20. How can collision theory explain the effect of surface area on reaction rate?

21. The following reaction is taking place at a very slow rate in a closed container at room temperature. $S(s) + O_2 \longrightarrow SO_2(g)$State the effect of the following procedures on the rate of this reaction and explain the effect in terms of collision theory.
    (a) The temperature is decreased.
    (b) More $0_2(g)$ is added to the same volume.
    (c) Some $SO_2(g)$ is removed.
    (d) The sulphur is ground up into a powder.
    (e) The volume of the container is increased.

22. Explain in terms of collision theory why kindling is used to start a fire, rather than a large block of wood.

23. When breaking the Br-Br bond in Br_2, what happens to the potential energy of the molecule?

24. ΔH =-25 kJ for the reaction: A $\rightarrow$ B. Re-write this equation to show the 25 kJ properly on reactant or product side. Draw a graph of "enthalpy" versus "reaction proceeds, showing the relative enthalpies of the reactant and product, and the enthalpy change. Will the surroundings feel warmer or cooler as the reaction occurs?

25. If a reaction absorbs 40 kJ of heat, what is ΔH for the reaction?

26. What is ΔH for the reaction C + 30 kJ $\rightarrow$ D? Which have more energy, reactants or products? Draw a graph of "enthalpy' versus "reaction proceeds", showing the relative enthalpies of the reactant and product, and the enthalpy change. Will the surroundings feel warmer or cooler as the reaction occurs?

27. Draw a graph of "enthalpy" versus "reaction proceeds" for a reaction in which R $\rightarrow$ P + 10 kJ. Will the surroundings feel warmer or cooler as the reaction occurs?

28. When one mole of HCl reacts with one mole of NaOH to produce one mole of NaCl and one mole of H_2O, 59 kJ of heat is absorbed by the surroundings. Draw a graph of enthalpy" versus "reaction proceeds", showing the relative enthalpies of reactant and product, and the enthalpy change.