Kinetics Worksheet

1) Fill out the following boxes. You can either fill half the boxes with words, and half with pictures. Or you can fill each box with a combo of some words and some pictures.

Collision Theory	Activation Energy
Rate Affecting Factor – Temperature	**Rate Affecting Factor – Concentration**
Rate Affecting Factor – Surface Area	**Rate Affecting Factor – Catalysts**

2) Watch the following videos and take notes in the boxes:

Enthalpy and Entropy: Why do reactions happen?   **https://tinyurl.com/y5jqco2p**
Activation energy – Energy and Orientation, Maxwell-Boltzmann Distribution and relationship to EA and change in temperature   **https://tinyurl.com/y2clyoxl**

Catalysts – great graph showing catalyst changing one step into two steps
https://tinyurl.com/y2kk37o5

Catalyst Classes – general info
https://tinyurl.com/y2l6asc2

3) A study of reaction _____ is called chemical _____.

Reaction rate refers to how quickly or slowly the _____ disappear and how

quickly or slowly the _____ appear.

Answer these on your notebook paper under this "flippy"
What are the units we usually use for the rate?
4) What is the collision theory?
5) What is the activation energy?
6) What is a catalyst and why is it different from a reactant in an equation?
7) What are the FOUR major factors that affect reaction rate?
8) Draw an exothermic reaction graph shown with and without a catalyst?
9) Why would iron filings rust faster than an iron nail?
10) How would you change temperature of a reaction if you wanted to increase the rate of reaction? Explain how this effects the reaction using the collision theory.
11) How many moles of HCl are present in 550 mL of 0.01 M HCl acid?
12) An aqueous solution of NaOH contains 24 g of NaOH dissolved in 69mL of water. Find the molarity.
13) What is the molarity of a solution that contains 15.0 g NaCl in 1.25 L of solution?
14) How many grams of $Al(OH)_3$ are in 800 ml of a 0.2 M solution?
15) How many liters of a 0.3 M solution can be made by using 78 grams of isopropanol (C_3H_8O)?
16) What is the rate of reaction if you start with 4.5M of your reactant and after 75 seconds you have 1.3M left?
17) What is the rate of reaction if you start with 0 M of product and after 50 seconds you have 0.95 M made?
18) Use the data table to answer the questions below using the following reaction: $2H_2 + O_2 \rightarrow 2H_2O$

Time	[H₂]	[O₂]	[H₂O]	Questions
0 s	2.5 M	1.25 M	0 M	a. Which molecules are reactants and which are products
5 s	2.0 M	1.0 M	0.25 M	b. Which molecules should have a positive rate?
10 s	1.5 M	0.75 M	0.5 M	c. Which molecules should have a negative rate?
15 s	1.0 M	0.5 M	1.5 M	d. What is the rate of reaction for H2 between times 5 seconds and 20 seconds?
20 s	0.5 M	0.25 M	2 M	e. What is the rate of reaction of O_2 between times 5 seconds and 20 seconds? f. What is the rate of reaction of H2O between times 5 seconds and 20 seconds? g. What do you notice about the rate of disappearance of H_2 compared to O_2?