



Name _____ Date _____

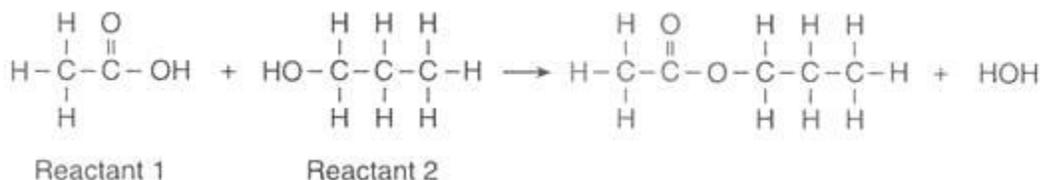
Organic Reaction Worksheet

1. Fill in the table below. Be sure to complete the example reaction as well as fill in all other blanks. Be complete in your answers.

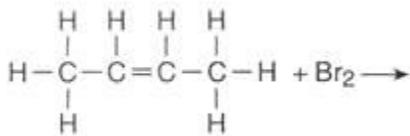
	Organic Reaction	Description	Example
a.	Addition		$\text{CH}_2=\text{CH}_2 + \text{Cl}_2 \rightarrow$
b.		A halogen replaces a hydrogen on a saturated alkane	$\text{CH}_3\text{CH}_2\text{CH}_3 + \text{_____} \rightarrow \text{CH}_3\overset{\text{I}}{\text{C}}\text{HCH}_3 + \text{HI}$
c.		Join many small molecules into one large molecule	$n \left(\begin{array}{c} \text{H} & & \text{H} \\ & \diagdown & / \\ & \text{C} = \text{C} & \\ & / & \diagdown \\ \text{H} & & \text{H} \end{array} \right) \longrightarrow \left(\begin{array}{c} \text{H} & & \text{H} \\ & & \\ -\text{C} & - & \text{C}- \\ & & \\ \text{H} & & \text{H} \end{array} \right)_n$
d.			$\text{C}_6\text{H}_{12}\text{O}_6 + \text{Yeast} \rightarrow \text{CH}_3\text{CH}_2\text{OH} + \text{CO}_2$
e.			Fat + base \rightarrow _____
f.			$\text{CH}_3\text{CH}_2\text{COOH} + \text{CH}_3\text{OH} \rightarrow$ _____ + _____
g.			$\text{C}_3\text{H}_8 + 5 \text{O}_2 \rightarrow 3\text{CO}_2 + 4\text{H}_2\text{O}$
h.		Break down large hydrocarbons with heat, pressure and/or catalyst into smaller, more useful sizes	$\text{C}_{20}\text{H}_{42} \rightarrow \text{C}_8\text{H}_{16} + 2\text{C}_3\text{H}_8$

- The process of joining many small molecules into larger molecules is called
(1) neutralization (2) polymerization (3) saponification (4) substitution
- In which reaction is soap a product?
(1) addition (2) substitution (3) saponification (4) polymerization
- Given the equation: $\text{C}_2\text{H}_6 + \text{Cl}_2 \rightarrow \text{C}_2\text{H}_5\text{Cl} + \text{HCl}$ This reaction is best described as
1) addition involving a saturated hydrocarbon
2) addition involving an unsaturated hydrocarbon
3) substitution involving a saturated hydrocarbon
4) substitution involving an unsaturated hydrocarbon

5. Base your answers to questions a. through c. on the information below. Many artificial flavorings are prepared using the type of organic reaction shown below.

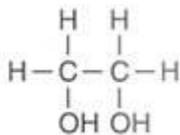


- a. What is the name of this organic reaction? _____
- b. To what class of organic compounds does reactant 2 belong? _____
- c. Draw the structural formula of an isomer of reactant 2.
6. In the space to the right of the reactants and arrow draw the structural formula for the product of the reaction shown.



7. Base your answers on the information below.

Ethene (common name ethylene) is a commercially important organic compound. Millions of tons of ethene are produced by the chemical industry each year. Ethene is used in the manufacture of synthetic fibers for carpeting and clothing, and it is widely used in making polyethylene. Low-density polyethylene can be stretched into a clear, thin film that is used for wrapping food products and consumer goods. High-density polyethylene is molded into bottles for milk and other liquids. Ethene can also be oxidized to produce ethylene glycol, which is used in antifreeze for automobiles. The structural formula for ethylene glycol is:



At standard atmospheric pressure, the boiling point of ethylene glycol is 198°C , compared to ethene that boils at -104°C .

- a. Identify the type of organic reaction by which ethene (ethylene) is made into polyethylene. _____
- b. According to the information in the reading passage, state two consumer products manufactured from ethene.

- c. Explain, in terms of bonding, why ethene is an unsaturated hydrocarbon.
