

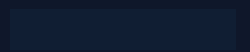


LearnFrenzy
QUALITY EDUCATION

REASONING ABILITY

MATHEMATICAL OPERATIONS

Master the application of BODMAS, symbol substitution, and arithmetic logic through structured patterns and analytical problem-solving.



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Mathematical Operations

A given mathematical expression can be represented using different mathematical symbols.

The process of solving according to (+, -, ×, ÷, <, > etc.) is called mathematical operation. To solve mathematical operations, we use the BODMAS rule. According to which, in any mathematical expression, first of all the brackets are solved and after that the operations of 'of', division, multiplication, addition and subtraction are done respectively.

In the reasoning test, instead of asking mathematical operations directly, questions are asked after making some changes in the mathematical symbols. Under this, the questions are solved in a simple way by changing the symbols as per the instructions given in them.

Example:

1. If '÷' means '+', '-' means '×', '+' means '÷' and '×' means '-', then what will be the value of $20 \div 12 \times 4 + 8 - 6$?

- (1) 30 (2) 29
(3) 20 (4) None of these.

Sol. Step-I: Firstly, write the meaning of each symbol in a systematic order so that there is no confusion while solving the problem.

$$\begin{aligned} \div &\rightarrow + \\ - &\rightarrow \times \\ + &\rightarrow \div \\ \times &\rightarrow - \end{aligned}$$

Step-II: Change the question on this basis and write it.

$$20 \div 12 \times 4 + 8 - 6 \\ = 20 + 12 - 4 \div 8 \times 6$$

Step-III: The new question thus formed will be solved with the help of BODMAS rule.

$$\begin{aligned} 20 + 12 - 4 \div 8 \times 6 \\ = 20 + 12 - \frac{1}{2} \times 6 \\ = 20 + 12 - 3 = 32 - 3 = 29 \end{aligned}$$

Here 29 is present in option (2),

Hence the correct option is (2).

2. If '+' means '-', '×' means '÷', '÷' means '+' and '-' means '×', then

$$4 + 50 \times 10 \div 4 - 2 = ?$$

- (1) 6 (2) 8
(3) 10 (4) None of these.

Sol. Step-I:

$$\begin{aligned} + &\rightarrow - & \times &\rightarrow \div \\ \div &\rightarrow + & - &\rightarrow \times \end{aligned}$$

Step-II: $4 + 50 \times 10 \div 4 - 2 \rightarrow 4 - 50 \div 10 + 4 \times 2$

Step-III: (By BODMAS Rule)

$$\begin{aligned} 4 - 50 \div 10 + 4 \times 2 \\ = 4 - 5 + 4 \times 2 \\ = 4 - 5 + 8 = 12 - 5 = 7 \end{aligned}$$

7 is not present in any of the options.

Hence, the correct option is (4).

3. If '@' means '×', '#' means '÷', '%' means '+' and '*' means '-' then what will be the value of x in the given equation?

$$8 @ 57 \# 19 \% 4 * 1 = x$$

- (1) 65 (2) 72
(3) 27 (4) 56

Sol. Step-I:

$$\begin{aligned} @ &\rightarrow \times & \# &\rightarrow \div \\ \% &\rightarrow + & * &\rightarrow - \end{aligned}$$

Step-II:

$$\begin{aligned} 8 @ 57 \# 19 \% 4 * 1 = x \\ \Rightarrow 8 \times 57 \div 19 + 4 - 1 = x \end{aligned}$$

Step-III:

$$\begin{aligned} 8 \times 57 \div 19 + 4 - 1 = x \\ \Rightarrow 8 \times 3 + 4 - 1 = x \\ \Rightarrow 24 + 4 - 1 = x \\ \Rightarrow 28 - 1 = x \\ \Rightarrow x = 27 \end{aligned}$$

Hence, the correct option is (3).

4. If '+' means '-', '-' means '+', '×' means '÷' and '÷' means '×' then what will come in place of the question mark in the following equation?

$$81 \times 9 \div (6 + 3) - 2 = ?$$

- (1) 29 (2) 15
(3) 18 (4) 5

Sol. Step-I:

$$\begin{aligned} + &\rightarrow - & - &\rightarrow + \\ \times &\rightarrow \div & \div &\rightarrow \times \end{aligned}$$

Step-II: $81 \times 9 \div (6 + 3) - 2 \rightarrow 81 \div 9 \times (6 - 3) + 2$

Step-III: By BODMAS Rule,

$$\begin{aligned} 81 \div 9 \times (6 - 3) + 2 \\ = 81 \div 9 \times 3 + 2 \\ = 9 \times 3 + 2 = 27 + 2 = 29 \end{aligned}$$

Hence, the correct option is (1).

5. If 'A' means '÷', 'B' means '−', 'C' means '×' and 'D' means '+' then what will be the value of 30D10C5A25B1?

- (1) 30 (2) 31
(3) 32 (4) 33

Sol. Step-I:

$$'A' \rightarrow '÷' \quad 'B' \rightarrow '−'$$

$$'C' \rightarrow '×' \quad 'D' \rightarrow '+'$$

$$\text{Step-II: } 30 \text{ D } 10 \text{ C } 5 \text{ A } 25 \text{ B } 1 \Rightarrow 30 + 10 \times 5 \div 25 - 1$$

Step-III: By BODMAS rule,

$$\begin{aligned} 30 + 10 \times 5 \div 25 - 1 &= 30 + 10 \times \frac{1}{5} - 1 \\ &= 30 + 2 \times 1 - 1 \\ &= 30 + 2 - 1 = 32 - 1 = 31 \end{aligned}$$

Hence, the correct option is (2).

6. If '+' means '−', '−' means '+', '×' means '÷' and '÷' means '×', then which equations are true?

1. $7 + 55 \times 11 \div 2 - 3 > 1$
2. $7 + 55 \times 11 \div 2 - 3 < 1$
3. $7 + 55 \times 11 \div 2 - 3 = 0$
4. $7 + 55 \times 11 \div 2 - 3 < 2$

Code:

- (1) Only 1 and 2 (2) Only 2 and 3
(3) Only 2, 3 and 4 (4) 1, 2, 3 and 4

Sol. By changing the sign as per the question,

$$\begin{aligned} 7 + 55 \times 11 \div 2 - 3 &\Rightarrow 7 - 55 \div 11 \times 2 + 3 \\ \therefore 7 - 55 \div 11 \times 2 + 3 &= 7 - 5 \times 2 + 3 \\ &= 7 - 10 + 3 = 10 - 10 = 0 \end{aligned}$$

$$\text{Equation 1. } 7 + 55 \times 11 \div 2 - 3 > 1 \\ 0 > 1$$

We all know that 0 is not greater than 1. So this equation is false.

$$\text{Equation 2. } 7 + 55 \times 11 \div 2 - 3 < 1 \\ 0 < 1$$

We know that 0 is less than 1. So this equation is true.

$$\text{Equation 3. } 7 + 55 \times 11 \div 2 - 3 = 0 \\ 0 = 0$$

Hence this equation is also true.

$$\text{Equation 4. } 7 + 55 \times 11 \div 2 - 3 = 0 \\ 0 < 2$$

$\therefore$ 0 is less than 2. So this equation is also true.

After looking at all the options, we find that here all equations are true except equation 1, hence the correct option is (3).

7. If '−' means '+', '÷' means '×', '+' means '−' and '×' means '÷' then which equation is/are true?

1. $4 - 3 \div 4 \times 2 - 1 = 8$
2. $3 - 2 \div 1 \times 2 + 1 = 3$
3. $5 \div 4 \times 2 + 8 - 2 = 4$
4. $3 - 1 + 2 \times 1 \div 2 = 1$

- (1) Only 2 (2) Only 3
(3) Only 3 and 4 (4) Only 2 and 3

$$\text{Sol. Equation 1. } 4 - 3 \div 4 \times 2 - 1 = 8$$

$$\begin{aligned} &\Rightarrow 4 + 3 \times 4 \div 2 + 1 = 8 \\ &\quad \text{(after change of mark as per question)} \end{aligned}$$

$$\Rightarrow 4 + 3 \times 2 + 1 = 8$$

$$\Rightarrow 4 + 6 + 1 = 8$$

$$\Rightarrow 11 = 8$$

But we know that $11 \neq 8$ so equation 1 is not true.

$$\text{Equation 2. } 3 - 2 \div 1 \times 2 + 1 = 3$$

$$\begin{aligned} &\Rightarrow 3 + 2 \times 1 \div 2 - 1 = 3 \\ &\quad \text{(after change of mark as per question)} \end{aligned}$$

$$\Rightarrow 3 + 2 \times \frac{1}{2} - 1 = 3$$

$$\Rightarrow 3 + 1 \times 1 - 1 = 3$$

$$\Rightarrow 3 + 1 - 1 = 3$$

$$\Rightarrow 4 - 1 = 3$$

$$3 = 3$$

$\therefore$ L.H.S = R.H.S and this is true according to equation 2, hence equation 2 is true.

$$\text{Equation 3. } 5 \div 4 \times 2 + 8 - 2 = 4$$

$$\Rightarrow 5 \times 4 \div 2 - 8 + 2 = 4 \quad \text{(after change of symbol)}$$

$$\Rightarrow 5 \times 2 - 8 + 2 = 4$$

$$\Rightarrow 10 - 8 + 2 = 4$$

$$\Rightarrow 12 - 8 = 4$$

$$4 = 4$$

$\therefore$ L.H.S = R.H.S and this is true according to equation 3, hence equation 3 is true.

$$\text{Equation 4. } 3 - 1 + 2 \times 1 \div 2 = 1$$

$$\Rightarrow 3 + 1 - 2 \div 1 \times 2 = 1$$

$$\Rightarrow 3 + 1 - 2 \times 2 = 1$$

$$\Rightarrow 3 + 1 - 4 = 1$$

$$0 = 1$$

But we know that $0 \neq 1$ so equation 4 is not true.

Equations 2 and 3 are true while equations 1 and 4 are false, Hence the correct option is (4).

8. In the following question, the # symbols at various places stand for different mathematical symbols which are given as options. Choose the option having the correct order of the symbols which when substituted would make the question equation correct.

$$88 \# 11 \# 7 \# 12 \# 1$$

$$(1) =, +, \times, - \quad (2) =, \times, +, -$$

$$(3) \times, +, =, - \quad (4) +, -, \times, =$$

$$\text{Sol. (1)} \quad 88 = 11 + 7 \times 12 - 1$$

$$\Rightarrow 88 = 11 + 84 - 1$$

$$\Rightarrow 88 = 95 - 1$$

$$\Rightarrow 88 = 94$$

But we know that $88 \neq 94$ so option (1) is not correct.

$$(2) \quad 88 = 11 \times 7 + 12 - 1$$

$$\Rightarrow 88 = 77 + 12 - 1$$

$$\Rightarrow 88 = 89 - 1$$

$$88 = 88$$

Hence, the correct option is (2).

$\therefore$ Here only one answer will be correct, hence after getting the correct answer there is no need to check the remaining options.

9. In the following question, $\square$ symbols at different places represent different numbers which are given as options. Choose the options having the correct order of numbers which when substituted will make the question equation correct.

$$\square + \square \div \square = \square$$

$$(1) \ 5, 10, 2, 10$$

$$(2) \ 10, 2, 5, 10$$

$$(3) \ 2, 5, 10, 10$$

$$(4) \ \text{None of these.}$$

Sol. From option (1),

$$5 + 10 \div 2 = 10$$

$$\Rightarrow 5 + 5 = 10$$

$$10 = 10$$

Therefore, the equation becomes correct if the numbers used in option (1) are used sequentially in place of $\square$. Hence, the correct option is (1).

10. Some equations are solved on the basis of a particular system. Find the correct answer of the unanswered equation on the same basis.

If $9 * 7 = 32$, $13 * 7 = 120$, $17 * 9 = 208$, then $19 * 11 = ?$

$$(1) \ 150$$

$$(2) \ 180$$

$$(3) \ 210$$

$$(4) \ 240$$

Sol. $9 * 7 = 32$

$$\Rightarrow (9)^2 - (7)^2 = 81 - 49 = 32$$

So this particular logic is used here. But whether this logic will give us the correct answer, we will test the other equation on the same logic.

$$13 * 7 = 120$$

$$\Rightarrow (13)^2 - (7)^2 = 120$$

$$\Rightarrow 169 - 49 = 120$$

$$\Rightarrow 120 = 120$$

So it is clear that the equations have been solved on the basis of this system.

Similarly,

$$19 * 11 = ?$$

$$\Rightarrow (19)^2 - (11)^2 = 361 - 121 = 240$$

Hence, the correct option is (4).

11. Some equations are solved on the basis of a particular system. Find the correct answer of the unanswered equation on the same basis.

If $3 \div 5 = 5$, $4 \div 7 = 8$, $8 \div 7 = 6$, then $9 \div 6 = ?$

$$(1) \ 4$$

$$(2) \ 9$$

$$(3) \ 5$$

$$(4) \ 6$$

$$\text{Sol.} \quad 3 \times 5 = 1\boxed{5} \rightarrow 3 \div 5 = 5$$

$$4 \times 7 = 2\boxed{8} \rightarrow 4 \div 7 = 8$$

$$8 \times 7 = 5\boxed{6} \rightarrow 8 \div 7 = 6$$

$$9 \times 6 = 5\boxed{4} \rightarrow 9 \div 6 = 4$$

In this question, the digit in the unit place of the product of the two numbers is written after the sign of '=', and the sign of ' $\div$ ' is used for the action ' $\times$ '.

Hence, the correct option is (1).

12. Which of the following numbers should be interchanged to make the given equation correct?

$$4 + 28 \div 7 \times 3 = 19$$

$$(1) \ 28 \text{ and } 7$$

$$(2) \ 7 \text{ and } 4$$

$$(3) \ 3 \text{ and } 4$$

$$(4) \ 3 \text{ and } 7$$

Sol. From option (1), $4 + 7 \div 28 \times 3 = 19$

$$\Rightarrow 4 + \frac{1}{4} \times 3 = 19$$

$$\Rightarrow 4 + \frac{3}{4} = 19$$

$$\Rightarrow 16 + 3 = 19 \times 4$$

$$\Rightarrow 19 \neq 76$$

Therefore option (1) is wrong.

From option (2), $7 + 28 \div 4 \times 3 = 19$

$$\Rightarrow 7 + 7 \times 3 = 19$$

$$\Rightarrow 7 + 21 = 19$$

$$\Rightarrow 28 \neq 19$$

Hence option (2) is also wrong.

From option (3), $3 + 28 \div 7 \times 4 = 19$

$$\Rightarrow 3 + 4 \times 4 = 19$$

$$\Rightarrow 3 + 16 = 19$$

$$\Rightarrow 19 = 19$$

Hence, option (3) is correct. The correct answer to this question is option (3).

13. On interchanging which of the following signs will the given equation become true?

$$10 - 66 \div 3 \times 1 + 12 = 20$$

$$(1) \ + \text{ and } -$$

$$(2) \ + \text{ and } \times$$

$$(3) \ \times \text{ and } \div$$

$$(4) \ \div \text{ and } -$$

Sol. From option (1), $10 - 66 \div 3 \times 1 + 12 = 20$

$$\Rightarrow 10 + 66 \div 3 \times 1 - 12 = 20$$

$$\Rightarrow 10 + 22 \times 1 - 12 = 20$$

$$\Rightarrow 10 + 22 - 12 = 20$$

$$\Rightarrow 20 = 20$$

So by interchanging the signs in option (1) the equation becomes true. Hence, the correct option is (1).

14. Which two numbers and which two signs should be interchanged among the following numbers and signs to make the equation correct?

$$6 + 4 - 10 \times 2 \div 3 = -5$$

$$(1) \ 2, 3 \text{ and } -, +$$

$$(2) \ 4, 6 \text{ and } -, +$$

$$(3) \ 2, 3 \text{ and } \times, \div$$

$$(4) \ 4, 6 \text{ and } \times, \div$$

Sol. From option (1), $6 - 4 + 10 \times 3 \div 2 = -5$

$$\Rightarrow 6 - 4 + 10 \times \frac{3}{2} = -5$$

$$\Rightarrow 6 - 4 + 5 \times 3 = -5$$

$$\Rightarrow 6 - 4 + 15 = -5$$

$$\Rightarrow 17 = -5;$$

This is not possible.

Therefore option (1) is wrong.

From option (2), $4 - 6 + 10 \times 2 \div 3 = -5$

$$\Rightarrow 4 - 6 + 10 \times \frac{2}{3} = -5$$

$$\Rightarrow 4 - 6 + \frac{20}{3} = -5$$

$$\Rightarrow 12 - 18 + 20 = -15$$

$$\Rightarrow 32 - 18 = -15$$

$$\Rightarrow 14 = -15;$$

This is not possible.

Hence option (2) is also wrong.

From option (3),

$$6 + 4 - 10 \div 3 \times 2 = -5$$

$$\Rightarrow 6 + 4 - \frac{10}{3} \times 2 = -5$$

$$\Rightarrow 6 + 4 - \frac{20}{3} = -5$$

$$\Rightarrow 18 + 12 - 20 = -15$$

$$\Rightarrow 30 - 20 = -15$$

$$\Rightarrow 10 = -15;$$

This is not possible.

Hence option (3) is also wrong.

From option (4),

$$4 + 6 - 10 \div 2 \times 3 = -5$$

$$\Rightarrow 4 + 6 - 5 \times 3 = -5$$

$$\Rightarrow 4 + 6 - 15 = -5$$

$$\Rightarrow -5 = -5$$

Hence, option (4) is correct.

Practice Questions

1. If '−' means '÷', '+' means '×', then what will be the value of the following equation?

$$54 - 9 + 5 = ?$$

- (1) 40 (2) 30
(3) 45 (4) 35

2. If Δ means '+', $\square$ means '−', O means '×' and $\triangle$ means '÷', then what will come in place of x?

$$81 \triangle 9 \text{ O } 3 \triangle 3 \square 16 = x$$

- (1) 18 (2) 16
(3) 14 (4) None of these.

3. If $\odot$ means '÷', $\triangle$ means '×', $\square$ means '−' and $\star$ means '+' then

$$3 \star 5 \square 20 \odot 4 \triangle 1 = ?$$

- (1) 3 (2) 4
(3) 5 (4) 6

4. If @ means '×', # means '+', % means '÷' and & means '−' then which of the following will be the value of $36 \# 5 \& 24 \% 6 @ 3$?

- (1) 31 (2) 29
(3) 32 (4) 30

5. If '#' means '×', '@' means '÷', '−' means '+' and '+' means '−' then find the value of K.

$$(10 \# 5) + (4 \# 2) - 3 @ 1 = K$$

- (1) 35 (2) 54
(3) 45 (4) None of these.

6. If Δ means '+' and $\square$ means '−' then

$$46 \square 23 \triangle 7 \square 21 \triangle 6 \square 1 \triangle 13 \square 2 = ?$$

- (1) 94 (2) 54
(3) 63 (4) 25

7. If '+' means '×', '−' means '+' and '×' means '÷', then what will be the value of $(6 + 8 - 10 \times 2)$?

- (1) −26 (2) 26
(3) −53 (4) 53

8. If '+' means '−', '−' means '×', '÷' means '+' and '×' means '÷', then what will be the value of $4 - 5 \times 10 \div 2 + 3$?

- (1) 0 (2) 1
(3) −1 (4) None of these.

9. If '+' means '−', '−' means '+', '×' means '÷' and '÷' means '×', then, $(9 + 5) \times 2 \div 5 - 5 + 1 = ?$

- (1) 11 (2) 12
(3) 14 (4) 13

10. If 'P' means '÷', 'Q' means '×', 'R' means '+' and 'S' means '−', then

$$55 \text{ P } 11 \text{ Q } 5 \text{ R } 5 \text{ S } 12 = ?$$

- (1) 16 (2) 18
(3) 20 (4) 22

11. If '+' means '÷', '÷' means '−', '−' means '×' and '×' means '+', then,

$$7 - 5 \times 14 + 7 \times 3 = ?$$

- (1) 40
(2) 35
(3) 30
(4) None of these.

12. If A means '+', B means '−', C means '×' and D means '÷', then,

$$16 \text{ B } 4 \text{ C } 10 \text{ B } 9 \text{ D } 3 = ?$$

- (1) −54 (2) 27
(3) −27 (4) 54

13. If ' $\times$ ' means ' $-$ ', ' $\div$ ' means ' $+$ ', ' $-$ ' means ' $\times$ ' then what will come in place of (?)?
 $(8 \times 5) \div 10 \times 5 - 15 = ?$
 (1) -62 (2) 67
 (3) 62 (4) -67
14. If ' $+$ ' means ' $-$ ', ' $\div$ ' means ' $\times$ ', ' $-$ ' means ' $+$ ', ' $\times$ ' means ' $\div$ ' then what will be the value of the following expression?
 $16 + 8 - 3 \div 3 \times 9 = ?$
 (1) 7 (2) 8
 (3) 9
 (4) It is not possible to find out.
15. If ' $+$ ' means ' $-$ ', ' $-$ ' means ' $\times$ ', ' $\times$ ' means ' $\div$ ' and ' $\div$ ' means ' $+$ ' then what will come in place of (?) in the following equation?
 $2 \div 8 \times 4 \div 2 = ?$
 (1) 6 (2) 8
 (3) 10 (4) None of these.
16. If $\rightarrow$ is the sign of addition, $\leftarrow$ is the sign of subtraction, $\uparrow$ is the sign of division, $\downarrow$ is the sign of multiplication, then what will be the value of the following equation?
 $3 \downarrow 5 \leftarrow 4 \uparrow 2 = ?$
 (1) 11 (2) -11
 (3) 13 (4) -13
17. If R means addition, S means multiplication, T means division and U means subtraction, then what will be the value of the following equation?
 $32 R 8 S 3 T 6 U 2 = ?$
 (1) 36 (2) 34
 (3) 32 (4) None of these.
18. If ' L ' means ' $\div$ ', ' M ' means ' $\times$ ', ' N ' means ' $+$ ', ' P ' means ' $-$ ' then what will be the value of $50 L 10 N 5 M 10 P 50$?
 (1) 15 (2) -5
 (3) 5 (4) 10
19. If A means ' $+$ ', B means ' $\times$ ', C means ' $-$ ', D means ' $\div$ ', then what will be the value of $30 D 2 A 3 B 6 C 5$?
 (1) 30 (2) 14
 (3) 21 (4) 28
20. If '@' means ' $+$ ', '%' means ' $-$ ', '#' means ' $\times$ ', '©' means ' $\div$ ', then what will be the value of $50 @ 5 \# 10 \text{ © } 2\% 5$?
 (1) 70 (2) 60
 (3) 50 (4) 40
21. If $\square$ means ' $\div$ ', Δ means ' $\times$ ', O means ' $-$ ' then what will be the value of $36 \square 6 \Delta 6 O 30$?
 (1) 8 (2) 6
 (3) 14 (4) 21
22. If ' $+$ ' means ' $-$ ', ' $-$ ' means ' $\div$ ', ' $\div$ ' means ' $\times$ ', ' $\times$ ' means ' $+$ ', then
 $(49 - 7) \div 4 + 3 \times 2 = ?$
 (1) 27 (2) 72
 (3) 36 (4) 63
23. If $\uparrow$ means ' $+$ ',
 $\downarrow$ means ' $-$ ',
 $\leftarrow$ means ' $\times$ ',
 $\rightarrow$ means ' $\div$ ' then what will be the value of $(7 \uparrow 4) \leftarrow (17 \downarrow 12) \rightarrow 2.5$?
 (1) 33 (2) 11
 (3) 22 (4) 44
24. If ' $+$ ' means ' $\times$ ', ' $-$ ' means ' $\div$ ' then
 $88 - 8 + 7 = ?$
 (1) 73 (2) 77
 (3) 72 (4) 75
25. If ' $\times$ ' means ' $\div$ ' and ' $\div$ ' means ' $\times$ ', then what will be the value of $6 + 6 \div 2 \times 3 + 9 - 1$?
 (1) 17 (2) 18
 (3) 19 (4) None of these.
26. If $P = 4$, $Q = 5$, $R = 6$, $S = 10$ then, what is the value of $P - S \div Q \times R$?
 (1) 4 (2) 8
 (3) 10 (4) None of these.
27. If $P = 7$, $L = 21$, $M = 28$, $N = 2$ then what is the value of $P + L \times M \div N$?
 (1) 333 (2) 311
 (3) 301 (4) 300
28. If $x = 5$, $y = 10$, $z = 15$ then, what is the value of $y \times x \div x + z - y$?
 (1) 15 (2) 20
 (3) 10
 (4) It is not possible to find out.
29. If ' $\times$ ' means ' $+$ ', ' $-$ ' means ' $\div$ ', ' $+$ ' means ' $\times$ ' and ' $\div$ ' means ' $-$ ', then what will be the value of $2 \times 8 - 4 + 3 \div 5$?
 (1) 2 (2) 3
 (3) 4 (4) 5
30. If '@' means ' $\div$ ', '#' means ' $+$ ', '*' means ' $\times$ ' and '%' means ' $-$ ' then what will be the value of $25 @ 5 \# 4 * 3 \% 7$?
 (1) 12 (2) 15
 (3) 8 (4) 10
31. If ' P ' means ' $\times$ ', ' R ' means ' $\div$ ', ' M ' means ' $-$ ' and ' W ' means ' $+$ ', then which of the following options is correct?
 (1) $20 R 5 W 12 M 3 P 4 = 8$
 (2) $20 R 5 W 12 M 3 P 4 = 6$
 (3) $20 R 5 W 12 M 3 P 4 = 4$
 (4) $20 R 5 W 12 M 3 P 4 = 1$
32. Which of the following is true?
 $46 * 20 * 2 * 8 * 2$
 (1) $+, -, =, \times$
 (2) $+, -, \times, =$
 (3) $=, +, \times, -$
 (4) $=, \times, +, -$

33. Which of the following is false?
 (1) $20 \div 5 \times 4 - 6 = 10$ (2) $20 \div 5 \times 4 - 6 > 11$
 (3) $20 \div 5 \times 4 - 6 < 11$ (4) $20 \div 5 \times 4 - 6 > 8$
34. What should be placed in place of Δ to make the equation $50 \div 5 \times 4 - 30 + 2 = \Delta$ true?
 (1) 12 (2) 10
 (3) 18 (4) 16
35. In the following question, * signs at various places represent different mathematical symbols which are given as options. Choose the options having the correct order of signs which when replaced would make the question equation correct.
 $24 * 4 * 5 * 4$
 (1) $\times, +, =$ (2) $=, \times, +$
 (3) $+, \times, =$ (4) $\times, =, +$
36. Which mathematical symbols should be used in place of Δ respectively so that the equation becomes completely true?
 $3 \Delta 3 \Delta 5 \Delta 2 \Delta 12$
 (1) $+, -, \times, =$ (2) $-, \times, +, =$
 (3) $\times, -, +, =$ (4) $\times, +, -, =$
37. Which of the following equations is completely false?
 (1) $3 \times 5 + 2 - 3 > 11$
 (2) $21 \div 7 \times 5 - 10 + 7 > 11$
 (3) $3 \times 5 - 10 + 5 > 11$
 (4) $6 \times 3 \div 3 + 10 > 11$
38. Which of the following equations is definitely true?
 (1) $42 \div (9 - 2) + 6 \times 3 - 8 > 16$
 (2) $42 \div (9 - 2) + 6 \times 3 - 8 < 16$
 (3) $42 \div (9 - 2) + 6 \times 3 - 8 = 16$
 (4) None of these.
39. Which of the following equations is definitely true?
 (1) $5 + 3 - 2 + 1 \times 3 \div 6 < 7$
 (2) $5 + 3 - 2 + 1 \times 3 \div 6 < 5$
 (3) $5 + 3 - 2 + 1 \times 3 \div 6 = 8$
 (4) None of these.
40. Which of the following equations is definitely true?
 (1) $50 + 10 \times 3 + 5 + 5 = 70$
 (2) $50 \div 10 - 5 \times 2 + 5 = 70$
 (3) $50 + 10 \times 5 \div 2 + 5 = 70$
 (4) $50 + 5 \times 10 \div 2 - 5 = 70$
41. In the following question, symbols at different places represent different mathematical signs which are given as options. Choose the options having the correct order of symbols which when replaced would make the question equation correct.
 $36 @ 6 @ 6 @ 30 @ 6$
 (1) $\div, \times, =, -$ (2) $\div, \times, -, =$
 (3) $+, -, \times, \div$ (4) $\times, \div, +, -$
42. If $\rightarrow$ is the sign of addition, $\leftarrow$ is the sign of subtraction, $\uparrow$ is the sign of division, $\downarrow$ is the sign of multiplication and $\wedge$ is the sign of equals, then which of the following options is correct?
 (1) $3 \downarrow 5 \leftarrow 4 \uparrow 2 \uparrow 13$ (2) $3 \uparrow 5 \rightarrow 4 \downarrow 2 \uparrow 13$
 (3) $3 \leftarrow 5 \uparrow 4 \downarrow 2 \uparrow 13$ (4) $3 \uparrow 5 \leftarrow 4 \uparrow 2 \uparrow 13$
43. If P means division, Q means subtraction, R means multiplication and S means addition then which of the following equations is true?
 (1) $70 P 2 Q 4 R 5 S 6 = 44$
 (2) $70 P 2 Q 4 R 5 S 6 = 21$
 (3) $70 P 2 Q 4 R 5 S 6 = 341$
 (4) $70 P 2 Q 4 R 5 S 6 = 96$
44. If $\rightarrow$ is the sign of addition, $\leftarrow$ is the sign of subtraction, $\uparrow$ is the sign of multiplication, $\downarrow$ is the sign of division, $\wedge$ is the sign of equals then which of the following option is correct?
 (1) $2 \uparrow 5 \leftarrow 6 \rightarrow 2 \wedge 6$ (2) $5 \leftarrow 7 \leftarrow 3 \downarrow 5 \wedge 4$
 (3) $7 \leftarrow 43 \uparrow 6 \uparrow 1 \wedge 4$ (4) $3 \downarrow 6 \downarrow 2 \rightarrow 3 \leftarrow 6 \wedge 5$
45. In the following question, the # symbols at various places stand for different mathematical symbols which are given as options. Choose the option in which the correct order of the symbols is substituted to make the question equation correct, $56 \# 25 \# 2 \# 6$
 (1) $\times, +, =$ (2) $+, \times, =$
 (3) $=, \times, +$ (4) $\times, =, +$
46. If x means add; v means subtract; $\cup$ means equal to, $\wedge$ means divide; Σ means multiply; ∂ means 'greater than' and σ means 'less than', then which of the following equations is false?
 1. $3 \times 8 v 2 \cup 12 \wedge 3$
 2. $13 v 12 \times 9 v 2 \sigma 5 \Sigma 1$
 3. $2 \Sigma 3 \Sigma 4 \sigma 51 \wedge 3$
 4. $3 \Sigma 2 \Sigma 4 \cup 2 \times 7 v 3$
 (1) Only 1 and 3 (2) Only 3 and 4
 (3) Only 1, 3 and 4 (4) 1, 2, 3 and 4
47. In the following question, * signs at different places represent different numbers which are given as options. Choose the options having the correct order of numbers which when substituted will make the question equation correct.
 $* \div * \times * - * = *$
 (1) 4, 5, 3, 16, 2 (2) 5, 4, 16, 3, 2
 (3) 4, 2, 5, 3, 16 (4) 16, 4, 2, 5, 3
48. In the following question, Δ sign at different places stands for different numbers which are given as options. Choose the option which has the correct order of numbers which when substituted will make the question equation correct.
 $\Delta \times \Delta \div \Delta = \Delta$
 (1) 25, 2, 4, 50 (2) 50, 25, 4, 2
 (3) 25, 4, 2, 50 (4) 50, 25, 2, 4

49. If L means '+', M means '-', N means '×' and P means '=' then which statement is true?
 (1) 11 L 7 M 4 N 3 P 0 (2) 11 L 7 M 4 P 3 N 0
 (3) 11 M 7 N 4 P 3 L 0 (4) 11 P 7 L 4 M 3 N 0
50. If '+' means '-', '-' means '×', '×' means '÷' and '÷' means '+', then which of the following equations is correct?
 1. $2 \div 6 \times 6 \div 2 = 4$ 2. $2 \div 6 - 6 \div 2 > 4$
 3. $2 \div 6 \times 6 \div 2 < 4$ 4. $2 \div 6 \times 6 \div 2 = 5$
 (1) Only 1 and 3 (2) Only 1 and 2
 (3) Only 2 and 4 (4) Only 3 and 4
51. To make the given equation correct, which two numbers should be interchanged?
 $9 + 7 \times 5 - 18 \div 2 = 3 \times 4 - 10 + 45 \div 5$
 (1) 18 and 45 (2) 7 and 4
 (3) 2 and 5 (4) 9 and 3
SSC CGL, 2019
52. Select the correct sequence of mathematical signs, which when placed sequentially will balance the given equation.
 $(14 * 9 * 6) * 15 * 8$
 (1) $\times, =, \div, -$ (2) $-, \div, \times, =$
 (3) $\div, -, =, \times$ (4) $\times, -, \div, =$
SSC CGL, 2019
53. To make the given equation correct, which two mathematical signs should be interchanged?
 $12 - 8 + 12 \times 9 \div 3 = 8$
 (1) - and $\div$ (2) + and $\div$
 (3) $\div$ and $\times$ (4) + and -
SSC CGL, 2018
54. To make the given equation correct, which two mathematical signs should be interchanged?
 $18 + 6 - 6 \div 3 \times 3 = 6$
 (1) + and $\div$ (2) $\div$ and $\times$
 (3) - and $\div$ (4) + and -
SSC CGL, 2018
55. In the given question, which two mathematical operators should be interchanged to make the equation correct?
 $9 \times 3 + 8 \div 4 - 7 = 28$
 (1) $\times$ and + (2) + and -
 (3) $\div$ and + (4) $\times$ and $\div$
SSC CGL, 2017
56. In the given question, which two numbers should be interchanged to make the equation correct?
 $8 \times 3 \div 4 + 9 - 5 = 16$
 (1) 3 and 4 (2) 4 and 8
 (3) 5 and 3 (4) 5 and 9
SSC CGL, 2017
57. If P means '÷', Q means '×', R means '+', and S means '-', then what will be the value of 18Q12P4R5S6?
 (1) 64 (2) 53
 (3) 81 (4) 24 **SSC CGL, 2016**
58. The following equations are solved based on a certain pattern. Find the correct answer for the missing equation based on the same pattern.
 $2 + 4 + 6 = 48$
 $3 + 2 + 8 = 48$
 $2 + 5 + 7 = ?$
 (1) 48 (2) 70
 (3) 14 (4) 59 **SSC CGL, 2016**
59. After interchanging '+' and '-', and also interchanging 8 and 7, which of the following sequences will be correct?
 (1) $6 + 8 \times 2 - 7 = 0$ (2) $7 \times 8 \times 6 - 9 = 25$
 (3) $8 \times 2 + 7 - 6 = 9$ (4) $8 - 7 + 3 \times 5 = 35$
SSC CGL, 2015
60. Select the correct sequence of signs to balance the equation:
 $(16 + 18) * (21 - 11) * 32 * 8$
 (1) $- \times =$ (2) $- = -$
 (3) $+ = -$ (4) $\div - =$ **SSC CGL, 2015**
61. Sequentially replace the symbols and choose the correct sequence of mathematical signs to balance the given equation:
 $11 * 15 * 78 * 6 * 18 * 160$
 (1) $\times, +, \div, -, =$ (2) $+, \times, -, \div, =$
 (3) $\times, +, \div, =, -$ (4) $+, \times, \div, -, =$
SSC CHSL, 2019
62. To balance the given equation, which two symbols should be interchanged?
 $25 - 5 \times 50 \div 10 + 35 = 155$
 (1) $\times$ and $\div$ (2) + and -
 (3) $\times$ and - (4) $\times$ and +
SSC CPO, 2020
63. If A denotes addition, B denotes multiplication, C denotes subtraction, and D denotes division, then find the value of the following expression:
 $35 B 2 A 5 B (40 C 37) A (8 B 4) D 16 C 14 = ?$
 (1) 54 (2) 66
 (3) 73 (4) 56 **SSC CPO, 2020**
64. By interchanging some symbols and numbers, which of the following equations will become correct?
 $8 \div 2 - 6 \times 4 + 3 = 13$
 (1) + and $\div$, 4 and 8
 (2) - and +, 6 and 4
 (3) $\times$ and -, 2 and 6
 (4) $\times$ and $\div$, 8 and 6
SSC CPO, 2019
65. To solve the given equation correctly, which two symbols should be interchanged?
 $4 + 8 \times 12 \div 6 - 4 = 8$
 (1) - and +
 (2) + and $\div$
 (3) $\div$ and -
 (4) $\times$ and $\div$ **SSC CPO, 2018**

66. In the given question, which of the following combinations of mathematical operations will make the equation correct?
 $14 ? 2 ? 4 ? 6 ? 4$
 (1) $\times, \div > -$ and $\times$
 (2) $\div, \times, >$ and $\times$
 (3) $\div, +, =$ and $\times$
 (4) $+, \div, >$ and $\times$ **SSC CPO, 2017**
67. In the given question, which two mathematical operations should be interchanged to make the equation correct?
 $43 + 9 - 6 \div 3 \times 8 = 50$
 (1) $\div$ and $\times$ (2) $+$ and $\div$
 (3) $-$ and $+$ (4) $+$ and $\times$ **SSC CPO, 2017**
68. In the given equation, if '+' and '-' are interchanged, and ' $\times$ ' and ' $\div$ ' are interchanged, then what will come in place of the question mark (?)?
 $14014 \times 14 - 10 \div 8 + 14 = ?$
 (1) 1062 (2) 1063
 (3) 1067 (4) 1064 **SSC CGL, 2024**
69. To make the given equation correct, which two numbers (digits not to be changed) should be interchanged?
 $48 \div 3 + 12 \times 4 - 6 \times 7 + 21 = 27$
 (1) 3 and 4 (2) 3 and 6
 (3) 4 and 7 (4) 12 and 21 **SSC CGL, 2024**
70. In the given equation, if ' $\div$ ' and '-' are interchanged, and ' $\times$ ' and '+' are interchanged, then what will come in place of the question mark (?)?
 $8 + 6 \div 51 - 17 \times 13$
 (1) 32 (2) 58
 (3) 63 (4) 71 **SSC CGL, 2024**
71. If '+' and '-' are interchanged, and ' $\times$ ' and ' $\div$ ' are interchanged, then which number will come in place of the question mark (?)?
 $41 - 54 \times 6 \div 9 + 7 = ?$
 (1) 108 (2) 119
 (3) 104 (4) 115 **SSC CGL, 2024**
72. In the given equation, if '+' and '-' are interchanged, and ' $\times$ ' and ' $\div$ ' are interchanged, then what will come in place of the question mark (?)?
 $304 \times 19 - 101 + 23 \div 5 = ?$
 (1) 21 (2) 12
 (3) 2 (4) 6 **SSC CGL, 2024**
73. In the given equation, if '+' and '-' are interchanged, and ' $\times$ ' and ' $\div$ ' are interchanged, then what will come in place of the question mark (?)?
 $164 - 173 \div 110 + 140 \times 5 = ?$
 (1) 19616
 (2) 11619
 (3) 19166
 (4) 11916 **SSC CGL, 2024**
74. If '+' and '-' are interchanged, and ' $\times$ ' and ' $\div$ ' are interchanged, then what will come in place of the question mark (?)?
 $216 \times 9 + 52 - 7 \div 7 = ?$
 (1) 21 (2) 19
 (3) 22 (4) 20 **SSC CHSL, 2024**
75. If '+' and ' $\times$ ' are interchanged, and '-' and ' $\div$ ' are interchanged, then what will come in place of the question mark (?)?
 $98 - 14 \times 11 + 6 \div 23 = ?$
 (1) 52 (2) 55
 (3) 50 (4) 56 **SSC CHSL, 2024**
76. If 'A' represents ' $\div$ ', 'B' represents ' $\times$ ', 'C' represents '+', and 'D' represents '-', then which of the following will result in 428?
 (1) 113 B 4 A 62 D 2 C 7 (2) 113 A 4 D 62 B 2 C 7
 (3) 113 B 4 C 62 A 2 D 7 (4) 113 B 4 D 62 A 2 C 7 **SSC CHSL, 2024**
77. In the given equation, what will come in place of the question mark (?) if '+' and '-' are interchanged, and ' $\times$ ' and ' $\div$ ' are interchanged?
 $15 \div 4 - 128 + 123 \times 3 = ?$
 (1) 167 (2) 147
 (3) 187 (4) 127 **SSC CHSL, 2024**
78. In the given equation, what will come in place of the question mark (?) if '+' and '-' are interchanged, and ' $\times$ ' and ' $\div$ ' are interchanged?
 $16 \div 5 - 24 \times 6 + 3 = ?$
 (1) 85 (2) 82
 (3) 81 (4) 80 **SSC CHSL, 2024**
79. In the given equation, what will come in place of the question mark (?) if '+' and '-' are interchanged, and ' $\times$ ' and ' $\div$ ' are interchanged?
 $14 - 15 \div 2 + 56 \times 14 = ?$
 (1) 30 (2) 45
 (3) 35 (4) 40 **SSC CHSL, 2024**
80. To make the given equation correct, which two numbers should be interchanged?
 $74 - 52 + (39 \div 13) \times 16 + (14 \div 2) = 106$
 (Note: Numbers should be interchanged, not digits. For example, if in the equation $43 \times 3 \div 4 \div 2$ numbers 2 and 3 are interchanged, the resulting equation becomes $43 \times 2 \div 4 \div 3$.)
 (1) 74 and 52 (2) 52 and 39
 (3) 14 and 52 (4) 14 and 16 **SSC CHSL, 2024**
81. If 'U' represents ' $\div$ ', 'D' represents ' $\times$ ', 'B' represents '+', and 'T' represents '-', then what will come in place of the question mark (?) in the given equation?
 $13 T 26 U 13 D 24 B 7 = ?$
 (1) -43 (2) -56
 (3) -28 (4) -87 **SSC CHSL, 2024**

82. What will come in place of the question mark (?) in the given equation, if '+' and '-' are interchanged and '×' and '÷' are interchanged?

$$162 \times 9 - 452 + 7 \div 9 = ?$$

- (1) 507 (2) 407
(3) 607 (4) 707 **SSC CHSL, 2024**

83. If 'T' represents '×', 'M' represents '+', 'K' represents '÷', and 'G' represents '-', then what will come in place of the question mark (?)?

$$100 \text{ K } 5 \text{ M } 73 \text{ T } 48 \text{ M } 56 \text{ G } 23 = ?$$

- (1) 3560 (2) 3575
(3) 3500 (4) 3557 **SSC CHSL, 2024**

84. What will come in place of the question mark (?) if '+' and '÷' are interchanged, and '×' and '-' are interchanged?

$$21 + 3 - 7 \div 11 \times 4 = ?$$

- (1) 48 (2) 51
(3) 56 (4) 63 **SSC CHSL, 2024**

85. If 'Z' represents '÷', 'Q' represents '×', 'H' represents '+', and 'E' represents '-', then what will come in place of the question mark (?)?

$$17 \text{ H } 23 \text{ Q } 42 \text{ Z } 7 \text{ E } 13 = ?$$

- (1) 975 (2) 688
(3) 785 (4) 142 **SSC CHSL, 2024**

86. What will come in place of the question mark (?) if '+' and '×' are interchanged, and '-' and '÷' are interchanged?

$$46 \times 17 + 4 \div 98 - 7 = ?$$

- (1) 90 (2) 85
(3) 80 (4) 100 **SSC CHSL, 2024**

87. What will come in place of the question mark (?) if '+' and '-' are interchanged, and '×' and '÷' are interchanged?

$$14 + 6 \times 3 \div 7 - 2 = ?$$

- (1) 3 (2) 8
(3) 10 (4) 2 **SSC CHSL, 2024**

88. What will come in place of the question mark (?) if '+' and '-' are interchanged, and '×' and '÷' are interchanged?

$$91 \times 7 + 27 - 7 \div 13 = ?$$

- (1) 99 (2) 77
(3) 66 (4) 88 **SSC CHSL, 2024**

Answer Key

1. (2)	2. (3)	3. (1)	4. (2)	5. (3)	6. (4)	7. (4)	8. (2)	9. (3)	10. (2)
11. (1)	12. (3)	13. (1)	14. (3)	15. (1)	16. (3)	17. (2)	18. (3)	19. (4)	20. (1)
21. (2)	22. (1)	23. (3)	24. (2)	25. (2)	26. (4)	27. (3)	28. (1)	29. (2)	30. (4)
31. (3)	32. (4)	33. (2)	34. (1)	35. (2)	36. (4)	37. (3)	38. (3)	39. (1)	40. (4)
41. (2)	42. (1)	43. (2)	44. (1)	45. (3)	46. (4)	47. (4)	48. (3)	49. (4)	50. (3)
51. (2)	52. (4)	53. (3)	54. (1)	55. (4)	56. (3)	57. (2)	58. (2)	59. (1)	60. (2)
61. (1)	62. (3)	63. (3)	64. (4)	65. (2)	66. (2)	67. (3)	68. (3)	69. (1)	70. (2)
71. (4)	72. (2)	73. (3)	74. (1)	75. (3)	76. (4)	77. (2)	78. (3)	79. (4)	80. (2)
81. (3)	82. (2)	83. (4)	84. (3)	85. (4)	86. (4)	87. (4)	88. (2)		

Explanations

1. Changing signs as per question, $54 \div 9 \times 5 = 6 \times 5 = 30$
Hence option (2) is correct.

2. Changing signs as per question,

$$81 \triangle 9 \bigcirc 3 \Delta 3 \square 16 = x$$

On changing the sign,

$$81 \div 9 \times 3 + 3 - 16 = x$$

From BODMAS, $81 \div 9 \times 3 + 3 - 16 = x$

$$\Rightarrow 9 \times 3 + 3 - 16 = x$$

$$\Rightarrow 27 + 3 - 16 = x$$

$$\Rightarrow 30 - 16 = x$$

$$\Rightarrow x = 14$$

Hence option (3) is correct.

3. Changing signs as per question,

$$3 \nabla 5 \square 20 \bigcirc 4 \Delta 1$$

$$= 3 + 5 - 20 \div 4 \times 1$$

$$= 3 + 5 - 5 \times 1$$

$$= 3 + 5 - 5 = 3$$

Hence option (1) is correct.

4. Changing signs as per question,

$$36 \# 5 \& 24 \% 6 @ 3 = 36 + 5 - 24 \div 6 \times 3$$

$$= 36 + 5 - 4 \times 3$$

$$= 36 + 5 - 12 = 29$$

Hence option (2) is correct.

5. $(10 \# 5) + (4 \# 2) - 3 @ 1 = K$

Changing signs as per question,

$$\Rightarrow (10 \times 5) - (4 \times 2) + 3 \div 1 = K$$

$$\Rightarrow (50) - (8) + 3 \div 1 = K$$

$$\Rightarrow 50 - 8 + 3 = K$$

$$\Rightarrow 53 - 8 = K$$

$$\Rightarrow K = 45$$

Hence option (3) is correct.

6. Changing signs as per question,

$$46 \square 23 \Delta 7 \square 21 \Delta 6 \square 1 \Delta 13 \square 2$$

$$= 46 - 23 + 7 - 21 + 6 - 1 + 13 - 2$$

$$= 46 + 7 + 6 + 13 - 23 - 21 - 1 - 2$$

$$= 46 + 26 - 21 - 26$$

$$= 46 - 21 = 25$$

Hence option (4) is correct.

7. Changing signs as per question,

$$6 + 8 - 10 \times 2 = 6 \times 8 + 10 \div 2$$

$$= 6 \times 8 + 5$$

$$= 48 + 5 = 53$$

Hence option (4) is correct.

8. Changing signs as per question,

$$4 - 5 \times 10 \div 2 + 3 = 4 \times 5 \div 10 + 2 - 3$$

$$= 4 \times \frac{1}{2} + 2 - 3$$

$$= 2 + 2 - 3 = 1$$

Hence option (2) is correct.

9. Changing signs as per question,

$$(9 + 5) \times 2 \div 5 - 5 + 1 = (9 - 5) \div 2 \times 5 + 5 - 1$$

$$= 4 \div 2 \times 5 + 5 - 1$$

$$= 2 \times 5 + 5 - 1$$

$$= 10 + 5 - 1 = 14$$

Hence option (3) is correct.

10. Changing signs as per question,

$$55 \text{ P } 11 \text{ Q } 5 \text{ R } 5 \text{ S } 12 = 55 \div 11 \times 5 + 5 - 12$$

$$= 5 \times 5 + 5 - 12$$

$$= 25 + 5 - 12$$

$$= 30 - 12 = 18$$

Hence option (2) is correct.

11. Changing signs as per question,

$$7 - 5 \times 14 + 7 \times 3 = 7 \times 5 + 14 \div 7 + 3$$

$$= 7 \times 5 + 2 + 3$$

$$= 35 + 2 + 3 = 40$$

Hence option (1) is correct.

12. Changing signs as per question,

$$16 \text{ B } 4 \text{ C } 10 \text{ B } 9 \text{ D } 3 = 16 - 4 \times 10 - 9 \div 3$$

$$= 16 - 4 \times 10 - 3$$

$$= 16 - 40 - 3$$

$$= 16 - 43 = -27$$

Hence option (3) is correct.

13. Changing signs as per question,

$$(8 \times 5) \div 10 \times 5 - 15 = (8 - 5) + 10 - 5 \times 15$$

$$= 3 + 10 - 5 \times 15$$

$$= 3 + 10 - 75$$

$$= 13 - 75 = -62$$

Hence option (1) is correct.

14. Changing signs as per question,

$$16 + 8 - 3 \div 3 \times 9 = 16 - 8 + 3 \times 3 \div 9$$

$$= 16 - 8 + 3 \times \frac{1}{3}$$

$$= 16 - 8 + 1 = 9$$

Hence option (3) is correct.

15. Changing signs as per question,

$$2 \div 8 \times 4 \div 2 = 2 + 8 \div 4 + 2$$

$$= 2 + 2 + 2 = 6$$

Hence option (1) is correct.

16. Changing signs as per question,

$$3 \downarrow 5 \leftarrow 4 \uparrow 2 = 3 \times 5 - 4 \div 2$$

$$= 3 \times 5 - 2$$

$$= 15 - 2 = 13$$

Hence option (3) is correct.

17. Changing signs as per question,

$$32 \text{ R } 8 \text{ S } 3 \text{ T } 6 \text{ U } 2 = 32 + 8 \times 3 \div 6 - 2$$

$$= 32 + 8 \times \frac{1}{2} - 2$$

$$= 32 + 4 - 2 = 34$$

Hence option (2) is correct.

18. Changing signs as per question,

$$50 \text{ L } 10 \text{ N } 5 \text{ M } 10 \text{ P } 50 = 50 \div 10 + 5 \times 10 - 50$$

$$= 5 + 5 \times 10 - 50$$

$$= 5 + 50 - 50 = 5$$

Hence option (3) is correct.

19. Changing signs as per question,

$$30 \text{ D } 2 \text{ A } 3 \text{ B } 6 \text{ C } 5 = 30 \div 2 + 3 \times 6 - 5$$

$$= 15 + 3 \times 6 - 5$$

$$= 15 + 18 - 5$$

$$= 33 - 5 = 28$$

Hence option (4) is correct.

20. Changing signs as per question,

$$50 @ 5 \# 10 \odot 2 \% 5 = 50 + 5 \times 10 \div 2 - 5$$

$$= 50 + 5 \times 5 - 5$$

$$= 50 + 25 - 5 = 70$$

Hence option (1) is correct.

21. Changing signs as per question,

$$36 \square 6 \Delta 6 \circ 30 = 36 \div 6 \times 6 - 30$$

$$= 6 \times 6 - 30$$

$$= 36 - 30 = 6$$

Hence option (2) is correct.

22. Changing signs as per question,

$$(49 - 7) \div 4 + 3 \times 2 = (49 \div 7) \times 4 - 3 + 2$$

$$= 7 \times 4 - 3 + 2$$

$$= 28 - 3 + 2$$

$$= 30 - 3 = 27$$

Hence option (1) is correct.