Answer on Question #82384, Chemistry / General Chemistry

a solution which is 0.368 M in A (aq) and 0.567 M in B (aq). There are no other solutes initially. Reaction 2A (aq) + B (aq) 2C (aq) + D (aq) occurs. At equilibrium, the concentration of C (aq) is 0.147 M. What is the value of the equilibrium constant for this reaction?

Solution

2A (aq) + B (aq) $\rightarrow$ 2C (aq) + D (aq)

$$K_c = \frac{[C]^2[D]}{[A]^2[B]}$$

	[A]	[B]	[C]	[D]
Initial	0.368 M	0.567 M	0	0
Change	0.147 M	0.147 /2 =0.0735 M	0.147 M	0.147 /2 =0.0735 M
Equilibrium	0.368 -0.147= 0.221 M	0.567 -0.0735 =0.4935 M	0.147 M	0.0735 M

$$K_c = \frac{[0.147]^2[0.0735]}{[0.221]^2[0.4935]} = 0.066$$

Answer: 0.066