using start-change-end tables

At the top of the table, write the balanced chemical equation for the reaction.
The stoichiometric coefficients from a balanced chemical reaction can represent: (1) molecules or ions; (2) moles; (3) molarities; (4) or, for an ideal gas, volumes or pressures. The stoichiometric coefficients cannot represent masses.
Once you know one of the entries in the "change" row, you can find the other changes by using stoichiometric conversion ratios. The conversion ratios come from the stoichiometric coefficients in the balanced chemical equation. You cannot use this technique directly to find entries in the "start" or "end" rows.
If the change is very small relative to the starting or ending amount, you can approximate the starting and ending amounts as equal.

the two types of reactions

reactions that go to completion	**reactions that go to equilibrium**
Use the concept of the "limiting reagent". The limiting reagent is the starting material you run out of first.	Use the concept of the "equilibrium constant", K.
Generally, you will not have to use a variable to express the changes in your "start-change-end" table.	Often, you will have to use a variable ("*x*") to express the changes in your "start-change-end" table.
In your "start-change-end" table, the "end" row represents "completion" of the reaction. Completion is the point at which you run out of the limiting reagent; so, the "change" in the limiting reagent equals the "start" amount, and the "end" value for the limiting reagent is 0.	In your "start-change-end" table, the "end" row represents the equilibrium concentrations. Write an equation by setting the reaction's K equal to its equilibrium expression; plug the values from the "end" row of your table into the equilibrium expression.

equilibrium reactions

forward reaction spontaneous, reverse reaction nonspontaneous	forward rate > reverse rate	$\Delta G < 0$ for forward reaction, $\Delta G > 0$ for reverse reaction	$Q < K$
equilibrium	forward rate = reverse rate	$\Delta G = 0$ for both forward and reverse reactions	$Q = K$
forward reaction nonspontaneous, reverse reaction spontaneous	forward rate < reverse rate	$\Delta G > 0$ for forward reaction, $\Delta G < 0$ for reverse reaction	$Q > K$

Every cell in each row is a synonym for every other cell in the same row.