*Q.3 For the following reaction, the equilibrium constant K_c at 298 K is 1.6×10^{17}

$Fe^{2+}(aq) + S^{2-}(aq) \rightleftharpoons FeS(s)$

When equal volumes of 0.06 M $Fe^{2+}(aq)$ and 0.2 M $S^{2-}(aq)$ solutions are mixed, the equilibrium concentration of $Fe^{2+}(aq)$ is found to be $Y \times 10^{-17}$ M. The value of Y is ..... .

Sol. **8.93**

	$Fe^{2+}(aq) + S^{2-}(aq) \rightleftharpoons FeS(s)$	$K_c = 1.6 \times 10^{17}$
Initial	0.06 M	0.2 M
After mixing	0.03 M	0.1 M
	?	0.07 M

$$1.6 \times 10^{17} = \frac{1}{\left[Fe^{2+}\right] \times 0.07} \quad \text{or}$$

$$\left[Fe^{2+}\right] = \frac{10^{-17}}{1.6 \times 0.07} = \frac{10^{-15}}{11.2} = 8.928 \times 10^{-17}$$

or $8.93 \times 10^{-17} = Y \times 10^{-17}$