

Multi Level Marketing

Theory and Profitability

Shawn 04/17/2023

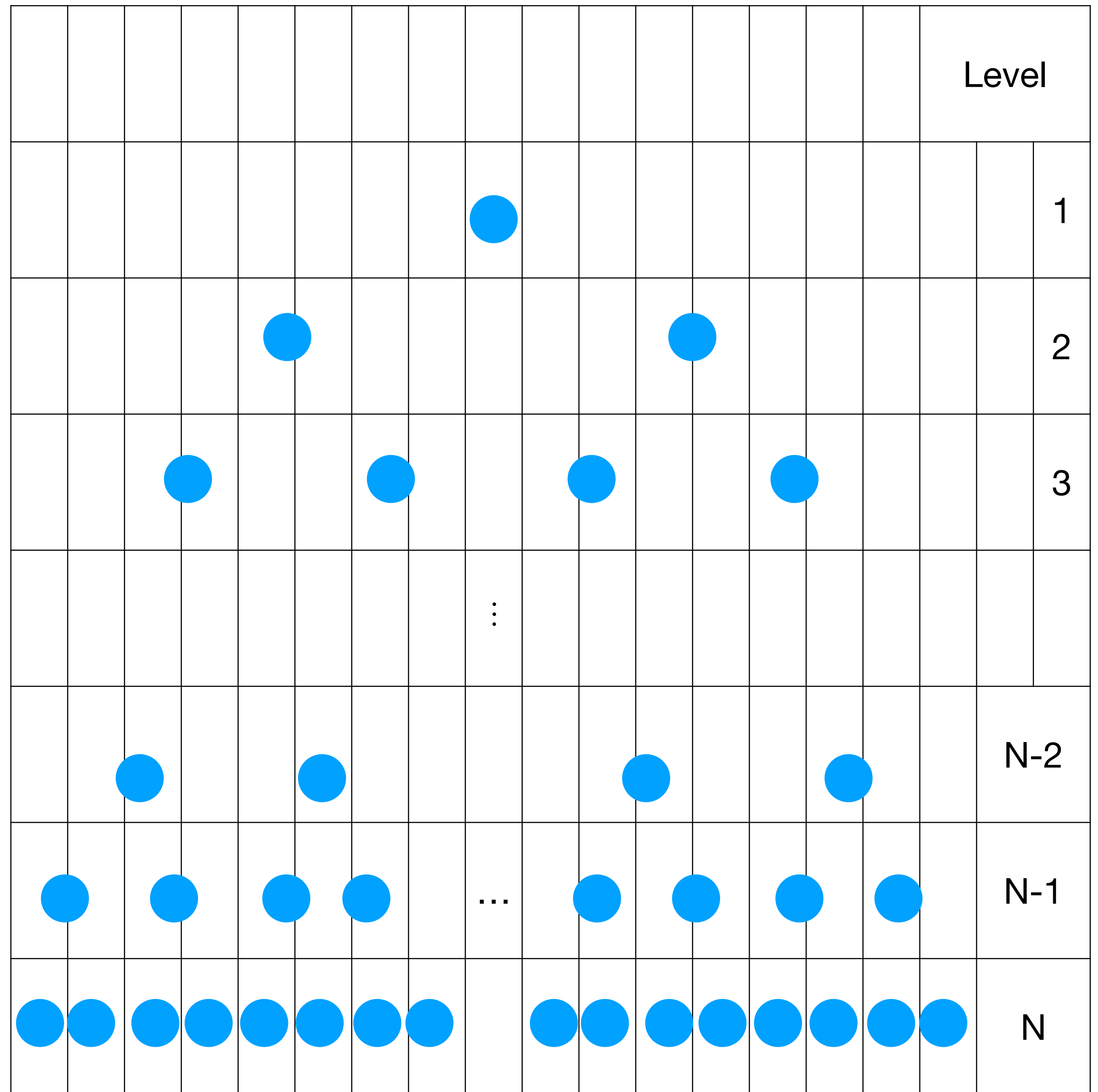
MLM Terminologies

- Revenue (매출)
- Direct Sale Bonus
- Team Commission
- Profit (이익)
- $\text{Profit} = \text{Revenue} - \text{Direct Sale Bonus} - \text{Team Commission}$

Revenue

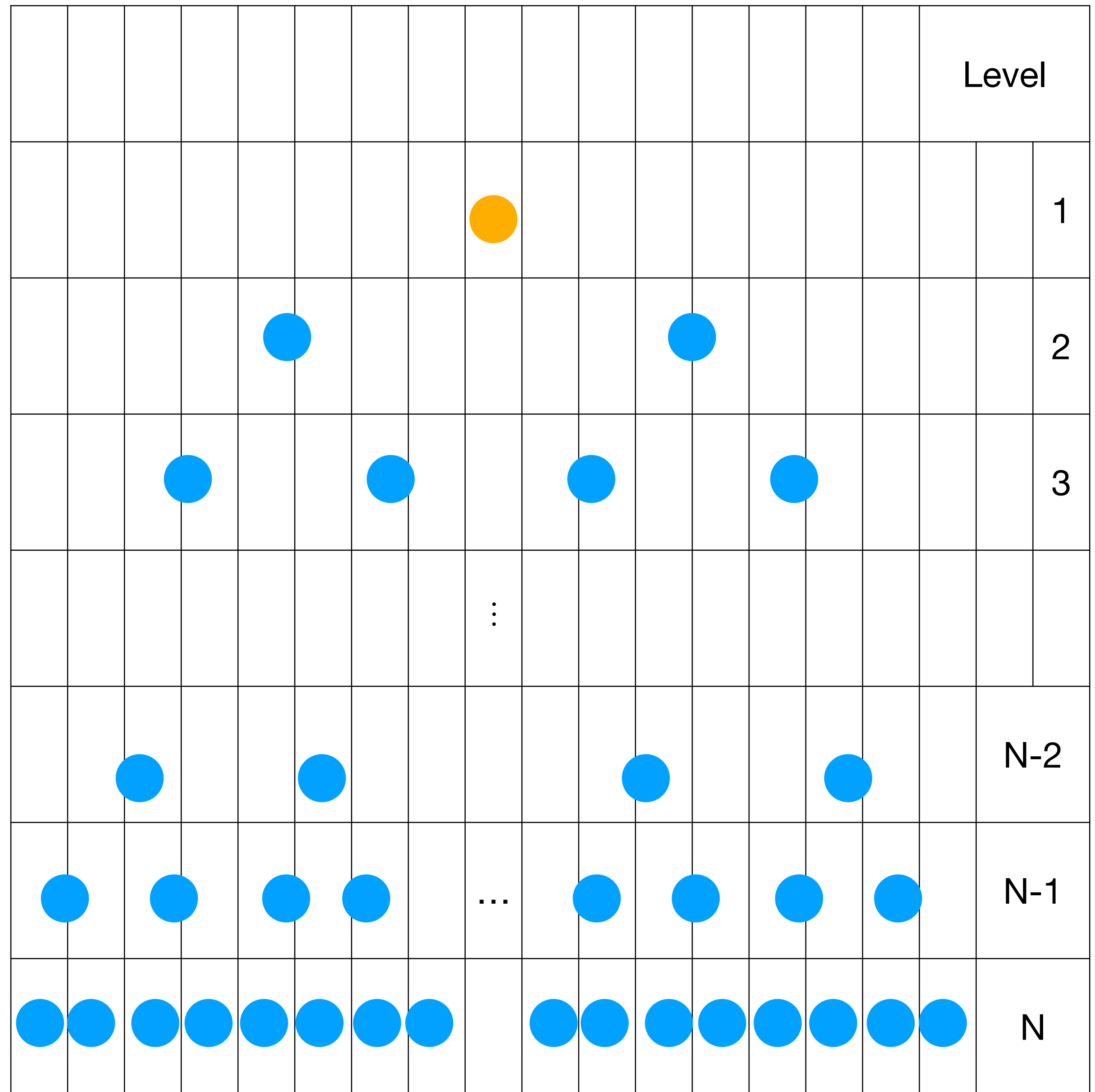
- People * Product Price

- $2^n - 1$



- Direct Sale Bonus Rate * (People -1) * Product Price

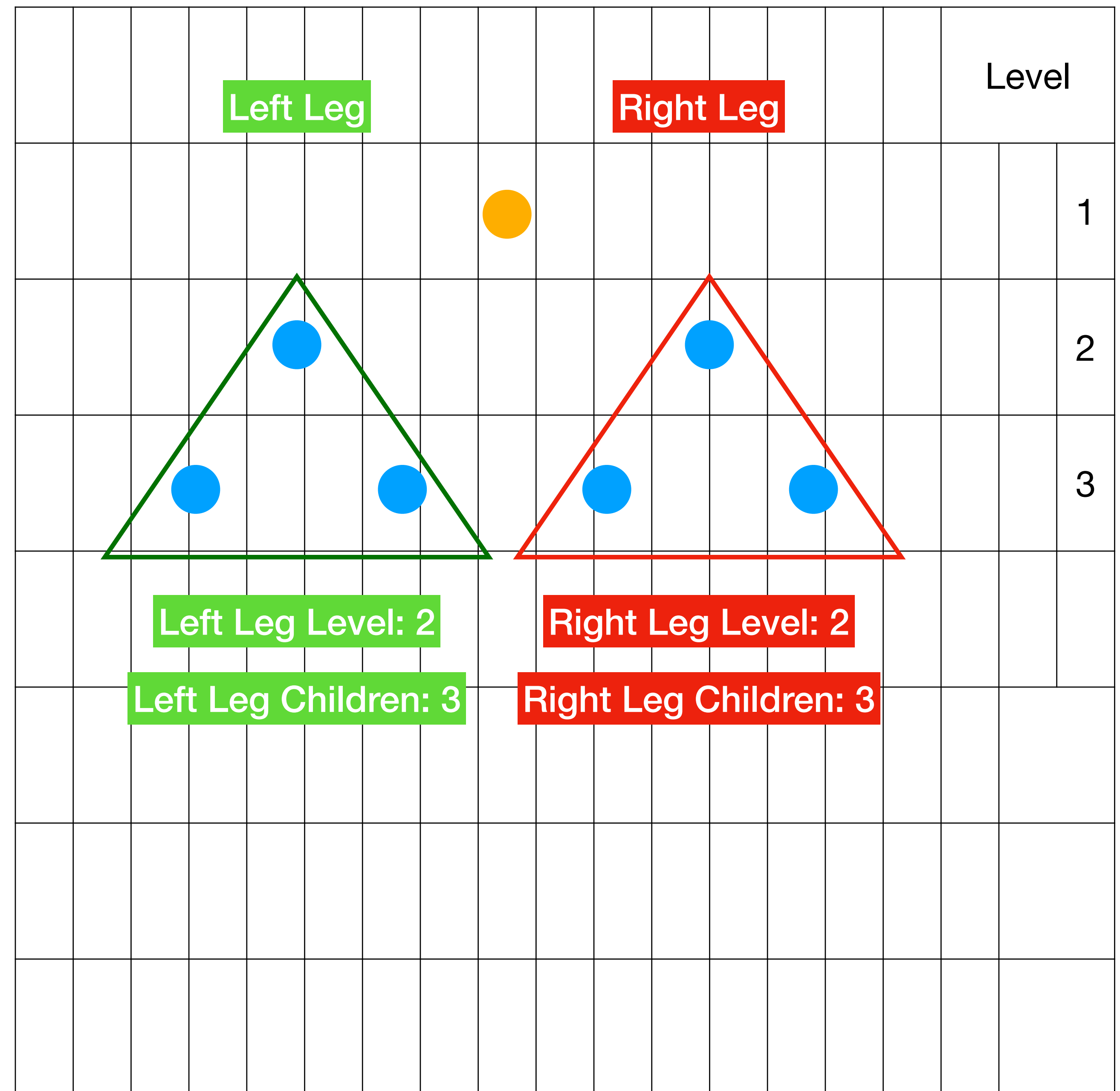
- $2^n - 2$



Team Commission

(Theory)

- When $\text{Left Leg Level} * \text{Right Leg Level} \geq 2$
-  : the smaller of Left Leg Children and $\text{Right Leg Children}$
 - * $\text{Direct Sale Bonus Rate}$
 - * $\text{Team Commission Rate}$
 - * Product Price
- $\text{Direct Sale Bonus Rate} : 20\%$
 $\text{Team Commission Rate} : 10\%$

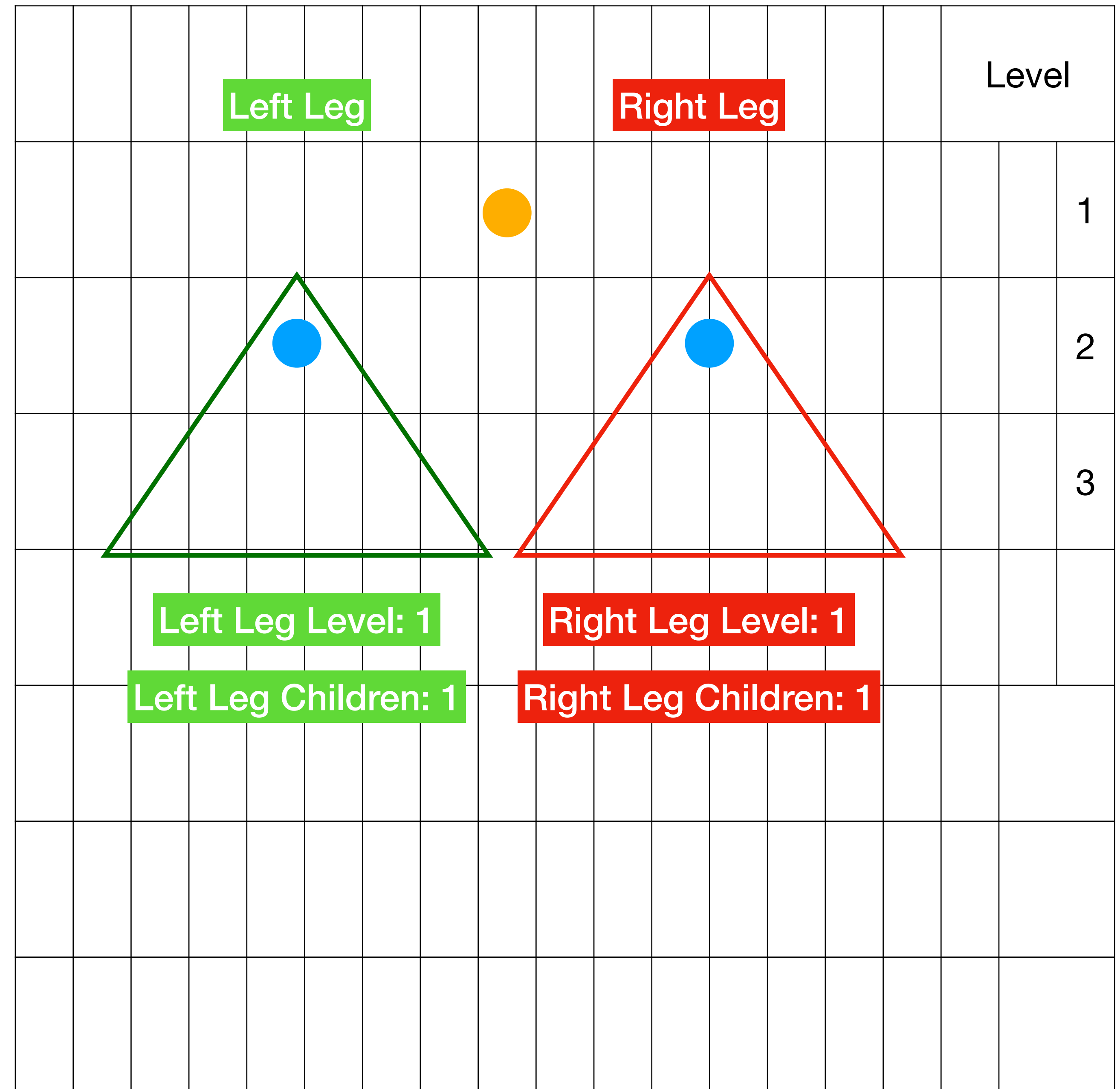


Team Commission

(Ex1)

Does not satisfy the condition

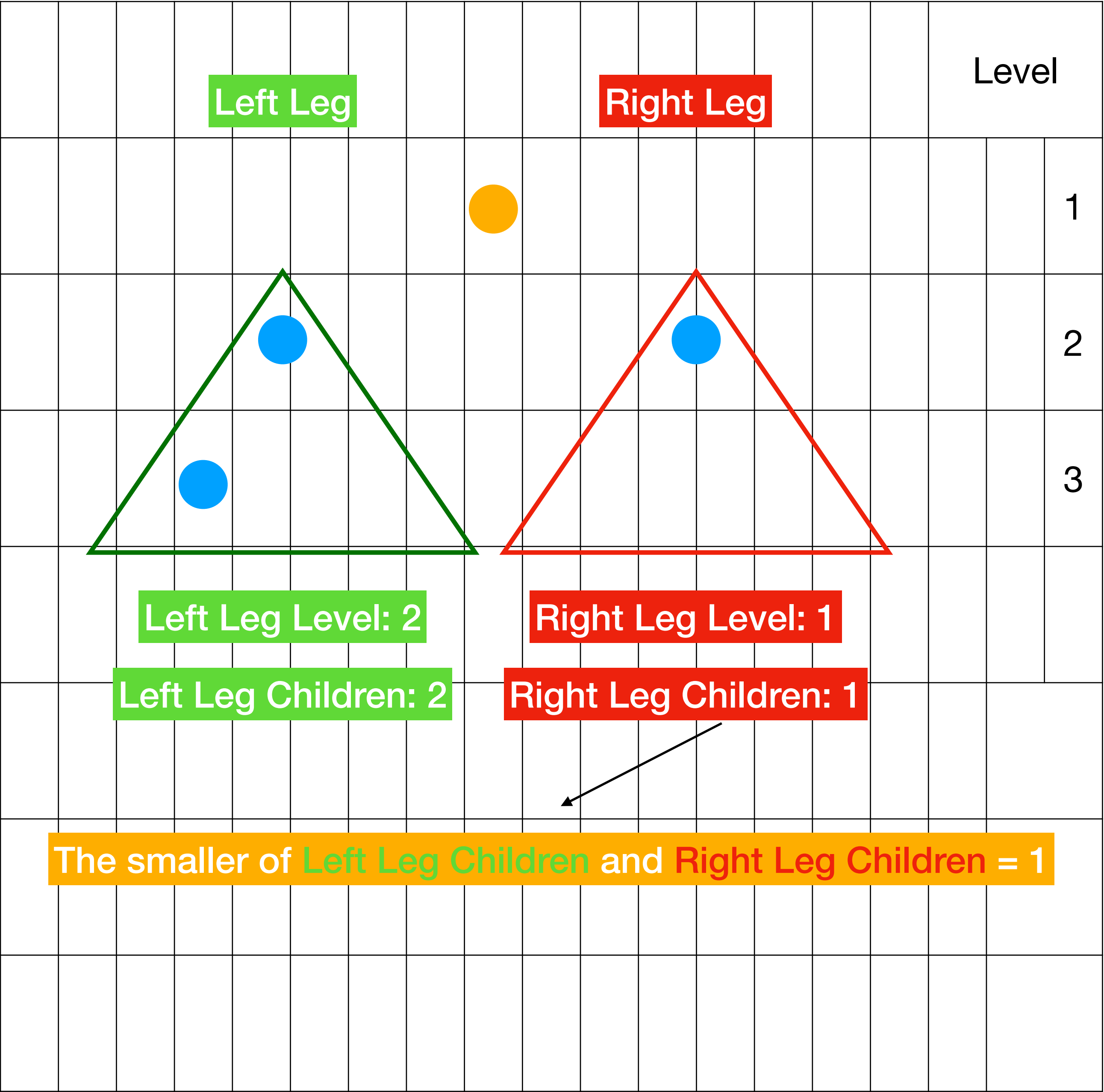
- When **Left Leg Level** * **Right Leg Level** ≥ 2
-  : the smaller of **Left Leg Children** and **Right Leg Children**
 - * **Direct Sale Bonus Rate**
 - * **Team Commission Rate**
 - * **Product Price**
- **Direct Sale Bonus Rate** : 20%
Team Commission Rate : 10%
- **Team Commission** : 0



Team Commission

(Ex2)

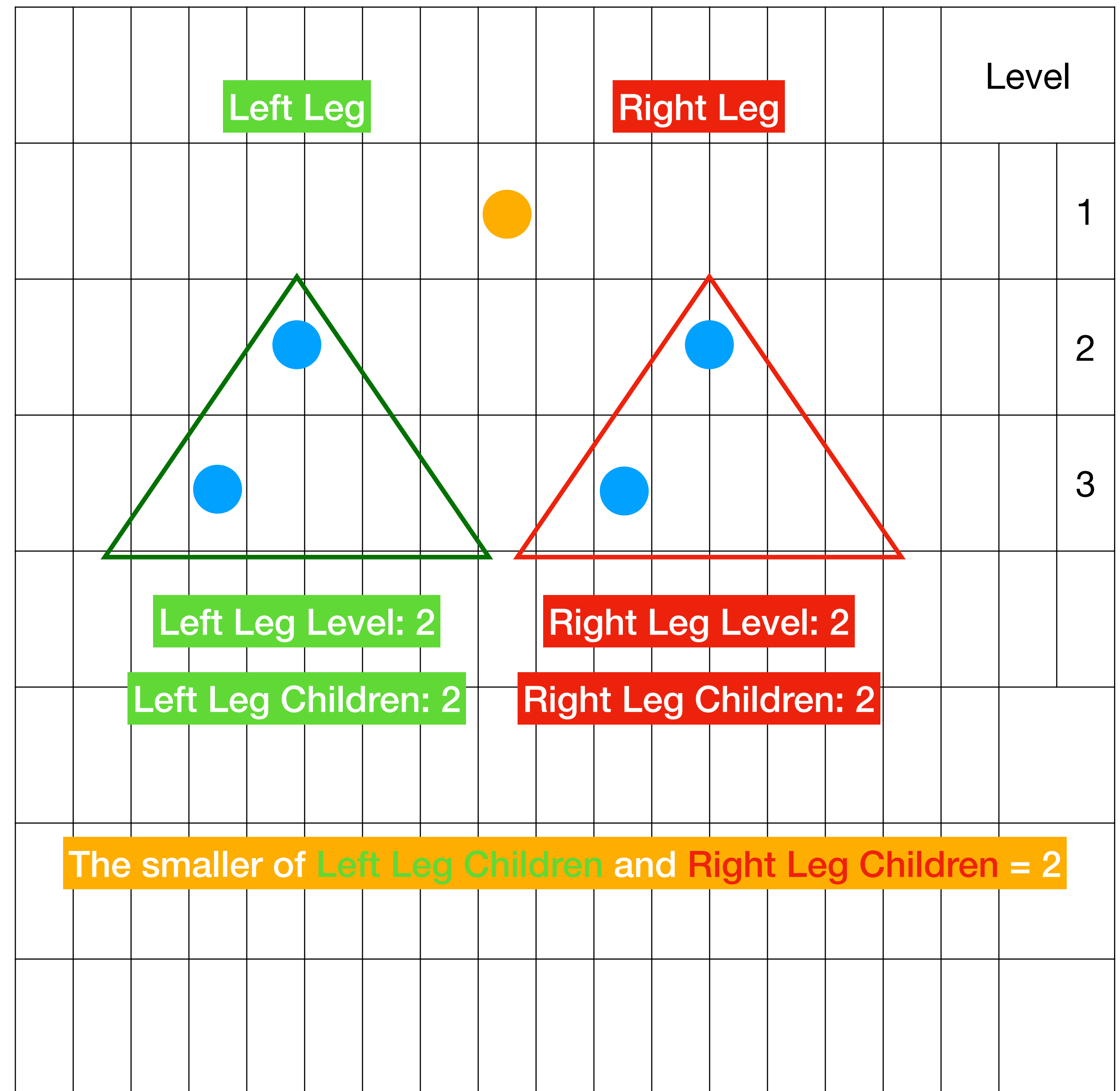
- When **Left Leg Level** * **Right Leg Level** ≥ 2
- : the smaller of **Left Leg Children** and **Right Leg Children**
 - * **Direct Sale Bonus Rate**
 - * **Team Commission Rate**
 - * **Product Price (\$10000)**
- Direct Sale Bonus Rate : 20%**
Team Commission Rate : 10%
- Team Commission : \$200**



Team Commission

(Ex3)

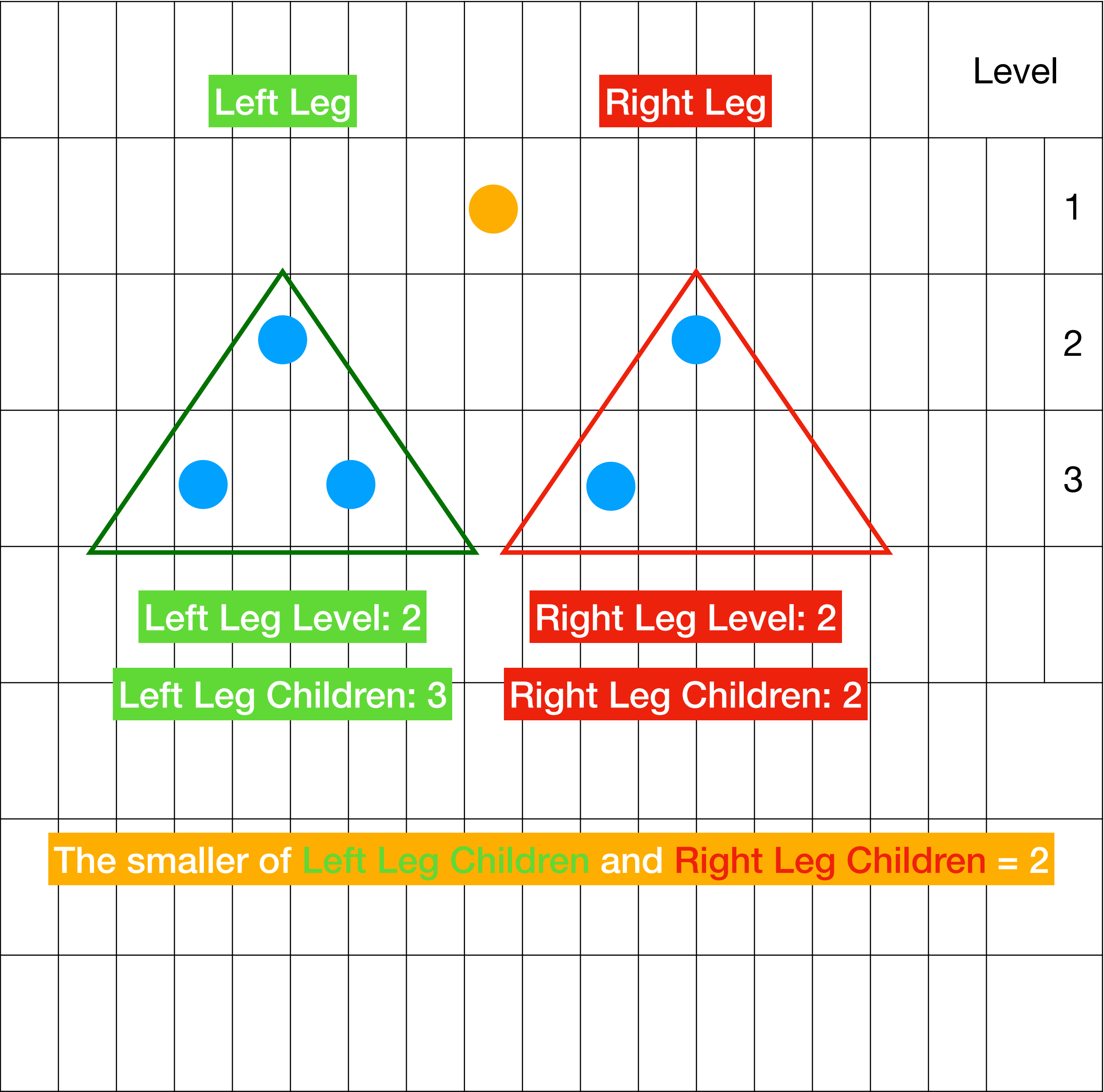
- When **Left Leg Level** * **Right Leg Level** ≥ 2
-  : the smaller of **Left Leg Children** and **Right Leg Children**
 - * **Direct Sale Bonus Rate**
 - * **Team Commission Rate**
 - * **Product Price (\$10000)**
- **Direct Sale Bonus Rate : 20%**
Team Commission Rate : 10%
- **Team Commission : \$400**



Team Commission

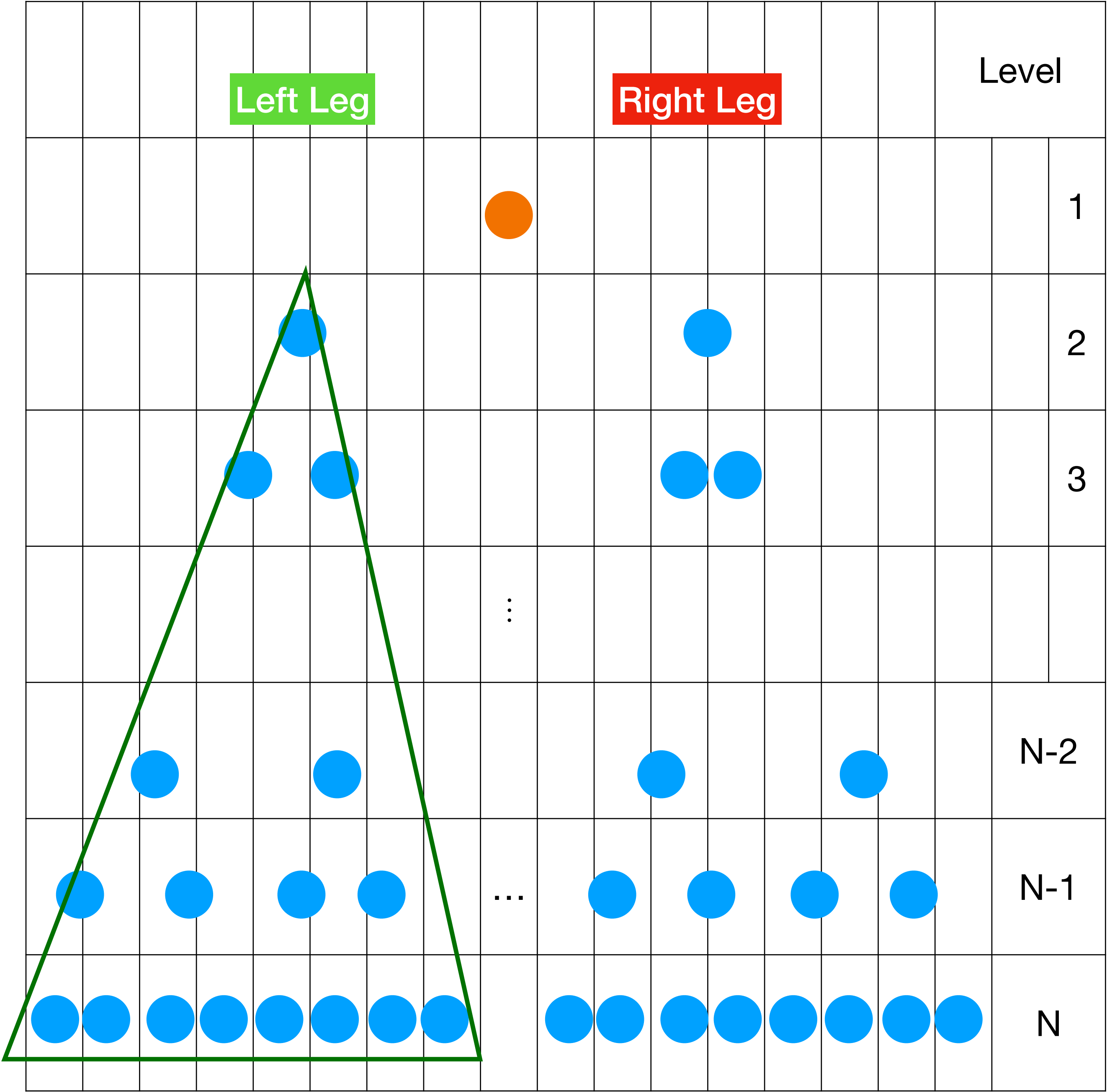
(Ex4)

- When **Left Leg Level** * **Right Leg Level** ≥ 2
- : the smaller of **Left Leg Children** and **Right Leg Children**
 - * **Direct Sale Bonus Rate**
 - * **Team Commission Rate**
 - * **Product Price (\$10000)**
- Direct Sale Bonus Rate : 20%**
Team Commission Rate : 10%
- Team Commission : \$400**

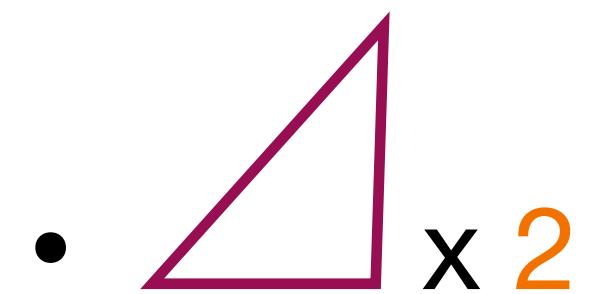


Team Commission Theory

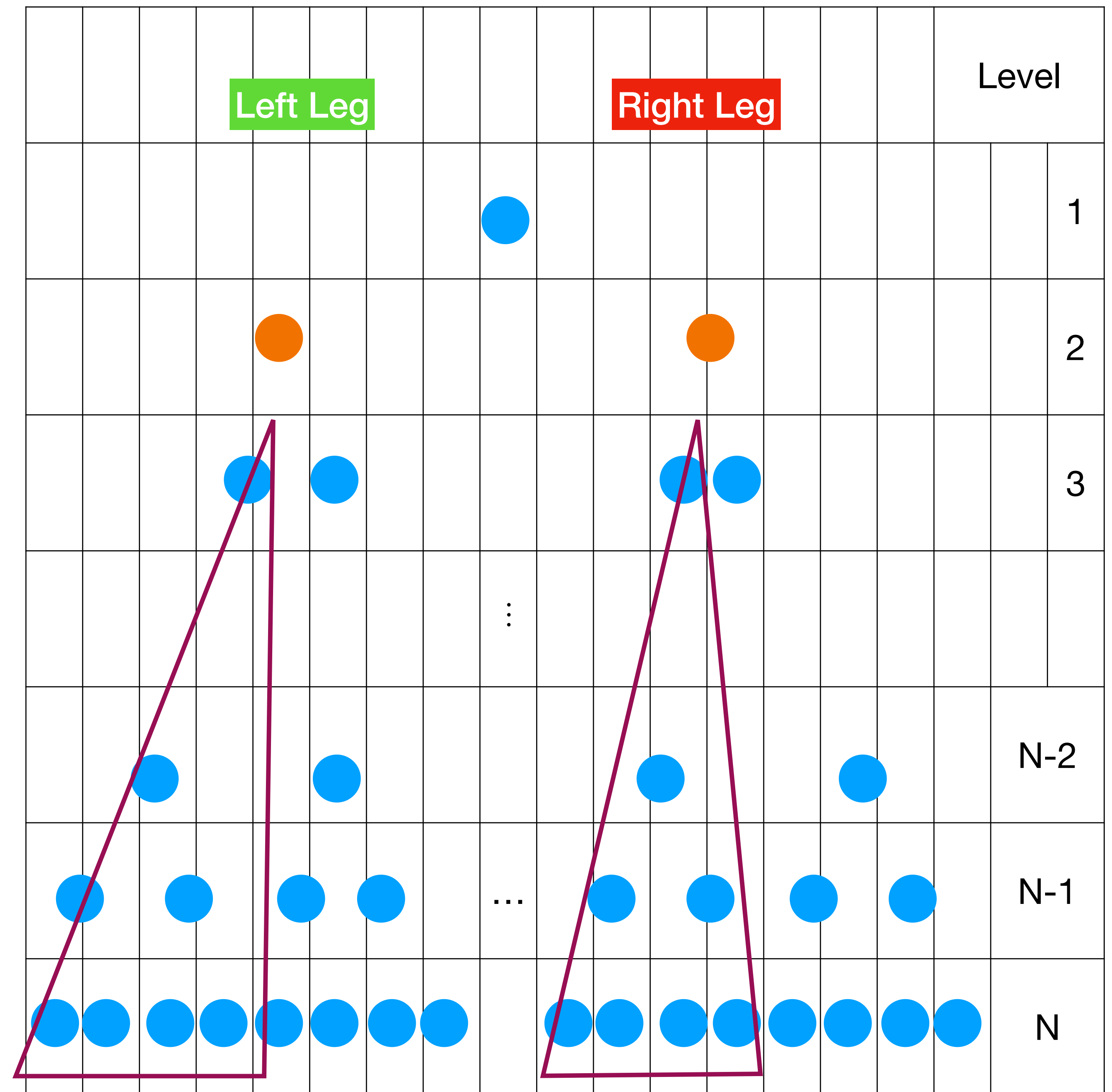
- Level: 1
-  x 1
- $(2^{n-1} - 1) \times 1$




- Level: 2

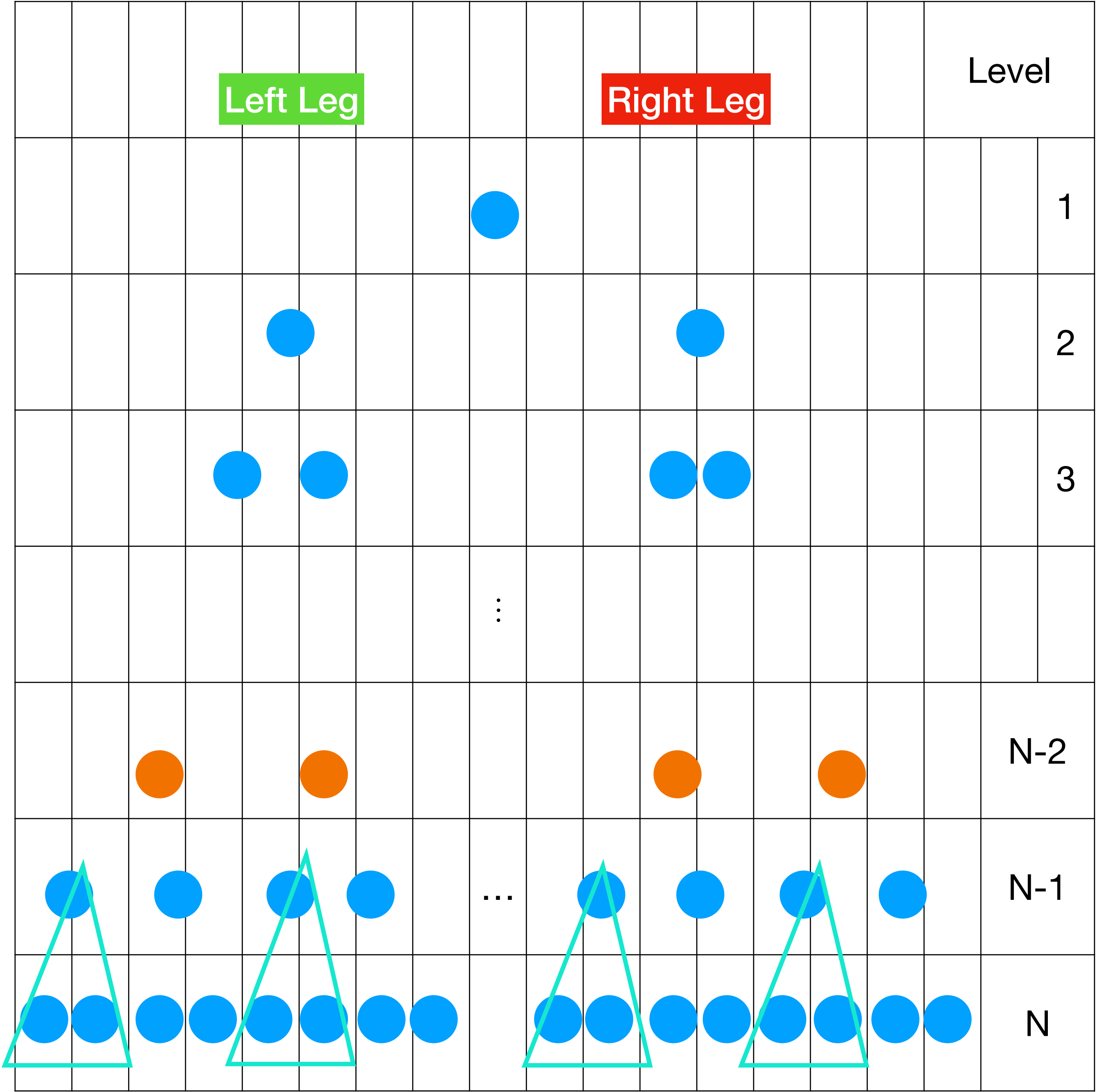


- $(2^{n-2} - 1) \times 2$



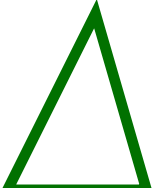
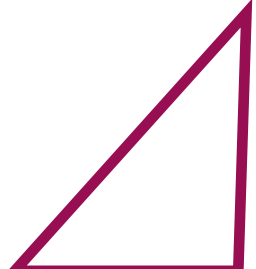

Team Commission Theory

- Level: N-2
-  x 2^{n-3}
- $(2^2 - 1) \times 2^{n-3}$



Team Commission Theory

- Level 1 + Level 2 + ... + Level N-2

-  x 1 +  x 2 + ... +  x 2^{n-3}

- $(2^{n-1} - 1) \times 1 + (2^{n-2} - 1) \times 2 + \dots + (2^2 - 1) \times 2^{n-3}$

- $= \sum_{k=0}^{n-3} (2^{n-1-k} - 1) * 2^k$

- $\sum_{k=0}^{n-3} 2^k (2^{-k+n-1} - 1) = \frac{1}{4} (2^{n+1} n - 5 \times 2^n + 4)$

- $0.25 * (2^{n+1} * n - 5 * 2^n + 4)$

Team Commission

Profitability

- **Profit** = Revenue - **Direct Sale Bonus** - **Team Commission**
- **Direct Sale Bonus Rate** : 20%
Team Commission Rate : 10%
- Revenue = $2^n - 1$
- **Direct Sale Bonus** = $0.2 \times (2^n - 2)$
- **Team Commission** = $0.2 \times 0.1 \times 0.25 * (2^{n+1} * n - 5 * 2^n + 4)$
- Profit = ?

Team Commission

Profitability

- **Does Profit > Revenue 30% ?**
- Profit = 0.3 x Revenue > Direct Sale Bonus + Team Commission
- Prove 👉 0.3 x Revenue - Direct Sale Bonus - Team Commission > 0

Team Commission Profitability

revenue

$2^n - 1$

direct_sale_bonus

$0.2 \cdot 2^n - 0.4$

team_commission

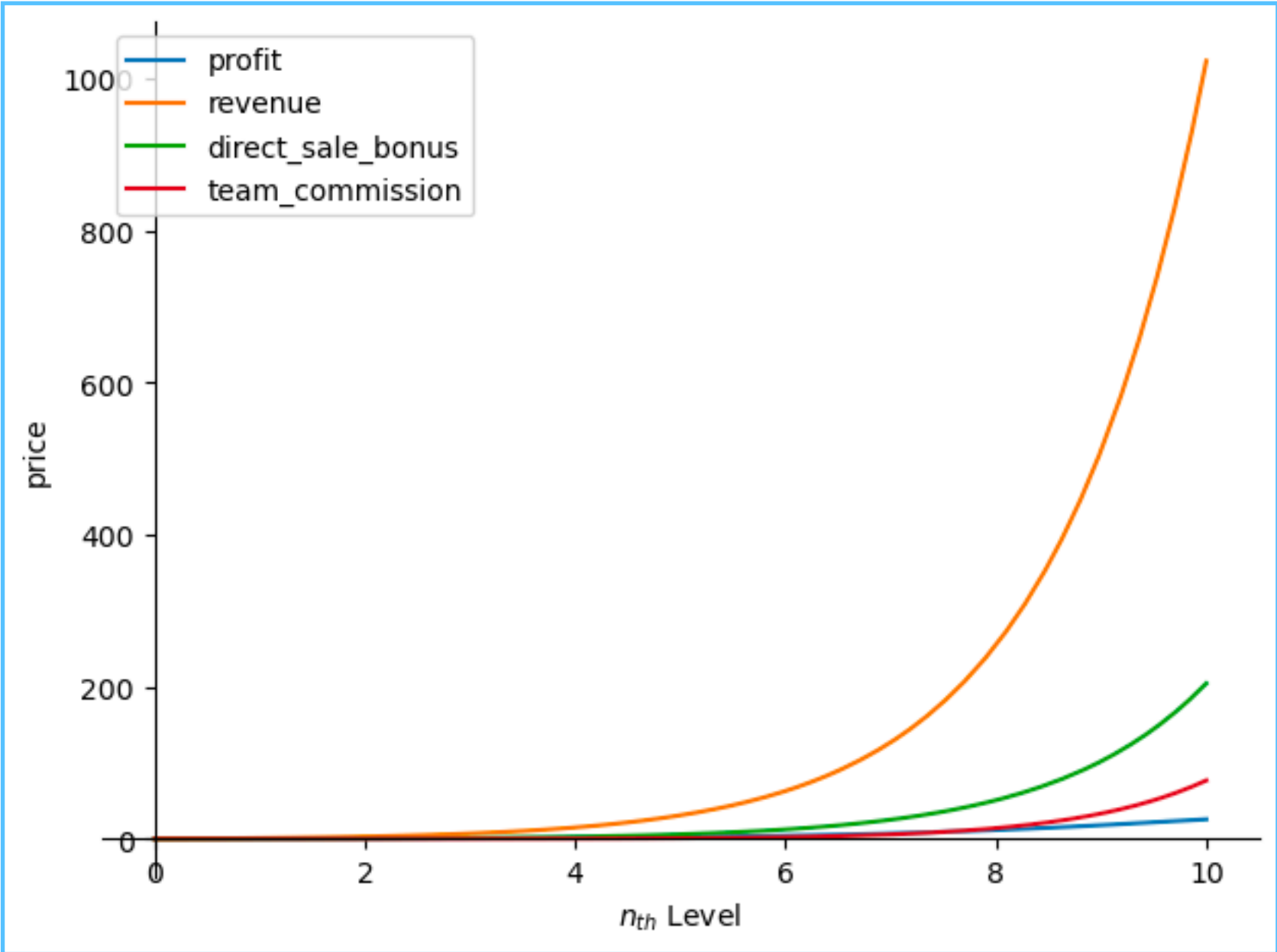
$-0.025 \cdot 2^n + 0.005 \cdot 2^{n+1}n + 0.02$

profit

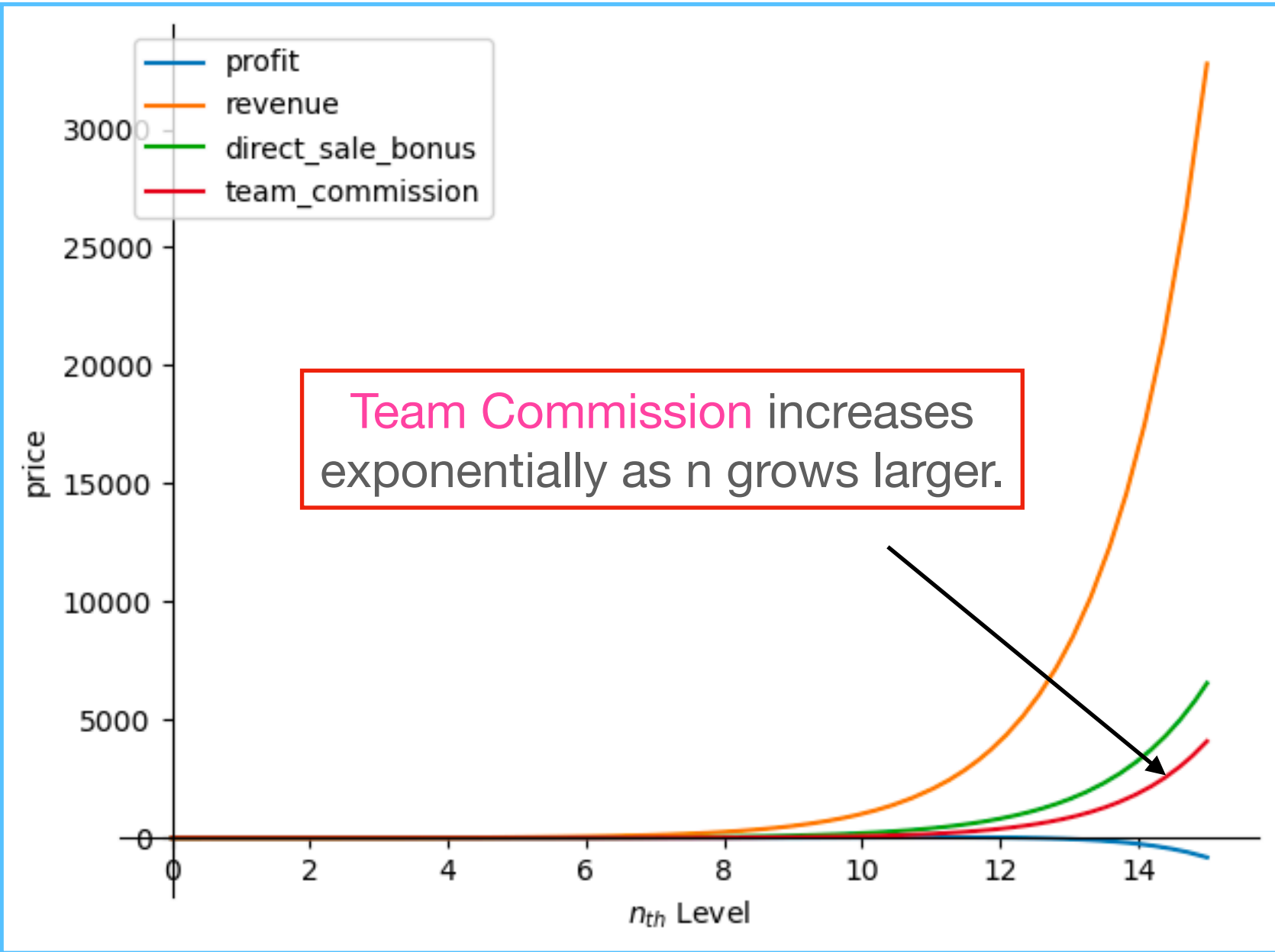
$0.125 \cdot 2^n - 0.005 \cdot 2^{n+1}n + 0.08$

- Prove 👉 0.3 x Revenue - Direct Sale Bonus - Team Commission > 0

$0 \leq n \leq 10$



$0 \leq n \leq 15$



Profit (Revenue x 0.3)

n = 1	:	0.3100000000000000
n = 2	:	0.5000000000000000
n = 3	:	0.8400000000000000
n = 4	:	1.4400000000000000
n = 5	:	2.4800000000000000
n = 6	:	4.2400000000000000
n = 7	:	7.1200000000000000
n = 8	:	11.6000000000000000
n = 9	:	18.0000000000000000
n = 10	:	25.6800000000000000
n = 11	:	30.8000000000000000
n = 12	:	20.559999999999998
n = 13	:	-40.880000000000003
n = 14	:	-245.68000000000000
n = 15	:	-819.12000000000001

Company can expect a profit of **\$25.68 x product price** even in the worst-case scenario.