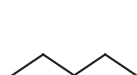


Solutions

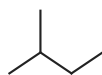
Original guidance. For drawing items, award one mark per correct connectivity and one per correct name unless specified otherwise. Equivalent clear displayed/structural/skeletal drawings are accepted.

2.1 3-methylpentane. The longest continuous chain has five carbons; selecting a four-carbon chain incorrectly treats part of that chain as an ethyl substituent.

2.2



pentane



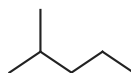
2-methylbutane



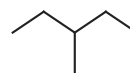
2,2-dimethylpropane



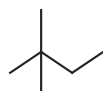
hexane



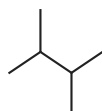
2-methylpentane



3-methylpentane



2,2-dimethylbutane



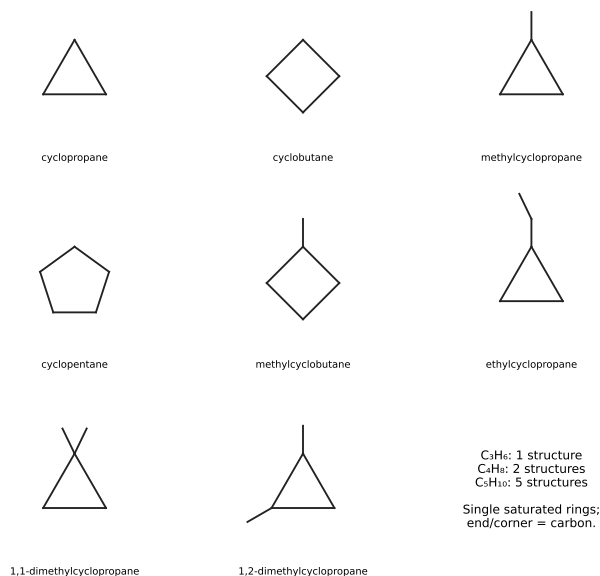
2,3-dimethylbutane

C₅H₁₂: 3 structures
C₆H₁₄: 5 structures
Hydrogen atoms fill
each carbon valency to 4.

Top row only: three correct structures and three correct names, 6 marks. The lower rows show the distinct C₆H₁₄ structures used in 2.3.

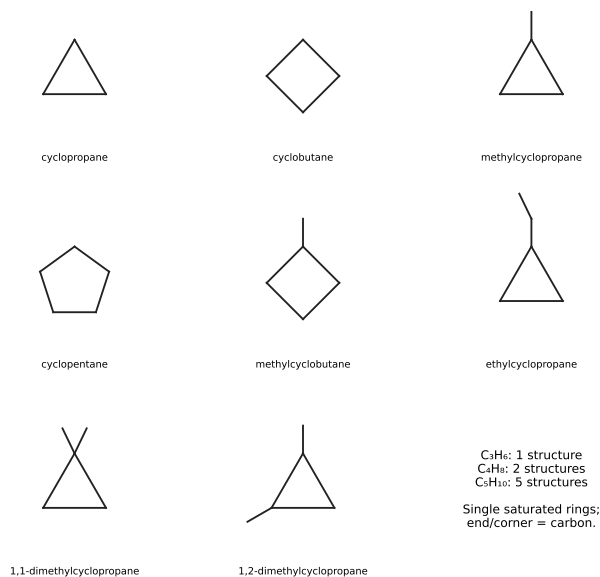
2.3 2,2-dimethylbutane and 2,3-dimethylbutane. Reversing the numbering turns 3,3 into 2,2 without changing connectivity.

3.1



First row: cyclopropane C₃H₆; cyclobutane C₄H₈; methylcyclopropane C₄H₈. Award one mark per correct structure and one per name with formula, 6 marks.

3.2



Five correct structures and names: cyclopentane, methylcyclobutane, ethylcyclopropane, 1,1-dimethylcyclopropane and 1,2-dimethylcyclopropane. Award one mark per correct structure and one per name, 10 marks. Cis/trans forms of the last name do not add another connectivity.

3.3 Cyclohexane, methylcyclopentane and ethylcyclobutane are examples with six-, five- and four-carbon rings. Moving carbons from the ring into saturated side chains retains one ring and six total carbons, so each has C₆H₁₂. Accept a correct three-carbon-ring example in place of another ring size.