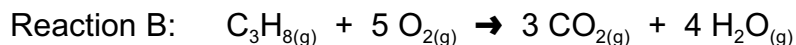


Reaction Rates and PE diagrams

1. Which of the reactions below would proceed most rapidly at room temperature? Why?



2. Hydrogen reacts more rapidly with Cl_2 than with Br_2 . What does this suggest about:

a) the strength of the bonds between the atoms in Cl_2 molecules and in Br_2 molecules?

b) the relative magnitude of the activation energies for the two reactions?

3. For each pair of reactants, identify which has the greater activation energy. Explain your choice:

a) A 1.00 cm cube of Fe reacting with 20.0 mL of 1.00 mol/L $\text{HCl}_{(\text{aq})}$ producing $\text{H}_{2(\text{g})}$ at a rate of 1.00 ml/s

OR A 1.00 cm cube of Mg reacting with 20.0 mL of 1.00 mol/L $\text{HCl}_{(\text{aq})}$ producing $\text{H}_{2(\text{g})}$ at a rate of 5.00 ml/s.

b) A 2.00 g cube of Fe reacting with 20.0 mL of 1.00 Mol/L $\text{HCl}_{(\text{aq})}$

OR 2.00 g of powdered Fe reacting with 20.0 mL of 1.00 Mol/L $\text{HCl}_{(\text{aq})}$.

4. Describe the striking and burning of a match in terms of a potential energy diagram. What does the striking do? Where does the E_a for the match to keep burning come from?

