

## Product of Array Except Self

Input nums = [1, 2, 3, 4]    Output = [24, 12, 8, 6]

Note: We cannot use / (divide) operator

Approach 1

Using infix & postfix Arrays

nums → 

1	2	3	4
---	---	---	---

Infix → ① 

1	2	6	24
---	---	---	----

 ①

(product of nums to its left)  
from left

postfix → ① 

24	24	12	4
----	----	----	---

 ①

(product of nums starting from  
right to its right)

ANS → 

24	12	8	6
----	----	---	---

In Approach 1, we are using extra space of  $O(2N)$

We can use the same approach & modify not to use  
 $O(2N)$  i.e. infix & postfix arrays

Approach 2

→

nums → 

1	2	3	4
---	---	---	---

  
0 1 2 3

result → 

--	--	--	--

← Fill product before this  
index

Traverse nums

left to Right

① 

1	1	2	6
---	---	---	---

$i=0 \rightarrow val = 1$  (left product)

$i$

$i=1 \rightarrow val = 1$  (left prod)

$i$

$i=2 \rightarrow val = 2$  (left product)

$i$

$i=3 \rightarrow val = 6$  (left product)

product)

Now Result array looks like

num → 

1	2	3	4
---	---	---	---

result → 

1	1	2	6
---	---	---	---

Now traverse num, right to left to capture product before reaching index & then multiply to result's existing value

