

$$a \leftarrow a$$

$$b \leftarrow b$$

$$T_{pq}: \quad \begin{aligned} a &\leftarrow bq + aq + ap \\ b &\leftarrow bp + aq \end{aligned}$$

$$\begin{aligned} T_{pq}: \quad a &\leftarrow (bp + aq)q + (bq + aq + ap)q + (bq + aq + ap)p \\ &= \underline{bpq} + \underline{aq^2} + \underline{bq^2} + \underline{aq^2} + \underline{apq} + \underline{bqp} + \underline{aqp} + \underline{ap^2} \\ &= b(q^2 + 2qp) + a(\underline{q^2} + \underline{q^2} + \underline{pq} + \underline{qp} + p^2) \\ &= b(q^2 + 2qp) + a(q^2 + 2qp) + a(q^2 + p^2) \end{aligned}$$

$$\begin{aligned} b &\leftarrow (bp + aq)p + (bq + aq + ap)q \\ &= \underline{bp^2} + \underline{aqp} + \underline{bq^2} + \underline{aq^2} + \underline{apq} \\ &= b(q^2 + p^2) + a(q^2 + 2qp) \end{aligned}$$

$$\therefore T_{pq}^2 = T_{p'q'} \quad \text{WHERE} \quad p' = q^2 + p^2$$

$$q' = q^2 + 2qp$$