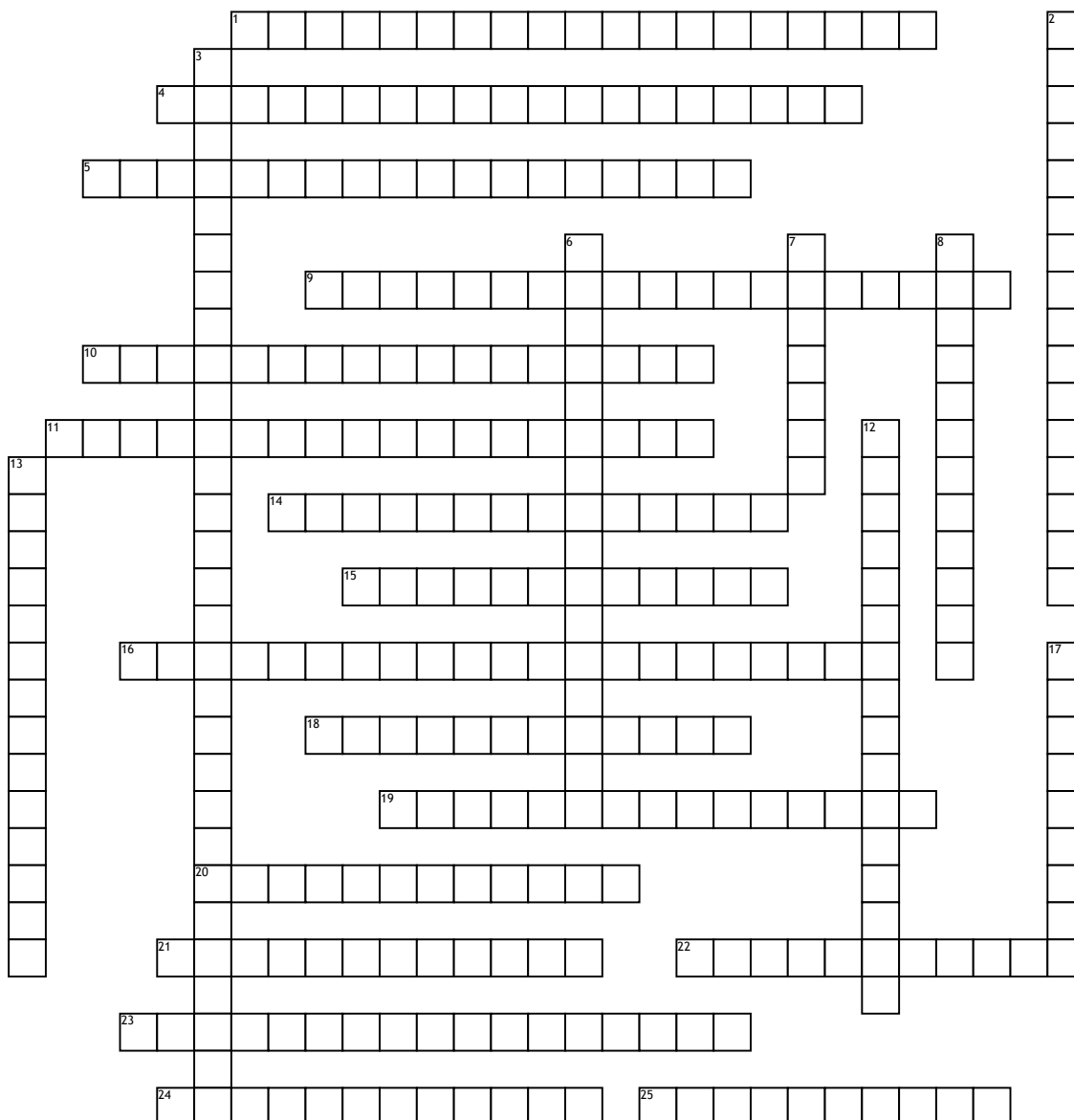


Name: _____

Chemical Kinematics



Across

1. a catalyst that is present in the same phase as the reacting molecules

4. since the overall reaction rate can not exceed the rate of the slowest elementary step in its mechanism, this slow step limits the overall reaction

5. net change represented by a balanced equation that consists of a sequence of elementary steps

9. in the rate law, reaction rate depends on the concentration of the reactants not their volumes

10. equation that incorporates the fraction of molecules possessing an energy E_a or greater, the number of collisions per second, and the fraction of collisions that have the appropriate orientation

11. reaction whose rate depends on the concentration of a single reactant raised to the first power

14. model based on the kinetic-molecular theory that accounts for both the effects of concentration of reactants and temperature on rates at the molecular level

15. the speed of a chemical reaction

16. a catalyst that exists in a different phase from the reactant molecules

18. characteristic determined by the number of molecules that participate as reactants in an elementary reaction

19. the constant A in the Arrhenius equation that does not change as temperature is varied and is related to the frequency of collision and the probability that the collisions are favorably oriented for the reaction

20. a substance that is neither a reactant nor product within the final net equation because it is formed in one elementary step and consumed in the next, having no overall effect on the multistep mechanism

21. elementary reaction in which a single molecule is involved

22. elementary reaction involving the collision of two reactant molecules

23. describes the process by which a reaction occurs

24. elementary reaction involving the simultaneous collision of three molecules

25. the binding of molecules to a surface; usually the initial step in heterogeneous catalysis

Down

2. the minimum energy required to initiate a chemical reaction

3. physical state of reactants, concentration of reactants, temperature, presence of catalyst

6. rate at a particular moment of a reaction: determined from the slope of the curve of a graph at a particular point

7. an equation that shows how the rate depends on the concentration of reactants

8. the constant k in the rate law that changes with temperature and therefore determines how temperature affects rate

12. the particular arrangement of atoms at the top of the barrier, or the energy necessary to force through the relatively unstable intermediate state of the final product

13. the power to which the concentration of a reactant is raised in a rate law; determined experimentally or using the coefficients of reactants within a balanced equation

17. does not affect rate in any way