Week 3 Worksheet

Topics Covered:
- Introduction to Alkanes
  - Acyclic vs. Cyclic
- IUPAC naming of alkanes
- Acyclic conformations
  - Newman projections
  - Steric hindrance and torsional strain
  - Anti and gauche conformations

1. Draw the structure corresponding to each IUPAC name. (Smith, 6th edition, Question 4.39):
   a. 3-ethyl-2-methyhexane

   b. 4-butyl-1,1-diethylcyclooctane

   c. sec-butylcyclopentane
2. Give the IUPAC name for each compound. (Smith, 6th edition, Question 4.38):

a. 

b. 

c.
3. Convert each structure to a Newman projection around the boxed carbon. (Smith, 6th edition, Question 4.14):

   a.

   b.

4. Ranking the following Newman projections in order of increasing energy. Convert each one to projection into a ball and stick model. (Smith, 6th edition, Question 4.46)

5. Classify each bond as staggered or eclipsed. Then rank the conformations in order of increasing stability (Smith, 6th edition, Question 4.47)
6. Label areas that face torsional or steric strain in each of the confirmations. (Smith, 6th edition, Question 4.49)

a.

b.

c.