

**Chemistry 12**  
**Worksheet 2-1 - Equilibrium, Enthalpy**  
**and Entropy**

KEY

TOTAL = 53

1. What do people mean when they say that a reaction is *reversible*? it can go forward (left to right) or in reverse (right to left)
2. Give *four* things which are true about a system *at equilibrium*:
1. rate of forward rx = rate of reverse reaction
  2. microscopic processes continue in a balance which yield no macroscopic change
  3. system is closed - temp is constant and uniform
  4. equil<sup>m</sup> can be approached from the left or the right
3. What is meant by *macroscopic properties*? Properties which are observable eg) colour, pressure, density, temp etc.
4. Give some examples of macroscopic properties: colour, pressure, density, temp etc.
5. What happens to macroscopic properties *at equilibrium*? nothing. They remain constant at equilibrium
6. How do the rates of the forward and reverse reaction compare at equilibrium? they are equal
7. Do the forward and reverse reactions stop at equilibrium? no. They continue
8. What can be said about the concentrations of all reactants and products *at equilibrium*? They remain constant
9. Why is chemical equilibrium called *dynamic equilibrium*? "dynamic" means "changing" or "moving". Reactants are changing to products. Products are changing to reactants. Movement continues on the microscopic level.