

- The product difference between (a, b) and (c, d) is $(a * b) - (c * d)$
- Given a container of numbers, choose an a, b, c, d such the product difference is maximized
- Return the maximized product difference.

The approach is easy. Find the two largest numbers, then find the two smallest numbers.

$$a = \text{max1}, \quad b = \text{max2}, \quad c = \text{min1}, \quad d = \text{min2}$$

Then return $(a * b) - (c * d)$

How to find these values?

Approach 1:

- 1.) Sort the array
- 2.) First two elements are min1 and min2
- 3.) Last two elements are max1 and max2 .
- 4.) Return product difference.

Approach 2:

- 1.) Enumerate over all values in array
- 2.) Compare each item with curr max & min , updating in linear fashion.
- 3.) values $[0..1]$ are maximums. values $[2..3]$ are minimums
- 4.) Return product difference of chosen values.