The scalar product is an algebraic operation that takes two equal-length sequences of numbers (usually coordinate vectors) and returns a single number.

The dot product of two vectors $\mathbf{a} = [a_1, a_2, \ldots, a_n]$ and $\mathbf{b} = [b_1, b_2, \ldots, b_n]$ is defined as:

$$\mathbf{a} \cdot \mathbf{b} = \sum_{i=1}^{n} a_i b_i = a_1 b_1 + a_2 b_2 + \cdots + a_n b_n$$

In our case,

$$\mathbf{a} \cdot \mathbf{b} = a_1 b_1 + a_2 b_2$$

We have $\mathbf{a} = (2, 4)$, $\mathbf{b} = (2, 5)$. Find $\mathbf{a} \cdot \mathbf{b}$:

$$\mathbf{a} \cdot \mathbf{b} = 2 \cdot 2 + 4 \cdot 5 = 24$$

Answer: $\mathbf{a} \cdot \mathbf{b} = 24$.