonucleic acid (DNA)
nucleotide

Academic Vocabulary

Use a dictionary to define identical.

identical

Organic Compounds 291
Main Idea

Biological Polymers
I found this information on page

Proteins
I found this information on page

Carbohydrates
I found this information on page

Details

Compare and contrast biological polymers to other polymers.

<table>
<thead>
<tr>
<th>Similarities</th>
<th>Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Complete the graphic organizer about protein monomers.

- groups of one amino acid form a bond with the acid group of another amino acid to make a ___________

- muscles, __________, and __________ use the body to create the molecule which is called a ___________

- When a peptide contains about 50 or more __________ acids

Complete the graphic organizer about carbohydrates.

- Carbohydrates contain 3 elements: __________, __________, and __________.

- Starches provide __________ fuel. __________ provide a quick burst of energy.

- Energy from starches can be stored in the __________ and __________ cells in the form of __________.

- Common table sugar, called __________, is broken down by digestion into __________, (fruit sugar) and __________ (blood sugar).
Section 4 Biological Compounds (continued)

Main Idea

Nucleic Acids
I found this information on page __________.

Details

Organize information about DNA using the table below.

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Where found</th>
<th>Practical use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lipids
I found this information on page __________.

Identify three lipids.
1. __________ 2. __________ 3. __________

Contrast saturated, monounsaturated, and polyunsaturated fats and oils.

<table>
<thead>
<tr>
<th>Saturated</th>
<th>Monounsaturated</th>
<th>Polyunsaturated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CONNECT IT

Describe ways you could change your diet to consume less cholesterol and saturated fats. Explain what foods you might replace in your diet and why.