

## Assessment and Evaluation

ThoughtLab/ ExpressLab/ Investigation	Curriculum Expectations	Assessment Tools/Techniques	Achievement Chart Category	Learning Skills
Investigation 13-A: Modelling Organic Compounds, page 542	<p><b>Overall Expectations</b></p> <ul style="list-style-type: none"> <li>■ [HE V.02] describe and investigate the properties of hydrocarbons, and apply calorimetric techniques to the calculation of energy changes</li> </ul> <p><b>Specific Expectations</b></p> <p><i>Developing Skills of Inquiry and Communication</i></p> <ul style="list-style-type: none"> <li>■ [HE 2.03] use molecular models to demonstrate the arrangement of atoms in isomers of hydrocarbons</li> </ul>	<ul style="list-style-type: none"> <li>■ Rubric for Investigation 13-A: Modelling Organic Compounds (see "Assessment and Evaluation" in the front matter of <i>Teacher's Resource CD-ROM</i>)</li> </ul>	<ul style="list-style-type: none"> <li>■ Knowledge/ Understanding</li> <li>■ Inquiry</li> <li>■ Communication</li> </ul>	<ul style="list-style-type: none"> <li>■ Teamwork</li> <li>■ Work Habits</li> </ul>

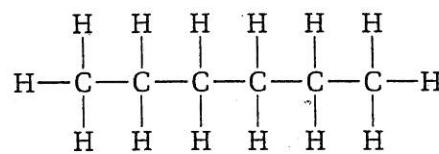
## Section Review Answers

### Student Textbook page 543

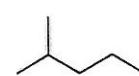
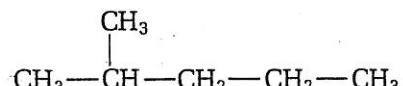
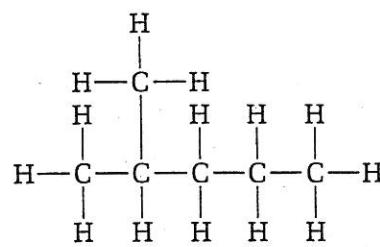
1. 1) Carbon has four bonding electrons, which allow the formation of four strong covalent bonds to a variety of different elements.  
 2) Carbon can form single/double/triple covalent bonds and stable chains.  
 3) Carbon-based molecules can assume various geometric shapes.
2. Students should represent their hydrocarbon molecule using a complete structural diagram, a condensed structural diagram, a line structural diagram, and (if time and material exist) a ball-and-stick model.

3.

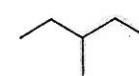
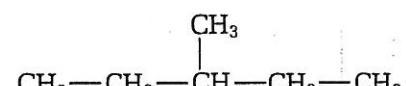
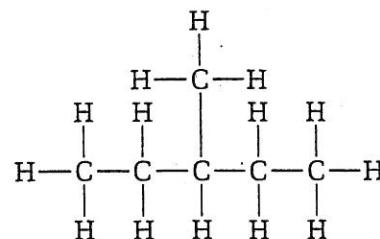
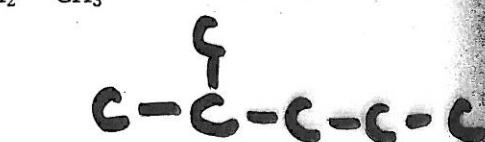
### Isomers of C<sub>6</sub>H<sub>14</sub>



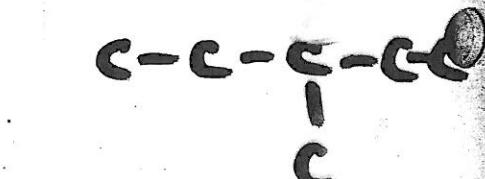
hexane

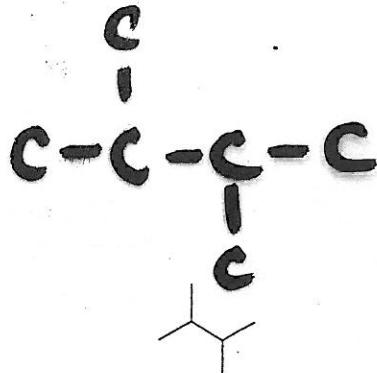
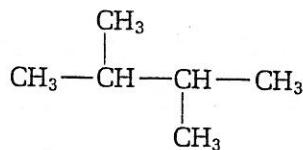
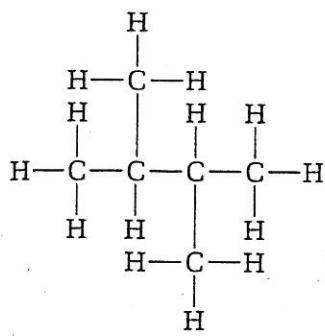


2-methylpentane

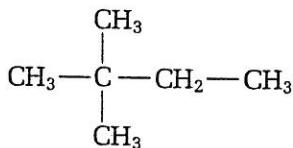
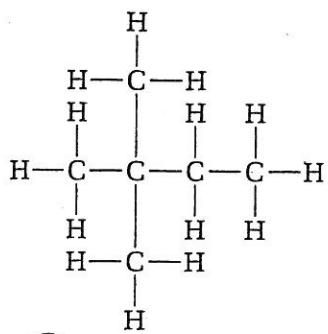


3-methylpentane



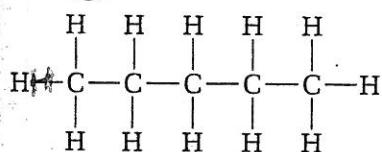


2,3-dimethylbutane

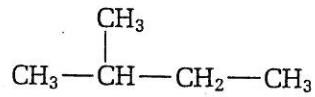
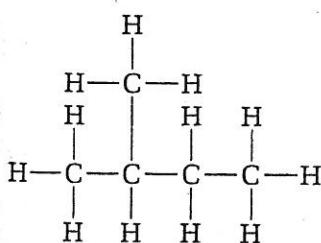


2,2-dimethylbutane

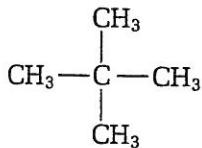
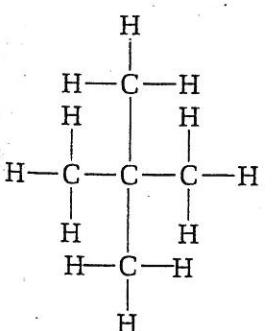
4.



pentane



2-methylbutane



2,2-dimethylpropane



5. The condensed structural diagram for ethanol is  $\text{CH}_3\text{CH}_2\text{OH}$ . A line structural diagram for ethanol cannot be drawn because the lines and points only represent carbon atoms. This type of diagram can be used only for hydrocarbons such as alkanes, alkenes, and alkynes and cannot be used for organic compounds containing atoms other than C and H.

