CONTENTS

NATIONAL SCHOOL OF BANKING

BODMAS

When an expression involves all (or some of) the signs , , , , brackets and 'of', the operations inside the brackets are to be carried out first, followed by 'of' operation, then multiplication or division and lastly, addition or subtraction. This whole thing can be summarised as an acronym 'BODMAS' rule, where 'B' stands for bracket, 'O' for of, 'D' for division, 'M' for multiplication, 'A' for addition and 'S' for subtraction.

Study the following rules for simplifying expression.

1) If an expression contains brackets, the expression within the brackets should be simplified first.

2) If the expression involves 'of', multiplication (or division), addition and subtraction, then 'of' should be performed first, followed by multiplication or division. Then proceeding from the left to the right, addition and subtraction are carried out in the order in which the sign of addition and subtraction are given. It should be noted that if the expression contains 'of' and 'division', always do 'of' first and then do division, in order to get the correct answer.

3) If the expression involves all the four operations, then multiplication and division are carried out first in the order in which they are given from left to right. This order also applies to the operations of addition and subtraction, which are carried out later.

Study the names of the brackets given below :-

( ) is circular bracket

{ } is curly bracket

[ ] is square bracket

When a bracket is preceded by plus ( ) sign, the bracket is removed without making any change in the expression.

When a bracket is preceded by minus ( ) sign, the bracket is removed by changing ' to ' and ' to ' within the bracket.

When there is a bracket within a bracket, the innermost bracket is to be removed first, followed by the next innermost and so on.

Violation of the above rule leads to the wrong answer.

This can be explained by taking the following simple example.

Anish has five notes, each of rupees fifty and rupees ten. Find the total amount he has.

Solution :

Following BODMAS rule,

5 50 5 10=250 50=300

But if we do addition before multiplication, the answer is as follows :

5 55 10 = 2750, which is wrong.

Illustrative Examples

1. 5½ {2/5 of 5/6 (7 7/4)} = ?

Solution :-

5 ½ {2/5 of 5/6 (7 7/4)}

= 5 ½ (2/5 of 5/6 4)

= 5 ½ (2/5 5/6 4)

= 5 ½ (1/3 4)

= 5 ½ 13/3

= 11/2 13/3

= 7/6

= $1\frac{1}{6}$.

2.½ ½ of ¼ 2/5 $2\frac{1}{3}$ 1 $\frac{7}{8}$ = ?

Solution :-

½ ½ of ¼ 2/5 $2\frac{1}{3}$ 1 7/8

= ½ ½ ¼ 2/5 7/3 15/8

= ½ 1/8 - 2/5 7/3 15/8

= ½ 8 2/5 7/3 8/15

= 4 112 /225

= $\frac{900}{225} \frac{112}{113} = \frac{788}{225}$

= $3\frac{225}{225}$.

3. 1 {1 [1+3 (4+1 (2+(1 7)))]}=?

Solution :-

1 {1 [1+3 (4+1 (2+(1 7)))]}

Solving the brackets from the innermost to the outermost, we get

= 1 {1 [1+3 (4+1 (2 + 1/7))]}

= 1 {1 [1+3 (4+1 15/7)]}

= 1 {1 [1+3 (4+1 7/15)]}

= 1 {1 [1+3 (4 + 7/15)]}

= 1 {1 [1 + 3 (67/15)]}

= 1 {1 [1 + 3 15/67]}

= 1 {1 [1 + 45/67]}

= 1 {1 [112/67]}

= 1 {67/112}

= $\frac{45}{112}$.

4. $7\frac{2}{3}$ of 168 + 3¼ of 612 = 3 ¾ of ? + 2½ of 8 + 2

Solution :-

$7\frac{2}{3}$ of 168 + 3 ¼ of 612 = 3 ¾ of ? + 2 ½ of 8 + 2

3 ¾ of ? + 2 ½ of 8 + 2 = $7\frac{2}{3}$ of 168 + 3 ¼ of 612

3 ¾ of ? = $7\frac{2}{3}$ of 168 + 3 ¼ of 612 2 ½ of 8 2

= 23/3 of 168 + 13/4 of 612 5/2 of 8 2

= 23/3 168 + 13/4 612 – 5/2 8 2

= 23 56+13 153 5 4 2

15/4 ? = 1288 + 1989 22

15/4 ? = 3277 22

15/4 ? = 3255

? = 3255 4/15

= 217 4 = 868.

5. 30 (2 6+15 3)+8 3 6

Solution :-

30 (2 6+15 3)+8 3 6

Let us remove the bracket first, then (2 6 + 15 3) becomes (12 + 5) = 17. Now = 30 17 + 8 3 6

= 30 17+8 ½

= 30 17+4 =17.

Exercise

1. 1+{1 [1+1 (1+(1 4))]}=?

   (1) $1\frac{7}{9}$ (2) $1\frac{2}{9}$ (3) $1\frac{1}{9}$ (4) $1\frac{4}{9}$ (5) $1\frac{5}{9}$

2. 83.924 8.08 + 3.084 = ?

   (1) 78.208 (2) 78.928 (3) 78.964 (4) 79.684 (5) None of these

3. $7\frac{1}{2}$ 4 $\frac{1}{4}$ $2\frac{3}{4}$ = ?

   (1) $5\frac{3}{4}$ (2) 3 (3) 6 (4) 4 (5) None of these

4. $3\frac{3}{4}$ 5 $\frac{1}{2}$ + $6\frac{3}{8}$ = ?

   (1) $4\frac{1}{2}$ (2) $4\frac{5}{8}$ (3) $5\frac{1}{4}$ (4) $4\frac{3}{4}$ (5) None of these

5. 99.307 84.32 + 4.903 = ?

   (1) 19.89 (2) 19.917 (3) 19.953 (4) 19.98 (5) None of these

6. 30.03 15 + 0.08 = ?

   (1) 2.002 (2) 2.01 (3) 2.082 (4) 2.1 (5) None of these

7. $\frac{16482+8}{6+2325}$ = ?

   (1) 1 (2) 2 (3) 3 (4) 4 (5) None of these

8. $5\frac{1}{4}$ + ?+2 $\frac{1}{8}$ = $8\frac{7}{16}$

   (1) $2\frac{7}{8}$ (2) $2\frac{1}{4}$ (3) $1\frac{7}{8}$ (4) $1\frac{7}{16}$ (5) None of these

9. $\frac{1}{3}$ of 0.18 $\frac{1}{4}$ of ? = (1/1000) of 27

   (1) 180 (2) 18 (3) 0.18 (4) 0.018 (5) None of these

10. $\frac{14.88 \quad 1.2}{5 \quad 4.8}$ = ?

    (1) 62 (2) 6.2 (3) 0.62 (4) 0.062 (5) None of these

11. 2108 + 324 + 46 + ? = 5239

    (1) 2661 (2) 2671 (3) 2761 (4) 2771 (5) None of these

12. 28.392 + 0.0432 + ? = 30.108

    (1) 1.1868 (2) 1.284 (3) 1.5756 (4) 1.7728 (5) None of these