

# 1913. Maximum Product Difference Between Two Pairs

## Description

The **product difference** between two pairs  $(a, b)$  and  $(c, d)$  is defined as  $(a * b) - (c * d)$ .

- For example, the product difference between  $(5, 6)$  and  $(2, 7)$  is  $(5 * 6) - (2 * 7) = 16$ .

Given an integer array `nums`, choose four **distinct** indices `w`, `x`, `y`, and `z` such that the **product difference** between pairs  $(\text{nums}[w], \text{nums}[x])$  and  $(\text{nums}[y], \text{nums}[z])$  is **maximized**.

Return *the maximum such product difference*.

### Example 1:

**Input:** `nums = [5,6,2,7,4]`

**Output:** 34

**Explanation:** We can choose indices 1 and 3 for the first pair (6, 7) and indices 2 and 4 for the second pair (2, 4).

The product difference is  $(6 * 7) - (2 * 4) = 34$ .

### Example 2:

**Input:** `nums = [4,2,5,9,7,4,8]`

**Output:** 64

**Explanation:** We can choose indices 3 and 6 for the first pair (9, 8) and indices 1 and 5 for the second pair (2, 4).

The product difference is  $(9 * 8) - (2 * 4) = 64$ .

### Constraints:

- $4 \leq \text{nums.length} \leq 10^4$
- $1 \leq \text{nums}[i] \leq 10^4$

