

# Guided Notes: Le'Chatelier's Principle

Name: \_\_\_\_\_ Period: \_\_\_\_\_

## Background Knowledge:

1. What happens if you are running on a treadmill and someone increases the speed?
2. What happens if you are riding your bike and the wind picks up?

-- These are \_\_\_\_\_ being put on you.

--Chemists put \_\_\_\_\_ on chemical reactions.

*Why do chemists want to put stresses on chemical reactions?*

--Chemists put stresses on chemical reactions to produce more \_\_\_\_\_.

-- \_\_\_\_\_ chemists use this.

**Le'Chatelier's Principle: If a \_\_\_\_\_ is applied to a system at \_\_\_\_\_, the system shifts in the direction that relieves the \_\_\_\_\_.**

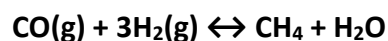
## Changes in Concentration:

### *Adding Reactants*

1. What will happen to the balance if you add more reactants?



2. What happens if I add more CO?



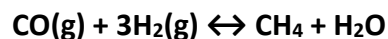
3. The reaction will shift to the \_\_\_\_\_.

### *Removing Products*

1. What will happen to the balance if you remove products?



2. What happens if I remove H<sub>2</sub>O?



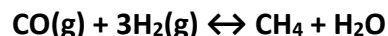
3. The reaction will shift to the \_\_\_\_\_.

### *Adding Products*

1. What will happen to the balance if you add products?



2. What happens if I add H<sub>2</sub>O?

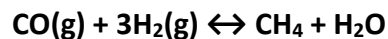


3. The reaction will shift to the \_\_\_\_\_.

Changes in Volume and Pressure:

Decreasing the Volume

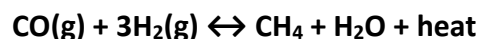
1. What happens to the pressure when volume is decreasing? \_\_\_\_\_
2. What happens to the number of collisions? \_\_\_\_\_
3. To determine if the reaction will shift, we need to look at the number of \_\_\_\_\_ of the reactants and products.



4. Which side of the reaction contains more moles? \_\_\_\_\_
5. Volume only has an effect on the reaction if the \_\_\_\_\_ of reactants differs from the number of products.
6. This reaction has more moles of \_\_\_\_\_, so the reaction will shift to the \_\_\_\_\_.

Changes in Temperature

1. Alters both the \_\_\_\_\_ and the \_\_\_\_\_.
2. Think of heat as either a \_\_\_\_\_ or \_\_\_\_\_.
3. Is this an exothermic or an endothermic reaction? \_\_\_\_\_
4. Is heat considered a product or reactant in the reaction below? \_\_\_\_\_



5. In this reaction, adding more heat would shift the reaction to the \_\_\_\_\_.

Addition of a Catalyst

1. \_\_\_\_\_ up a reaction, but does so in both ways.
2. \_\_\_\_\_ is just reached \_\_\_\_\_.

Summary: **Le'Chatelier's Principle: Changes in \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ make a difference in the amount of product formed in a reaction.**

Practice:

For the reaction below, which change will cause the reaction to shift to the right?



- a. decrease the concentration of dihydrogen sulfide
- b. increase the pressure on the system
- c. increase the temperature on the system
- d. increase the concentration of carbon disulfide
- e. decrease the concentration of methane