

MINISTRY OF EDUCATION
SECONDARY ENGAGEMENT PROGRAMME
GRADE 11
CHEMISTRY

Week 2

Lesson 1 - Worksheet 1


Complete the following reactions:

1. $C_2H_6 + Br_2 \longrightarrow$ +
2. $C_7H_{16} + Cl_2 \longrightarrow$ +
3. $C_3H_8 + Cl_2 \longrightarrow$ +
4. $CHBr_3 + Br_2 \longrightarrow$ +
5. $C_8H_6Br_{12} + Br_2 \longrightarrow$ +

Choose the correct answer.

1. For a substitution reaction to occur, _____ needs to present.
 - a) Ultraviolet Light
 - b) Nickel
 - c) Iron
 - d) Phosphoric Acid
2. Alkanes burn in air to produce _____.
 - a) Alkenes
 - b) Carbon Dioxide and Steam
 - c) Carbon Monoxide and Water
 - d) Alkanoic Acids
3. The combustion of Alkanes produces a _____ flame.
 - a) Smoky
 - b) Yellow
 - c) Clear blue
 - d) Purple

4. Since the combustion of Alkanes releases energy, this reaction is described as
 - a) Endothermic
 - b) Exothermic
 - c) Substitution
 - d) Addition
5. Substitution reactions occur when alkanes react with
 - a) Transition Metals
 - b) Noble Gases
 - c) Halogens
 - d) Alkenes
6. Filling the blank spaces in the table with the appropriate answers.

Alkane+&+ Formula+	Structural+Formula+	Condensed+Structural+ Formula+	Carbon+Skeleton+ Formula+
	$ \begin{array}{ccccccc} & \text{H} & \text{H} & \text{H} & \text{H} & \text{H} & \\ & & & & & & \\ \text{H} & -\text{C} & -\text{C} & -\text{C} & -\text{C} & -\text{C} & -\text{H} \\ & & & & & & \\ & \text{H} & \text{H} & \text{H} & \text{H} & \text{H} & \end{array} $		
		CH ₃ CH ₂ CH ₂ CH ₂ CH ₂ CH ₂ CH ₃ !	
Nonane! C ₉ H ₂₀ !			
Butane! C ₄ H ₁₀ !			

7. Answer the following.
 - a. What is the general formula for a *noncyclic* alkane? C_nH_n?
 - b. If a *noncyclic* alkane contains 15 carbon atoms, how many hydrogen atoms does it contain?
8. Give the molecular formula, the line bond structural formula and the condensed structural formula for pentane.
 - (a) Molecular formula:
 - (b) Line bond structural formula:
 - (c) Condensed structural formula:

References

1. https://www.saddleback.edu/faculty/jzoval/worksheets_tutorials/ch4worksheets/alkanes_worksheet_and_key02_25_09.pdf
2. <https://www.penfield.edu/webpages/tabraham/resources.cfm?subpage=1498914>

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Lesson 1: Worksheet - Answers

Complete the following



Choose the correct answer.

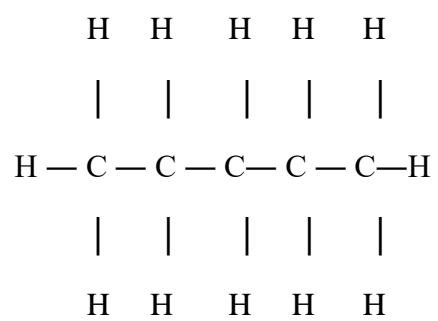
- For a substitution reaction to occur, _____ needs to present.
e) **Ultraviolet Light**
f) Nickel
g) Iron
h) Phosphoric Acid
- Alkanes burn in air to produce _____.
e) Alkenes
f) **Carbon Dioxide and Steam**
g) Carbon Monoxide and Water
h) Alkanoic Acids
- The combustion of Alkanes produces a _____ flame.
e) Smoky
f) Yellow
g) **Clear blue**
h) Purple

4. Since the combustion of Alkanes releases energy, this reaction is described as
- e) Endothermic
 - f) Exothermic**
 - g) Substitution
 - h) Addition
5. Substitution reactions occur when alkanes react with
- e) Transition Metals
 - f) Noble Gases
 - g) Halogens**
 - h) Alkenes
6. Fill in the blank spaces with the appropriate response.

Alkane & Formula	Structural Formula	Condensed Structural Formula	Carbon Skeleton Formula
Pentane C_5H_{12}		$CH_3CH_2CH_2CH_2CH_3$	
Heptane C_7H_{16}		$CH_3CH_2CH_2CH_2CH_2CH_2CH_3$	
Nonane C_9H_{20}		$CH_3CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_3$	
Butane C_4H_{10}		$CH_3CH_2CH_2CH_3$	

7. Answer the following.
- a. What is the general formula for a *noncyclic* alkane? C_nH_{2n+2}
 - b. If a *noncyclic* contains 15 carbon atoms, how many hydrogen atoms does it contain? **32**
8. Give the molecular formula, the line bond structural formula, the condensed structural formula, and the skeletal structure for pentane.
- (a) Molecular formula: C_5H_{12}

(b) Line bond structural formula:



(c) Condensed structural formula: $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$