

$$W_A = (a_1^1 + a_2^1 + a_1^2 + a_2^2)(b_1^1 + b_2^1 + b_1^2 + b_2^2) + (a_1^1 + a_2^1 - a_1^2 - a_2^2)(b_1^1 - b_2^1 + b_1^2 - b_2^2)$$

$$W_V = (a_1^1 + a_2^1 + a_1^2 + a_2^2)(b_1^1 + b_2^1 - b_1^2 - b_2^2) + (a_1^1 + a_2^1 - a_1^2 - a_2^2)(b_1^1 - b_2^1 - b_1^2 + b_2^2)$$

$$W_H = (a_1^1 - a_2^1 + a_1^2 - a_2^2)(b_1^1 + b_2^1 + b_1^2 + b_2^2) + (a_1^1 - a_2^1 - a_1^2 + a_2^2)(b_1^1 - b_2^1 + b_1^2 - b_2^2)$$

$$W_D = (a_1^1 - a_2^1 + a_1^2 - a_2^2)(b_1^1 + b_2^1 - b_1^2 - b_2^2) + (a_1^1 - a_2^1 - a_1^2 + a_2^2)(b_1^1 - b_2^1 - b_1^2 + b_2^2)$$