**Activity 18: Alkane Nomenclature**

***Learning Objectives***

*Provide IUPAC names for alkanes, haloalkanes, and cycloalkanes with two substituents*

**Estimated Completion Time** 90 Minutes

**Instructor Information**

This activity may require some discussion between instructor and students, as students have difficulty reading all the given information without getting sidetracked. Questions 1, 2, and part of 3 can be done as a class as a way of introducing alkane nomenclature. Be sure to emphasize in question 2 that both molecules are 2-methylbutane. This is a difficult concept for students.

**ANSWERS TO QUESTIONS**

1.

|  |  |  |  |
| --- | --- | --- | --- |
| **Methyl** | **Ethyl** | **Propyl** | **Isopropyl** |
| ─CH3 | ─CH2CH3 | ─CH2CH2CH3 | CH3CHCH3  │ |

2. Both molecules are 2-methylbutane.

3. a. 4-methylheptane b. 5-ethyl-2-methyloctane

c. 4-isopropylheptane d. 4-ethyl-2-methylheptane

4. a. 2-bromo-4-ethyl-8-methylnonane

b. 2-chloro-5-methylheptane

5. Cyclobutane, cyclopentane, cycloheptane

Methylcyclopentane, bromocyclohexane, *trans*-1-chloro-2-methylcyclopentane

6.



**Activity 18: Skill Development**

1. a. 3-bromo-4-methylhexane b. 4-isopropyl-5,6-dimethylnonane

c. *cis*-1-bromo-4-propylcyclohexane d. 2-chloro-4-ethyl-6-methylheptane

2.







3. Some possibilities are shown below:



Cyclohexane methylcyclopentane 1-hexene, 3-hexene, and 2-hexene