ROK Simulator Equations

Base Equations

$$atk = (atk_{base} + atk_{iconic}) * (1 + atk_{bonus\%})$$
$$def = (def_{base} + def_{iconic}) * (1 + def_{bonus\%})$$
$$hp = (hp_{base} + hp_{iconic}) * (1 + hp_{bonus\%})$$

$$DmgFactor_{200} = \left(2 + \frac{troop_{cnt}}{333333}\right) * \frac{atk * \sqrt{10000 * troop_{cnt}}}{def_{opp} * hp_{opp}} * (1 \pm 0.05)$$

**Note: the red part of the equation is for troop type advantage/disadvantage*

Base Combat

Attacks, counterattacks, and skill damage can be derived from the base damage factor equation with slight additions to the calculations.

$$Attack = DmgFactor_{200} * (1 + dmg_{bonus\%} + normal_{bonus\%})$$

$$Counterattack = DmgFactor_{200} * (1 + dmg_{bonus\%} + normal_{bonus\%} + counter_{bonus\%})$$

$$DirectDmg = DmgFactor_{200} * \frac{skilldmg_{fac} * (1 + dmg_{bonus\%} + skilldmg_{bonus\%})}{200}$$

Reductions

For "damage" reductions (i.e. "damage taken reduced by", "counter attack damage -x%", etc.) they are taken into account after the calculations in the base combat equations. For example:

$$Counterattack = Counterattack * (1 - dmg_{reduction\%} - counter_{reduction\%})$$

$$DirectDmg = DirectDmg * (1 - dmg_{reduction\%} - skilldmg_{reduction\%})$$

Stat reductions (i.e. attack, defense, and health) are taken into account during the base combat equations' calculations. For example:

$$Attack = \left(2 + \frac{troop_{cnt}}{333333}\right) * \frac{atk * \sqrt{10000 * troop_{cnt}}}{(def_{base} + def_{iconic}) * [1 + (def_{bonus\%} - def_{reduction\%})] * hp_{opp}} * (1 \pm 0.05)$$

$$Attack = \left(2 + \frac{troop_{cnt}}{333333}\right) * \frac{atk * \sqrt{10000 * troop_{cnt}}}{def_{opp} * (hp_{base} + hp_{iconic}) * [1 + (hp_{bonus\%} - hp_{reduction\%})]} * (1 \pm 0.05)$$

Healing & Shielding (Speckoh)

$$heal_{cnt} = \frac{heal_{fac} * \sqrt{troop_{cnt}}}{hp_{base} + hp_{iconic}} * (1 + heal_{bonus\%})$$

$$shield = \frac{shield_{fac} * \sqrt{troop_{cnt}}}{hp}$$

Other Ideas

HHobbsy - Primary inspiration

$$DmgFactor_{200} = 2 * \frac{atk * \sqrt{10000 * troop_{cnt}}}{def_{opp} * hp_{opp}} * (1 \pm 0.05)$$

Metalfyre

$$DmgFactor_{200} = (200 * ?) * \frac{atk * troop_{cnt}}{(def * hp * troop_{cnt})_{opp}} * (1 \pm 0.05)$$

Spechoh

$$DmgFactor_{200} = \frac{atk * troop_{cnt}}{def_{opp} * hp_{opp}} * \sqrt{\frac{troop_{cap}}{troop_{cnt}}} * (0.6114 \pm 0.3)$$