Evaluation of Arithmetic Expressions

Infix, postfix and prefix notations are three different but equal notations of writing algebraic expressions.

Infix notation :- Operator is placed in b/n operands.
Ex:- A+B.

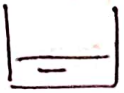
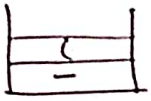
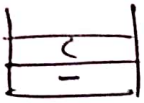
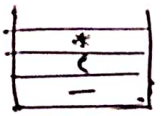
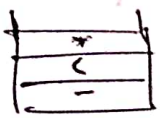
Prefix notation :- Operator is placed before operands.
Ex:- +AB.

Postfix notation :- Operator is placed after operands.
Ex:- AB+.

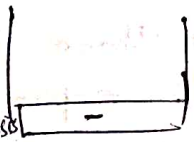
Conversion of an infix expression into a postfix expression.

(1) Add ")" to the end of the infix expression.
(2) Push "(" on to the stack.
(3) Repeat until each character in the infix notation is scanned.

Ex:- a-(b*c-d)/e

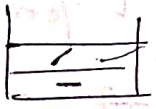
Infix	Stack	Postfix	
a		a	
-		a	
(		a	
b		ab	
*		ab	When an operator is there & the previous operator is "(", then don't bother about the priority.
c		abc	
-		abc*	star has highest priority So (pop).
d		abc*d	

) when it is encountered, removes all operators until it reaches to left parenthesis



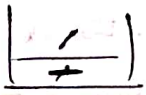
.abc*d-

/ → higher than '-', so we can push it into stack.



abc*d-

e



abc*d-

abc*d-/e

Eg:- A * B+C

Current symbol	Operator stack	Postfix string.
A		A
*	*	A
B	*	AB
+	+	AB* (star high precedence so pop & push '+' into stack)
C	+	AB* C
		AB* C +

A + B * C

A		A
+	+	A
B	+	AB
*	+*	AB
C		ABC
		ABC+*

A * (B+C)

A		A
*	*	A
(	*(	A
B	*(	AB
+	*(+	AB
C	*(+	ABC

) + ~~AB+C+~~ ABC+

ABC++

—

A -B+C

A		A
-	-	A
B	+-	AB
+	-+	AB
C	-+	ABC
		ABC+-

(X)

A		A
-	-	A
B	-	AB
+	+	AB-
C	+	AB-C
		AB-C+

(X)

—

~~A*(B+C~~

A+ B*C/CE-F)

A		A.
+	+	A.
B	+	AB
*	+*	AB
C	+*	ABC
/	+/	ABC*
(	+/(	ABC*
E	+/(	ABC*E
-	+/(-	ABC*E.
F	+/(-	ABC*EF
		~~ABC*EF-*~~
)	+/	ABC*EF-
		ABC*EF-/+

—

(a/(b-c+d))*(e-a)*c.

(	(	
a	(	a
/	(/	a
(	(/(	a
b	(/(	ab
-	(/(-	ab
c	(/(-	abc
+	(/(+	abc-
d	(/(+	abc-d
)	(/	abc-d+
)		abc-d+/
*	*	abc-d+/
(	*(	abc-d+/
e	*(	abc-d+/e
-	*(-	abc-d+/e.
a	*(-	abc-d+/ea
)	*	abc-d+/ea-
*	**	abc-d+/ea-
c	**	abc-d+/ea-c

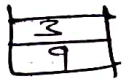
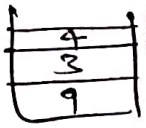
abc-d+/ea-c**.

9-(€3*4)+8)/4

9		9
-	-	9
(	-(	9
(	-((	9
3	-((	93
*	-((*	93
4	-((*	934
)	-(	934*
4	-(●	934*
+	-(+●	934*
8	-(+●	934*8
~~)~~	~~-(+●~~	~~93~~
)	-	934*8+●
/	-/	934*8+●
4	-/	934*8+●4

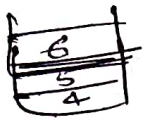
934*8+●4/-

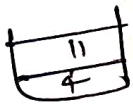
934*8+41-

9	9	
9,3	9,3	
4	9,3,4	

456+*

4	4
5	4,5
6	4,5,6
+	4, 5+6=11
*	4*11=44.





=.

10+2-8+3

10		10
+	+	10
2	+	10 2
-	-	10 2+
8	-	10 2+8
+	+	10 2+8-
3	+	10 2+8-3.
		10 2+8-3+

10 10

-

10 2+ 8 -3+

10	10
2	10,2
+	10+2=12
8	12,8
-	12-8=4
3	4,3
+	4+3=7.

628*+3-.

6	6
2	6,2
8	6,2,8.
*	6, 2*8=16
	6,16
+	6+16=22
3	22,3.
-	22-3=19

231*+9-

2	2
3	2,3
1	2,3,1
*	2, 3*1=3
	2,3
+	2+3=5
9	5,9
-	5-9 = -4.

53+621/*35*+.

5	5
3	5,3
+	8
6	8,6
2	8,6,2
/	8,3
*	24
3	24,3
5	24,3,5.
*	24,15
+	24+15=39.

786*-:

~~7-8-76~~

7	7
8	7,8
6	7,8,6
*	7, 8*6 = 48
	7,48
-	7 -48 = -41.

(6-4/2) * (4/2-1)

~~6~~		~~6~~
~~(~~		
6	(	6
-	(-	6
4	(-	64
~~4~~/	(-/	64
2	(-/	642
~~)~~		642/-
*	*	642/-
(	*(	642/-
4	*(	642/-4
/	*(/	642/-4/
2	*(/	642/-4/2
-	*(-	642/-4/2
1	*(-	642/-4/2/1
)	*	642/-4/2/1-

642/-4/2/1-*

6.	6
4	6,4
2	6,4,2
1	6,2
-	4
2	4,2
1	2
1	2,1
-	1

6	6
4	6,4
2	6,4,2
1	6,2
-	4
4	4,4
2	4,4,2
1	4,2
1	4,2,1
-	4,1
*	4*1=4