Mathematical Operations

REASONING WORKBOOK

QUESTIONS

1. If 'A' stands for '+', 'B' stands for '÷', 'C stands for '×' and 'D' stands for '–', then which of the following will be the value of the expression 4 A 6 B 3 C 5 D 4?
(a) 8 (b) 12 (c) 20 (d) 10

2. If '+' means '÷',' ÷' means '–','–' means '×' and '×' means '+', then $110+11-10\div22\times18=?$
(a) 46 (b) 96 (c) 106 (d) 116

3. P means 'add', Q means 'subtract', M means "multiply" and N means "divide, then 1 P 3 2 Q 6 N 1 M 0 P 8=?
(a) 0 (b) 1 (c) 21 (d) 41

4. It is given that 'ϕ' denotes "divided by", '@' denotes 'plus', '#' denotes 'minus' and '*' denotes 'multiplied by', then what is the value of the expression given below?

14 # 99 ϕ 33 @ 11 * 5

(a) 56 (b) 46 (c) 66 (d) 36

5. If 'a' stands for '×', 'b' stands for '÷', 'c' stands for '–' and 'd' stands for'+', then what will be the value of the expression (10 a 3) b (14 c 4) d (19 d 9) ?
(a) 31 (b) 29 (c) 23 (d) 11

6. If '+' is '×','–' is '+', '×' is '÷' and '÷' is '–', then simplify the following expression:

$9-3+4\div16\times2$

(a) 12 (b) 13 (c) 11 (d) 7

7. If 'A' stands for 'addition', 'S' stands for 'subtraction', 'D' stands for 'division', 'M' stands for 'multiplication', 'G' stands for 'greater than', 'E' stands for 'equal to' and 'L' stands for 'less than', which one of the following is correct ?
(a) 8 G 2 M 3 M 4 D 2 M 4 (b) 12 E 4 A 2 D 1 M 4 M 2
(c) 2 L 2 M 4 A 1 M 4 S 8 (d) 10 E 2 A 2 M 4 A 1 S 2

8. If 'L' means '÷', 'P' means '+', 'Q' means '–' and 'M' means '×', then tick the correct equation.
(a) 9 P 9 L 9 Q 9 M 9 = –71 (b) 6 M 18 Q 26 L 13 P 7 = – 10
(c) 11 M 3 4 L 1 7 Q 8 L 3 = – 24 (d) 32 P 8 L 16 Q 4 M 1 = – 6

9. If '$\Rightarrow$' stands for'+' '$\Uparrow$' stands for '÷', '$\Downarrow$' stands for '×', '$\Leftarrow$' stands for '–' and '$\otimes$' stands for '=', then which of the following statements is correct ?
(a) $5\Rightarrow7\Leftarrow2\Downarrow3\Uparrow5\otimes10$ (b) $2\Downarrow5\Leftarrow6\Rightarrow2\otimes6$
(c) $2\Downarrow6\Uparrow4\Leftarrow3\Rightarrow7\otimes0$ (d) $5\Rightarrow7\Leftarrow3\Uparrow2\otimes4$

10. If '×' stands for "addition", '<' for 'subtraction','+' for 'division', '>' for 'multiplication, '–' for 'equal to', '÷' for 'greater than' and '=' for 'less than', then which of the following is true?
(a) $3\times4>2-9+3<3$ (b) $5\times3<7\div8+4\times1$
(c) $5>2+2=10<4\times8$ (d) $3\times2<4\div16>2+4$

11. If '×' means'+','+' means '÷','–' means '×' and '÷' means '–', then $8\times7-8+40\div2=?$
(a) 1 (b) 72 (c) 83 (d) 44

12. If 'a' means '+', 'd' means '÷', 'm' means '×', 's' means '–', 'e' means '=', 'g' means '>', 'ℓ', means '< then which one out of the following four is correct ?
(a) 30 d 6 a 2 g 4 m 3 (b) 30 s 6 d 2 d 4 e 3
(c) 30 s 6 s 2 I 4 m 3 (d) 30 a 6 d 2 g 4 m 3

13. If the signs '+' and '–' are interchanged and the numbers 3 and 5 are also interchanged, then which one out of the following four alternatives is correct?
(a) $3-6\div2+5=1$ (b) $5+6\div2-3=1$
(c) $3+6\div2-5=1$ (d) $5-6\div2+3=1$

14. If the signs '×' and '÷' as well as the numbers 10 and 20 are interchanged, then select the correct one alternative out of the following four.
(a) $4\div20-10\times5=36$ (b) $10+20\times4\div5=6$
(c) $4+5\div20\times10=6$ (d) $10\times20+5-6=8$

15. If the signs '×' and '–' and numbers 6 and 3 are interchanged, then which one of the following equations is correct?
(a) $6-3\times8=21$ (b) $3-6\times7=9$
(c) $6-3\times4=18$ (d) $3-6\times8=10$

16. $16+4\div2-21\times7=21$
The above equation is incorrect. Which one out of the following interchanges would correct it?
(a) $\div$ and $\times$ (b) $+$ and $\times$ (c) $-$ and $\div$ (d) $-$ and $+$

17. The interchanges in the digits 9 and 4, and in the signs '$\div$' and '$\times$' would make true which one of the following expressions?
(a) $33\times9\div80=14$ (b) $94\times7\div97=324$
(c) $40\times10\div9=49$ (d) $30\div4\times19=49$

18. If the interchanges in the digits 2 and 7 and in the signs '$\times$' and '$+$' occur, then which of the following inequalities will be true?
(a) $3+8\times12<3+17\times4$ (b) $3+8\times12>3+17\times4$
(c) $3\times8+17>3\times12+6$ (d) $3\times8+17<3\times12+4$

19. If the sign '=' is replaced with '<' and the sign '<' is replaced with '=' and the signs '$\times$' and'+' are interchanged, then which of the following statements would become true?
(a) $7\times4+2<15$ (b) $3\times2+10=22$
(c) $7\times4+2=15$ (d) $6\times2+10<22$

20. If the digits 4 and 5, and the digits 7 and 2 are interchanged, then compute the value of the expression
$2\times15\div7-15+45-54\div9$
(a) 52 (b) 102 (c) 84 (d) 108

21. If 'β' means 'equal to, 'δ' means "not equal to' and 'η' means 'not greater than', then which of the following four could be a correct inference in $2A\delta B$ *and* $B\beta3C$?
(a) $2A\delta3C$ (b) $6C\eta B$ (c) $B\delta6A$ (d) $2A\eta3C$

22. Consider α as 'greater than', β as 'less than', γ as "not greater than', δ as 'not less than' and θ as 'equal to'. Also, P, Q and R as positive real numbers.
Lf 3R γ P and Q θ 2R,then
(a) $3Q\alpha2P$ (b) $Q\theta P$ (c) $Q\beta P$ (d) $Q\delta2P$

23. If 'a > b', 'b > c' and 'c > d', then which of the following conclusions is definitely wrong?
(a) a < d (b) c < a (c) d < a (d) d < b

24. Consider the meanings of the four symbols %, #, $ and * as given below:
'A % B' means A is more than B',
A # B' means A is either more than or equal to B ^
'A $ B' means A is less than B',
'A * B' means A is equal to B'.
Assuming the above statements to be true, identify which of the two conclusions I and regarding the statements given below is/are true?
Statements: P $ Q, Q * R, R # S.
Conclusions: I. S % P II. Q # S
(a) None (b) Only I (c) Only II (d) Both I and II

25. If '$\rightarrow$' stands for 'addition'; '$\leftarrow$' stands for 'subtraction'; '$\uparrow$' stands for 'division'; '$\downarrow$' stands for 'multiplication 'and ' '$\nearrow$''stands for 'equal to', then which of the following options is incorrect? **(SOF NSO 2017)**
(a) $2\downarrow5\leftarrow6\rightarrow2\nearrow6$ (b) $3\rightarrow7\leftarrow3\uparrow3\nearrow9$
(c) $3\downarrow6\nearrow2\rightarrow3\leftarrow6\downarrow5$ (d) $7\nearrow5\leftarrow4\rightarrow3\downarrow4\uparrow2$

ANSWER - KEY				
1. D	**2.** B	**3.** D	**4.** C	**5.** A
6. B	**7.** C	**8.** A	**9.** B	**10.** C
11. B	**12.** D	**13.** D	**14.** A	**15.** D
16. A	**17.** B	**18.** B	**19.** A	**20.** C
21. A	**22.** C	**23.** A	**24.** C	**25.** C

EXPLANATIONS

1. (d): $4A6B3C5D4 = 4+6\div3\times5-4=10$

2. (b): $110+11\ -10\div22\times18\ =110\div11\ \times10-22+18=96$

3. (d): Given expression $=1+32-6\div1\times0+8=41$

4. (c): Given expression $=14-99\div33+11\times5\ =\ 66.$

5. (a): Given expression $=(10\times3)\div(14-4)+(19+9)=31$

6. (b): Given expression $=9+3\times4-16\div2=13.$

7. (c): 2 L 2 M 4 A 1 M 4 S 8
$\Rightarrow 2<2\times4+1\times4-8\Rightarrow 2<4.$

8. (a); $9P9L9Q9M9=9+9\div9-9\times9=-71.$

9. (b) : $2\Downarrow5\Leftarrow6\Rightarrow2\otimes6=2\times5-6+2$
$=6$ i.e., 6=6 which is true.

10. (c): $5>2+2=10<4\times8$
or $5\times2\div2<10-4+8$
or $5\times1<10-4+8$
or $5<14$ which is true.

11. (b): Given expression $=8+7\times8\div40-2$
$=8+\frac{7}{5}-2=7\frac{2}{5}$

12. (d): 30 a 6 d 2 g 4 m 3 or $30+6\div2>4\times3$ or $33>12$ which is true.

13. (d): $5-6\div2+3=1$ means
$3+6\div2-5=1.$

14. (a): $4\div20-10\times5=36$ means
$4\times10-20\div5=\ 36$ *or* $36=36.$

15. (d): $3-6\times8=10$ means $6\times3-8=10,$ which is true.

16. (a): Given equation becomes
$16+4\times2-21\div7=21.$

17. (b): $94\times7\div97=324$ becomes
$49\div7\times47=329.$

18. (b): $3+8\times12>3+17\times4$ becomes
$3\times8+17>3\times12+4$ *or* $41>40.$

19. (a): $7\times4+2<15$ becomes $7+4\times2=15.$

20. (c) : The given expression will become
$7\times14\div2-14+54-45\div9.$

21. (a): $2A\delta B\Rightarrow 2A\neq B$ and $B\beta3C\Rightarrow B=3C$
$\Rightarrow 2A\neq3C\Rightarrow 2A\delta3C.$

22. (c): $3R\gamma P$ and $Q\theta2R$
$\Rightarrow 3R\not>P$ and Q=2R
$\Rightarrow 3\left(\frac{Q}{2}\right)\not>P\Rightarrow Q\leq\frac{2P}{3}\Rightarrow Q<P$

23. (a): $a > b > c > d \Rightarrow a > d.$

24. (c): P \$ Q ,Q * R ,R # S
$\Rightarrow P<Q,Q=R,R\geq S$
$\Rightarrow P<Q=R,R\geq S$
$\Rightarrow Q\geq S$
$\Rightarrow Q\#S$

25. (c) Not Available