

Answer on Question #70647 – Chemistry – Other

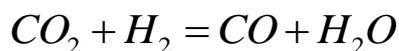
Task:

In a reversible reaction $\text{CO}_2 + \text{H}_2 = \text{H}_2\text{O} + \text{CO}$, the concentration of CO_2 is 0.70 mole/dm^3 and of H_2 is 80.38 mole/dm^3 and the concentrations of CO and H_2O are each 9.46 mole/dm^3 . What is the value of the equilibrium constant K .

- A) 0.168;
- B) 0.233;
- C) 0.628;
- D) 1.591.

Solution:

Reaction equation:



The expression for the equilibrium constant:

$$K = \frac{[\text{H}_2\text{O}] * [\text{CO}]}{[\text{H}_2] * [\text{CO}_2]}$$

Then,

$$K = \frac{[\text{H}_2\text{O}] * [\text{CO}]}{[\text{H}_2] * [\text{CO}_2]} = \frac{9.46 \text{ mole/dm}^3 * 9.46 \text{ mole/dm}^3}{80.38 \text{ mole/dm}^3 * 0.70 \text{ mole/dm}^3} = 1.5905;$$

Answer: D) 1.591.