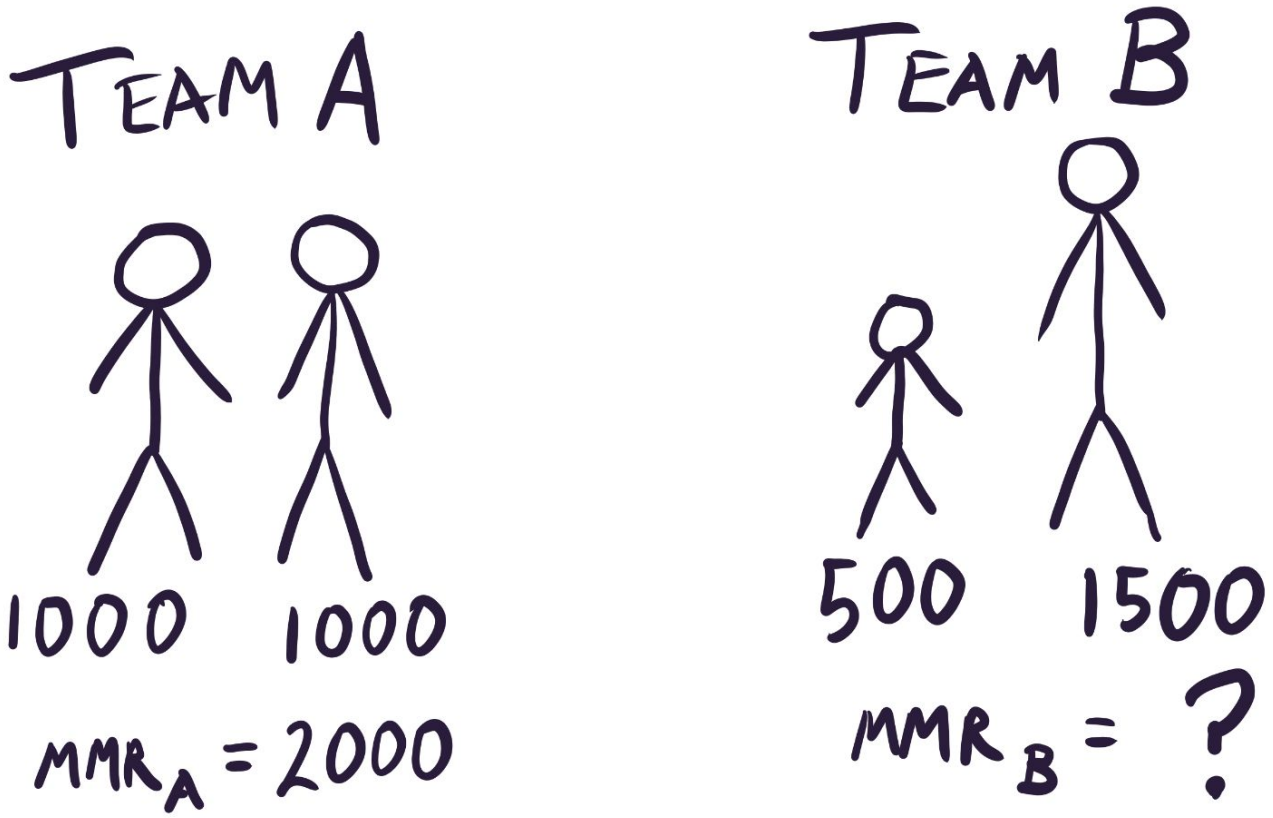
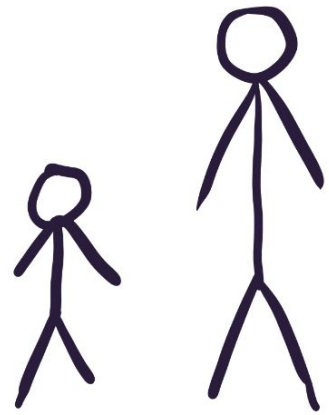

TEAM A
1000
1000
MMR_A = 2000
TEAM B
500
1500
MMR_B = ?

TEAM B



500 1500

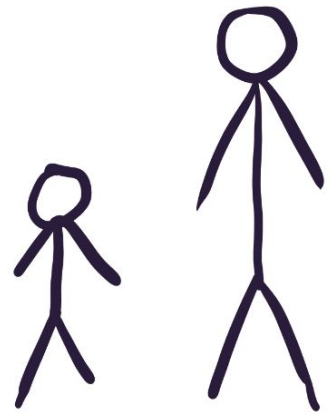
$MMR_B$ = ?

= 2000 ?

= 2462 ?

= 1537 ?

TEAM B



500 1500

$MMR_B$ = ?

= 2000 ?

= 2462 ?

= 1537 ?

ANSWER:

IT DEPENDS ON THE TEAM MODEL

$$\mu_i = \frac{\text{PLAYER MMR}}{1000}$$

$$\omega_i = e^{k\mu_i}$$

$$\text{TEAM MMR} = N \frac{\sum \omega_i \mu_i}{\sum \omega_i} * 1000$$

$N$: team size

$\frac{\sum \omega_i \mu_i}{\sum \omega_i}$: weighted average of $\mu$

$1000$: convert $\mu$ to visible MMR

$$\mu_i = \frac{\text{PLAYER MMR}}{1000} \Rightarrow \begin{matrix} \mu_0 = 0.5 \\ \mu_1 = 1.5 \end{matrix}$$

$$\omega_i = e^{k\mu_i}$$

$$\text{TEAM MMR} = N \frac{\sum \omega_i \mu_i}{\sum \omega_i} * 1000$$

if $k = 0$:

$$= 2 * \frac{1 * 0.5 + 1 * 1.5}{2} * 1000$$

$$= 2000$$

"neutral link"
or purely additive team MMR

$$\mu_i = \frac{\text{PLAYER MMR}}{1000} \Rightarrow \begin{matrix} \mu_0 = 0.5 \\ \mu_1 = 1.5 \end{matrix}$$

$$\omega_i = e^{k\mu_i}$$

$$\text{TEAM MMR} = N \frac{\sum \omega_i \mu_i}{\sum \omega_i} * 1000$$

if $k=1$:

$$= 2 \frac{1.649 * 0.5 + 4.482 * 1.5}{1.649 + 4.482} * 1000$$

$$= 2462$$

"strong link" team model

$$\mu_i = \frac{\text{PLAYER MMR}}{1000} \Rightarrow \begin{matrix} \mu_0 = 0.5 \\ \mu_1 = 1.5 \end{matrix}$$

$$\omega_i = e^{k\mu_i}$$

$$\text{TEAM MMR} = N \frac{\sum \omega_i \mu_i}{\sum \omega_i} * 1000$$

if $k = -1$:

$$= 2 * \frac{0.607 * 0.5 + 0.223 * 1.5}{0.607 + 0.223} * 1000$$

$$= 1537$$

"weak link" team model

NOTES:

1. MMR scale matters
2. $k$ is a continuous value, not just -1, 0, 1
3. $\omega$ can incorporate duration-played (and other factors)
4. $\sigma$ (or $\beta$ for logistic) is another topic
5. Party MMR modeling is related but different