

## Ch 10 MATHEMATICAL OPERATIONS

### ANSWERS AND EXPLANATIONS

#### EXERCISE 1

1. (e)  $? = 540 \div 36 \times 12 + 75 - 55$

or  $? = 15 \times 12 + 75 - 55$

or  $? = 180 + 75 - 55 = 200$

2. (c)  $? = 360 \div 24 + 56 \times 5 - 48$

or  $? = 15 + 280 - 48 = 247$

3. (a)  $\times$  means  $+$

$+$  means  $\div$

$\div$  means  $-$

$-$  means  $\times$

$5 - 7 \times 9 + 3 \div 2 = ?$

or  $? = 5 \times 7 + 9 \div 3 - 2$

or  $? = 5 \times 7 + 3 - 2$

or  $? = 35 + 3 - 2 = 36$

4. (d)

$- \Rightarrow +$	$\times \Rightarrow -$
$\div \Rightarrow \times$	$+ \Rightarrow \div$

$20 \times 12 + 4 - 16 \div 5 = ?$

or  $? = 20 - 12 \div 4 + 16 \times 5$

or  $? = 20 - 3 + 80 = 97$

5. (b)  $? = 20 R 16 K 5 M 10 T 8$

or  $20 + 16 \times 5 \div 10 - 8$

or  $20 + 16 \times \frac{5}{10} - 8$

or  $20 + 8 - 8 = 20$

6. (a)  $15 \div 5 \times 9 + 3 - 6 = ?$

or  $? = 15 \times 5 - 9 \div 3 + 6$

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

or  $? = 81 - 3 = 78$

7. (e)  $40 R 8 W 10 T 12 P 16 = ?$

or  $? = 40 \div 8 \times 10 - 12 + 16$

or  $? = 5 \times 10 - 12 + 16$

or  $? = 66 - 12 = 54$

8. (b)  $? = 288 \div 32 \times 6 - 45 + 9$

or  $? = 9 \times 6 - 45 + 9$

or  $? = 54 - 45 + 9 = 18$

9. (c)  $40\$20@2\#40\star20\#38$

$40 - 20 \times 2 + 40 \div 20 + 38$

$= 40 - 20 \times 2 + \frac{40}{20} + 38$

$= 40 - 40 + 2 + 38$

10. (a)  $60 T 48 P 8 W 6 R 9 = ?$

$\Rightarrow 60 + 48 \div 8 - 6 \times 9 = ?$

$\Rightarrow 60 + 6 - 54 = ?$

$\Rightarrow 12 = ?$

11. (e)  $10 \neg 10=5 \neg 10 ? 50 \bullet 10$

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

$10 \times 10 - 5 \times 10 + \frac{50}{10}$

$= 100 - 50 + 5$

$= 55$

12. (b) Using the given symbols, we have:

Given expression

$= 8 + 7 \times 8 \div 40 - 2 = 8 + 7 \times \frac{1}{5} - 2$

$= \frac{37}{5} = 7\frac{2}{5}$

13. (d) Using the proper symbols, we have:

Given expression  $= 16 + 24 \div 8 - 6 \div 2 \times 3$

$= 16 + 3 - 3 \times 3$

$= 16 + 3 - 9 = 10.$

14. (d) Using the proper notations in (d), we get

$9 + 9 \div 9 - 9 \times 9$

$= 9 + 1 - 9 \times 9 = 9 + 1 - 81 = -71.$

$\therefore$  option (d) is true.

15. (d)  $40 + 12 \div 3 \times 6 - 60 = 4$

16. (c)  $9 \times 8 + 8 \div 4 - 9 = 65$



17. (c)  $24 \times 4 \div 8 + 4 = 24 \times \frac{1}{2} + 4 = 12 + 4 = 16$

18. (b)  $20 + 12 - 4 \div 8 \times 6 = 29$

19. (d) Using the proper notations in (d), we get

$$8 \times 8 + 8 \div 8 - 8 = 8 \times 8 + 1 - 8 \\ = 64 + 1 - 8 = 57$$

20. (b) Since,  $20 \times 10 = 200$ , therefore,  $-$  means  $\times$

$$8 + 4 = 12, \text{ therefore, } \div \text{ means } +.$$

$$6 - 2 = 4, \text{ therefore, } \times \text{ means } -.$$

$$\text{and } 12 \div 3 = 4, \text{ therefore, } + \text{ means } \div.$$

Now, given expression

$$= 100 \times 10 - 1000 + 1000 \div 100 - 10$$

$$= 1000 - 1000 + 10 - 10 = 0$$

21. (c) Using the proper signs, we get:

$$36 - 8 + 4 + 6 \div 2 \times 3 = 36 - 2 + 3 \times 3$$

$$= 36 - 2 + 9$$

$$= 45 - 2 = 43$$

22. (c) Using proper notations, we have:

(1) given statement is  $3 \div 2 + 4 < 9 + 3 - 1$

or  $\frac{11}{2} < 2$ , which is not true.

(2) given statement is  $3 + 2 + 4 < 18 \div 3 - 2$

or  $9 < 4$ , which is not true.

(3) given statement is  $3 + 2 - 4 > 8 \div 4 - 2$

or  $1 > 0$ , which is true.

(4) given statement is  $3 \div 2 - 4 > 9 \div 3 - 3$

or  $-\frac{5}{2} > 0$ , which is not true. So, the statement

(c) is true.

23. (d) Using the correct symbols, we have:

$$\text{Given expression} = 8 + 36 \div 6 - 6 \div 2 \times 3$$

$$= 8 + 6 - 3 \times 3 = 5$$

24. (b) Using the proper notations in (2), we get the statement as  $5 \times 2 \div 2 < 10 - 4 + 2$  or  $5 < 8$ , which is true.

25. (a) Using the proper signs in the given expression, we get

$$175 \div 5 \times 20 - 3 \times 10 = 7 + 5 \times 20 - 3 \times 10$$

$$= 7 + 100 - 30$$

$$= 107 - 30 = 77.$$

26. (a) Given that :  $20 - 10 = 200$ .

But, actually  $20 \times 10 = 200$ , so  $-$  means  $\times$ .

Given that  $8 \div 4 = 12$ , But actually  $8 \div 4 = 12$ .

So,  $+$  means  $+$ .

Given that :  $6 \times 2 = 4$

But actually  $6 - 2 = 4$ . So,  $\times$  means  $-$

Thus, in the given mathematical language  $-$  means  $\times$ ,

$\div$  means  $+$  and  $\times$  means  $-$  so, + Given expression

$$= 100 \times 10 - 1000 + 1000 \div 100 - 10$$

$$1000 - 1000 + 10 - 10 = 0.$$

27. (d) Using the correct symbols, we have

$$\text{Given expression} = 24 \times 12 + 18 \div 9$$

$$= 288 + 2 = 290.$$

28. (b) Using the correct symbols, we have

$$\text{Given expression} = (3 \times 15 + 19) \div 8 - 6$$

$$= 64 \div 8 - 6 = 8 - 6 = 2.$$

29. (a) Using the correct symbols, we have

Given expression

$$= \frac{(36-4)+8-4}{4 \times 8 - 2 \times 16 + 1} = \frac{32+8-4}{32-32+1} = \frac{4-4}{0+1} = 0.$$

30. (d) Using the correct symbols, we have

$$\text{Given expression} = 12 - 12 \times 28 \div 7 + 15$$

$$= 12 - 12 \times 4 + 15 = 12 - 48 + 15 = 27 - 48 \\ = -21.$$

31. (c) Using the correct symbols, we have

$$\text{Given expression} = (10 \times 4) + (4 \times 4) - 6$$

$$= 40 + 16 - 6$$

$$= 56 - 6 = 50.$$

32. (d) Using the proper notations in (4) we get the statement as  $2 \times 5 - 6 + 2 = 6$

$$\text{or } 10 - 6 + 2 = 6 \text{ or } 6 = 6, \text{ which is true.}$$

33. (c) Using the proper notations in (3), we get the statement as  $5 \times 2 + 2 < 10 - 4 + 8$

$$\text{or } 5 \times 1 < 18 - 4 \text{ or } 5 < 14,$$

$$\text{which is true.}$$

34. (d) Interchanging ( $+$  and  $\div$ ) and (2 and 4), we get :

$$(1) 4 \div 2 + 3 = 3 \text{ or } 5 = 3, \text{ which is false}$$

$$(2) 2 \div 4 + 6 = 1.5 \text{ or } 6.5 = 1.5, \text{ which is false.}$$

$$(3) 2 + 4 \div 3 = 4 \text{ or } \frac{10}{3} = 4, \text{ which is false.}$$



