

$$\overline{\begin{bmatrix} k \\ n \end{bmatrix}}^{\tau} \gamma = n^{k-1} \sum_{d \prec n} d^{-k} \sum_b^n (\tau n + bd)/d^2 \gamma$$

$$\overline{\begin{bmatrix} k \\ n \end{bmatrix}}^{\#} \gamma = \sum_{m \succ d \prec n} d^{k-1} \overline{\begin{bmatrix} k \\ mn/d^2 \end{bmatrix}}^{\#} \gamma$$

$$\begin{bmatrix} k \\ m \end{bmatrix} \begin{bmatrix} k \\ n \end{bmatrix} = \sum_{m \succ d \prec n} d^{k-1} \begin{bmatrix} k \\ mn/d^2 \end{bmatrix}$$

$$\overline{\begin{bmatrix} k \\ n \end{bmatrix}} \gamma \overline{\begin{bmatrix} k \\ n \end{bmatrix}} \gamma = \overline{\begin{bmatrix} k \\ n \end{bmatrix}} \gamma \overline{\begin{bmatrix} k \\ n \end{bmatrix}} \gamma$$