

# Infix to Postfix Sums

## Example ①

$$A + B * C$$

Step	Input	A	Stack	+	Output
1	A+B*C	BA	-	+	(A-B)*
2	+B*C	+BA	-		A (A-B)*
3	B*C	+BA	+	*	A (A-B)*
4	*C	+BA	+	)	AB (A-B)*
5	C	) +BA	+*	-)	AB (A-B)*
6		) +BA	+*	-)	ABC (A-B)*
7		- (A) +BA	+		* ABC*
8		* - (A) +BA			ABC*+

final postfix expression :  $ABC*+$





# Postfix to Infix

①  $AB+C*$

Step		Postfix	Stack
1	[ ]	$AB+C*$	[ ]
2	[ ]	$B+C*$	A [A]
3	[ ]	$+C*$	$(A, B)$
4	[ ]	$C*$	$(A+B)$
5	[ ]	$*$	$((A+B), C)$
6	[ ]		$((A+B)*C)$

Infix Expression :  $((A+B)*C)$

2.  $ABC*+D-$

Step	Postfix	Stack
1	$A+BC*+$	[ ]
2	$B C * + D -$	A
3	$C * + D -$	A, B
4	$* + D -$	A, B, C
5	$+ D -$	A, (B*C)
6	$D -$	$((A+(B*C)))$
7	$-$	$((A+(B*C)), D)$
8		$((A+(B*C))-D)$

Infix Expression : 01

$\rightarrow ((A+(B*C))-D)$

# Balancing parenthesis

1.  $(A+B) * (C-D)$

Step	Read Character	Stack
1.	(	[(
2.	A	[(
3.	+	[(
4.	B	[(
5.	)	[]
6.	*	[]
7.	(	[(
8.	C	[(
9.	-	[(
10.	D	[]
11.	)	[]

Stack is empty.

So,  $(A+B) * (C-D)$  is balanced.

(((A+B)\*C)-D)



2.  $\{A + (B * C) - D\}$

Step	Read character	Stack
1	{	{
2.	A	{ A }
3.	+	{ + }
4.	(	{ ( , { }
5.	B	{ ( , { B }
6.	*	{ ( , { * }
7.	C	{ ( , { C }
8.	)	{ }
9	-	{ - }
10.	D	{ D }
11.	}	{ }
12.	)	{ ) }

↓  
Stack not Empty.

So, the equation  $\{A + (B * C) - D\}$  is Not Balanced.