**EXTRA KINETICS PRACTICE**

1. What does collision theory say about the energies of atoms, ions, or molecules reacting to form products when they collide?
2. Draw a diagram that represents an “effective collision” and a second that represents an “ineffective collision.”
3. The minimum amount of energy that particles must have in order to react is called the:
4. What is the transition state? Describe what is happening there.
5. What are the factors that can change the rate of a reaction?
6. The main effect of increasing the temperature of a chemical reaction is to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the number of particles that have enough kinetic energy to react when they collide.
7. What is a catalyst?
8. Draw a reaction diagram that demonstrates how a catalyst works. Label which is with a catalyst and which is without a catalyst.
9. Draw a reaction diagram for an endothermic reaction, and a reaction diagram for an exothermic reaction.
10. ΔH is negative for an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reaction.
11. What are the units we use to measure the rate of a reaction?
12. As the concentration of reactants increases, what happens to the rate of reaction?
13. Two molecules cannot react if there is not enough:

a) kinetic energy b) pressure c) time d) volume

1. 2HI 🡪H2 + I2
   1. Write the rate expression for the equation

* 1. Using the following data, determine the rate of reaction between time 10sec and 20sec

|  |  |
| --- | --- |
| Time (sec) | [H2] (M) |
| 0 | 0.015 |
| 10 | 0.018 |
| 20 | 0.024 |

* 1. Using the data above, find the rate of HI disappearance between times 10sec and 20sec (Hint – you will need to use your answer to part B)

1. F2 + 2ClO2 🡪 2FClO2
   1. Write the rate expression for the equation
   2. Using the following data, determine the rate of reaction between times 0sec and 30sec

|  |  |
| --- | --- |
| Time (sec) | [F2] (M) |
| 0 | 0.05 |
| 15 | 0.09 |
| 30 | 0.16 |

* 1. Using the data above, find the rate of ClO2 disappearance between times 0sec and 30sec (Hint – you will need to use your answer to part B)

1. 4HCl + O2 🡪 2H2O + 2Cl2
   1. Write the rate expression for the equation
   2. Using the following data, determine the rate of reaction between times 75sec and 120sec

|  |  |
| --- | --- |
| Time (sec) | [HCl] (M) |
| 0 | 0.043 |
| 75 | 0.087 |
| 120 | 0.261 |

* 1. Using the data above, find the rate of O2 disappearance between times 75sec and 120sec (Hint – you will need to use your answer to part B)