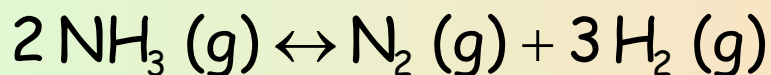


Equilibrium: Basic Calculations

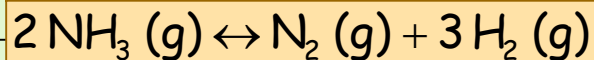
1. Fill in the table and determine the composition at equilibrium



initial
changes
equilibrium

Initial

$n(\text{NH}_3) = 2.2 \text{ mol}$
 $n(\text{N}_2) = 1.8 \text{ mol}$
 $n(\text{H}_2) = 2.4 \text{ mol}$

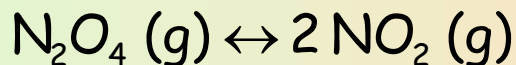


Equilibrium

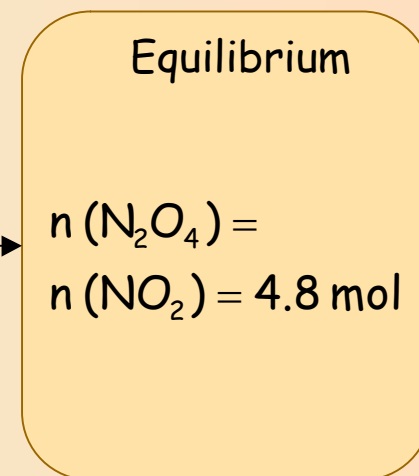
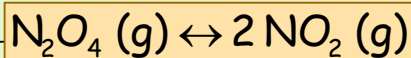
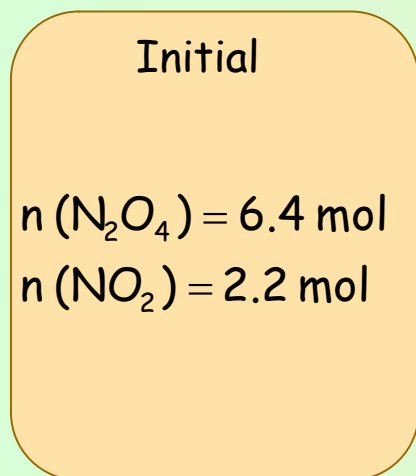
$n(\text{NH}_3) =$
 $n(\text{N}_2) =$
 $n(\text{H}_2) = 3.0 \text{ mol}$

Equilibrium: Basic Calculations

2. Fill in the table and determine the composition at equilibrium

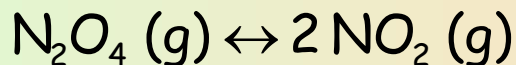


initial
changes
equilibrium

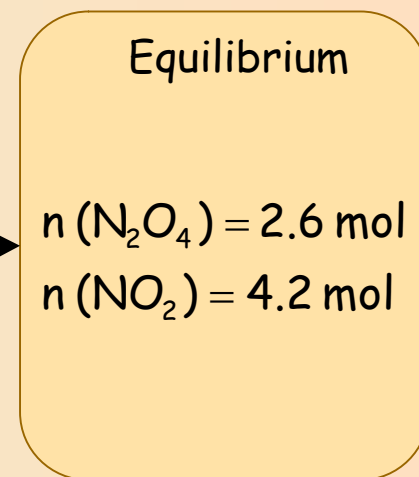
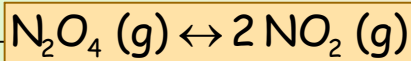
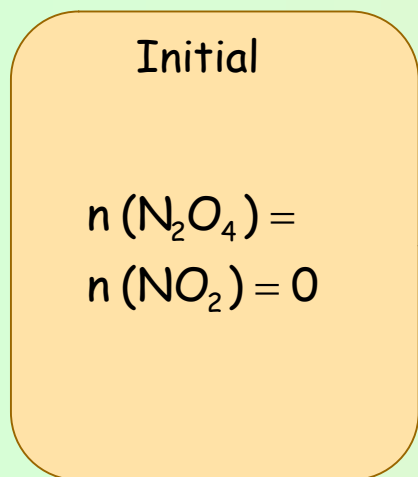


Equilibrium: Basic Calculations

3. Fill in the table and determine the initial composition

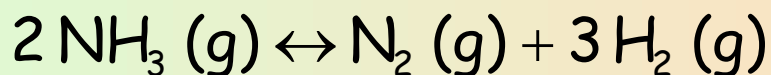


initial
changes
equilibrium



Equilibrium: Basic Calculations

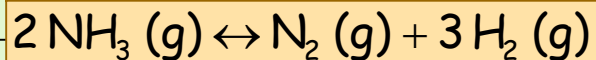
4. Fill in the table and determine the initial composition



initial
changes
equilibrium

Initial

$n(\text{NH}_3) =$
 $n(\text{N}_2) =$
 $n(\text{H}_2) = 2.4 \text{ mol}$



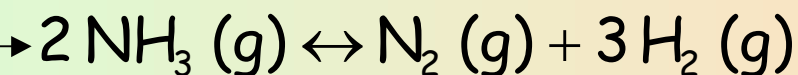
Equilibrium

$n(\text{NH}_3) = 4.6 \text{ mol}$
 $n(\text{N}_2) = 1.1 \text{ mol}$
 $n(\text{H}_2) = 1.8 \text{ mol}$

Equilibrium: Basic Calculations

1. Fill in the table and determine the composition at equilibrium

Ratio 2:1:3



initial

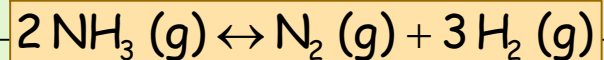
changes

equilibrium

2.2	1.8	2.4
-0.4	0.2	0.6
1.8	2.0	3.0

Initial

$n(\text{NH}_3) = 2.2 \text{ mol}$
 $n(\text{N}_2) = 1.8 \text{ mol}$
 $n(\text{H}_2) = 2.4 \text{ mol}$



Equilibrium

$n(\text{NH}_3) = 1.8 \text{ mol}$
 $n(\text{N}_2) = 2.0 \text{ mol}$
 $n(\text{H}_2) = 3.0 \text{ mol}$

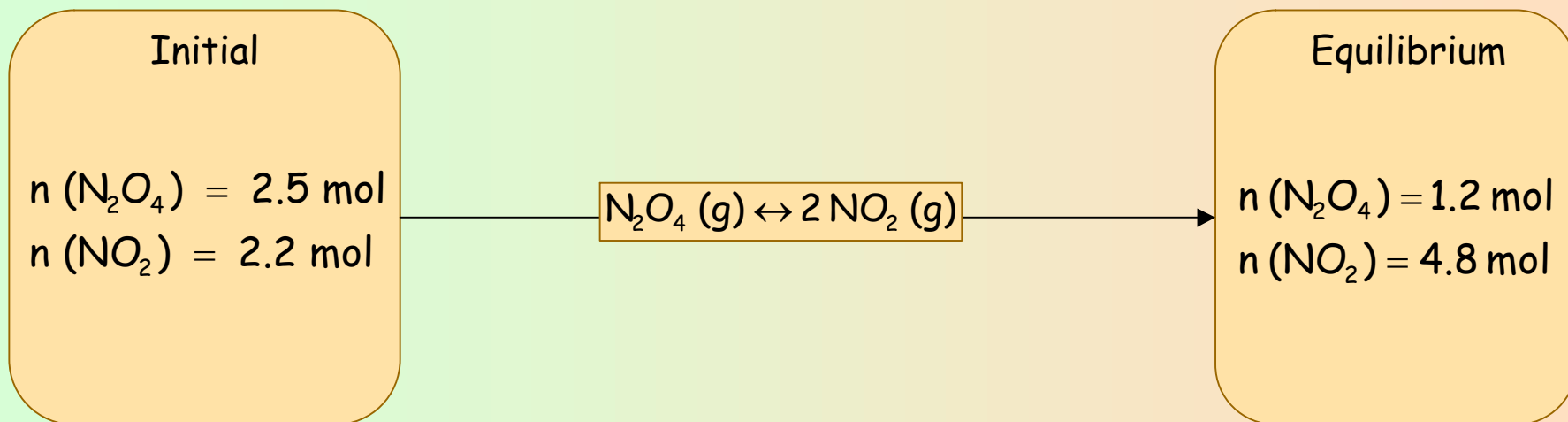
Equilibrium: Basic Calculations

2. Fill in the table and determine the composition at equilibrium

Ratio 1:2 → $\text{N}_2\text{O}_4 (\text{g}) \leftrightarrow 2 \text{NO}_2 (\text{g})$

initial
changes
equilibrium

2.5	2.2
-1.3	2.6
1.2	4.8



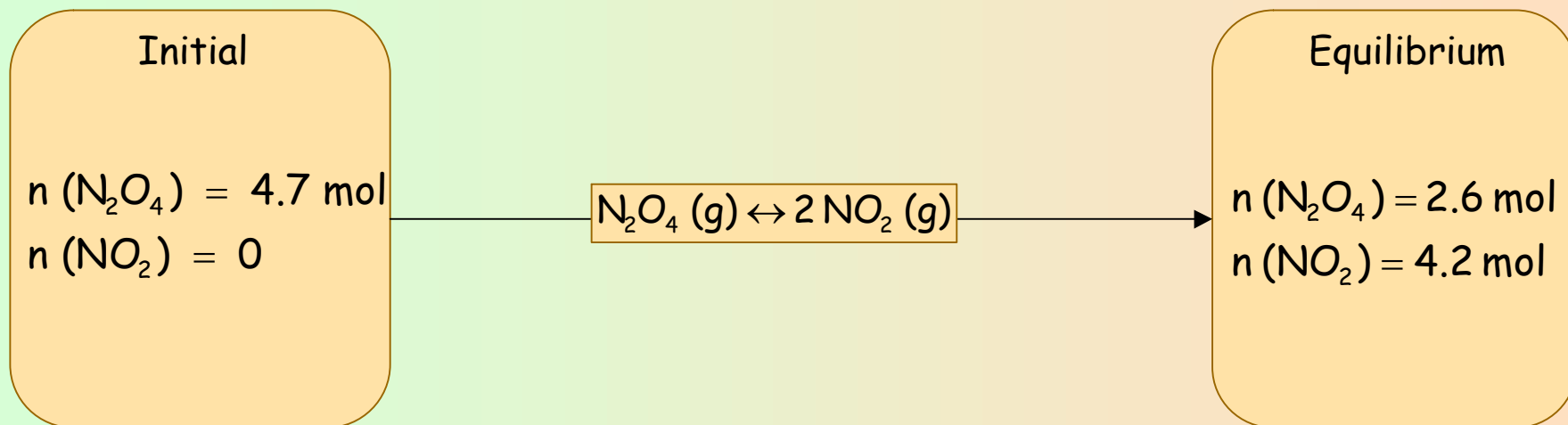
Equilibrium: Basic Calculations

3. Fill in the table and determine the initial composition

Ratio 1:2 → $\text{N}_2\text{O}_4 (\text{g}) \leftrightarrow 2 \text{NO}_2 (\text{g})$

initial
changes
equilibrium

4.7	0
-2.1	4.2
2.6	4.2



Equilibrium: Basic Calculations

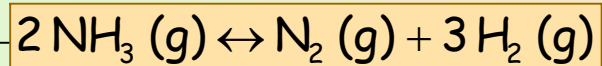
4. Fill in the table and determine the initial composition

Ratio 2:1:3 → $2 \text{NH}_3 (\text{g}) \leftrightarrow \text{N}_2 (\text{g}) + 3 \text{H}_2 (\text{g})$

initial	4.2	1.3	2.4
changes	0.4	-0.2	-0.6
equilibrium	4.6	1.1	1.8

Initial

$n(\text{NH}_3) = 4.2 \text{ mol}$
 $n(\text{N}_2) = 1.1 \text{ mol}$
 $n(\text{H}_2) = 2.4 \text{ mol}$



Equilibrium

$n(\text{NH}_3) = 4.6 \text{ mol}$
 $n(\text{N}_2) = 1.1 \text{ mol}$
 $n(\text{H}_2) = 1.8 \text{ mol}$