

## Chapter - 5

# MATHEMATICAL OPERATION AND ARITHMETICAL

**Answer Key with Step-by-Step Solutions**  
**Includes: All MCQs + Extra PYQs with Detailed Explanations**



## Previous Year Questions

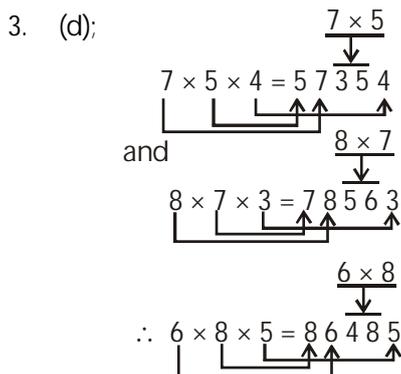
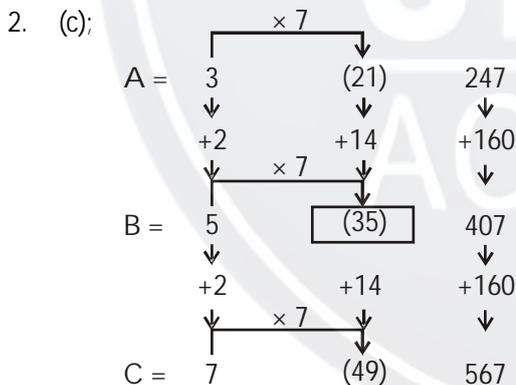
1. If '+' means 'x', '-' means '÷', 'x' means '-' and '÷' means '+' then what will be the value of  $16 \div 64 - 8 \times 4 + 2$ ?  
 (a) 12 (b) 24  
 (c) 16 (d) 18
2. If  $+ = \times$ ,  $- = \div$ ,  $\times = +$ ,  $\div = -$ , then which is the correct equation out of the following.  
 (a)  $18 + 6 - 4 \times 2 \div 3 = 26$  (b)  $18 \div 6 + 4 - 2 \div 3 = 22$   
 (c)  $18 \times 6 - 4 + 7 \times 8 = 47$  (d)  $18 - 6 \times 7 + 8 = 63$
3. If + stands for division,  $\times$  stand for addition, - stands for multiplication,  $\div$  stands for subtraction, which of the following is correct?  
 (a)  $46 \times 6 \div 4 - 5 + 3 = 74$   
 (b)  $46 - 6 + 4 \times 5 \div 3 = 71$   
 (c)  $46 \div 6 \times 4 - 5 + 3 = 75.5$   
 (d)  $46 \times 6 - 4 + 5 \div 3 = 70.1$
4. Some equations have been solved on the basis of a certain system. Find the correct answer for the unsolved equation on that basis.  
 If  $9 * 7 = 32$ ,  $13 * 7 = 120$ ,  $17 * 9 = 208$ , then  $19 * 11 = ?$   
 (a) 150 (b) 180  
 (c) 210 (d) 240
5. If '+' means '-', '-' means 'x', 'x' mean '÷' and '÷' means '+' which combination will give you the value of 0 in  $48 * 4 * 12 * 20 * 4$ ?  
 (a)  $+ - \div \times$  (b)  $\div + - \times$   
 (c)  $- \div \times +$  (d)  $\times \div + +$
6. After interchanging + and -, 8 and 7, which one of the following become correct  
 (a)  $6 + 8 \times 2 - 7 = 0$  (b)  $8 \times 2 + 7 - 6 = 9$   
 (c)  $7 \times 8 + 6 - 9 = 25$  (d)  $8 - 7 + 3 \times 5 = 35$
7. John's age is 42 years and Kelvin's age is 26 years. How many years ago was Kelvin's age half of John's age:  
 (a) 4 years (b) 10 years  
 (c) 8 years (d) 6 years
8. Select the correct combination of mathematical signs to replace \* signs and to balance the following equation.  
 $(\sqrt{121} * 9) * 5 * 1 * 4$   
 (a)  $+ , \div \times =$  (b)  $= + \times \div$   
 (c)  $- \times + =$  (d)  $- + \times =$
9. If '-' stands for 'division', '+' stands for 'multiplication',  $\div$  stands for 'subtraction', 'x' stands for 'addition', then which one of the following equations is correct?  
 (a)  $52 \div 4 + 5 \times 8 - 2 = 36$  (b)  $36 - 12 \times 6 \div 3 + 4 = 60$   
 (c)  $43 \times 7 \div 5 + 4 - 8 = 25$  (d)  $36 \times 4 - 12 + 5 \div 3 = 420$
10. Which of the following interchange of signs would make the equation correct?  
 $49 - 7 + 7 = 14$   
 (a) - and + (b) - and -  
 (c)  $\div$  and + (d) + and -
11. The ratio of the present ages of Sunita and Vinita is 4 : 5, six years hence, the ratio of their ages will be 14 : 17. What will be the ratio of their ages 12 years hence.  
 (a) 13 : 15 (b) 16 : 19  
 (c) 17 : 19 (d) 15 : 19
12. Select the correct combination of mathematical signs to replace \* signs and to balance the following equation:  
 $(8 * 5 * 6) * 10 * 24$   
 (a)  $+ - = \times$  (b)  $\times - \div =$   
 (c)  $- + \div =$  (d)  $\times \times \div =$
13. If L denotes x, M denotes  $\div$ , P denotes + and Q denotes -, the find the value of  $16 P 24 M 8 Q 6 M 2 L 3 = ?$   
 (a) 6 (b) 8  
 (c) 10 (d) 12
14. X stands for +, Z stands for +, Y stands for -, and P stands for x, then what is the value of  $10 P 2 X 5 Y 5 ?$   
 (a) 10 (b) 15  
 (c) 20 (d) 25
15. Select the correct combination of mathematical signs to replace \* signs and to balance the given equation:  
 $28 * 4 * 9 * 16$   
 (a)  $\div + =$  (b)  $+ \div =$   
 (c)  $- \times +$  (d)  $- = \times$
16. If x stands for +,  $\div$  stands for -, - stands for  $\div$ , + stands for x, which one of the following is correct?  
 (a)  $11 - 6 \div 4 + 2 = 64$   
 (b)  $10 - 5 \times 6 \div 2 = 54$   
 (c)  $15 + 3 \times 4 \div 3 = 12$   
 (d)  $12 + 4 \div 280 - 7 = 8$
17. If L denotes x, M denotes  $\div$ , P denotes +, Q denotes -  
 Then  $16 P 24 M 8 Q 6 M 2 L 3 = ?$   
 (a) 10 (b) 9  
 (c) 12 (d) 11
18. Select the correct set which will fit in the given equation  
 $8 * 8 * 1 * 11 * 11$   
 (a)  $+ = \div -$  (b)  $\times + = \div$   
 (c)  $\div \times + =$  (d)  $- + = \div$
19.  $7 * 5 * 5 * 4 * 10$   
 (a)  $+ \div - =$  (b)  $\times - = \times$   
 (c)  $\times + = \times$  (d)  $+ \times \div =$



20. If 'P' means '+', 'Q' means '×', 'R' means '÷' and 'S' means '-' then-  
 $44 Q 9 R 12 S 6 Q 4 P 16 = ?$   
 (a) 25 (b) 112  
 (c) 36 (d) 124
21. There are some ducks and goats in a ground. Total no of heads and feet are 77 and 224 respectively. How many ducks are there in the ground?  
 (a) 42 (b) 30  
 (c) 32 (d) 47
22. If all the numbers from 501 to 700 are written, what is the total number of times does the digit 6 appear  
 (a) 138 (b) 139  
 (c) 140 (d) 141
23. A book has 300 pages and each page has 20 lines of 10 – 10 words. Find the no. of words in the book.  
 (a) 6000 (b) 60,000  
 (c) 66000 (d) 600000
24. Some oranges were distributed among 40 children equally. If 20 more children were there, each children would have been get 5 less oranges. How many oranges are there at the beginning?  
 (a) 200 (b) 300  
 (c) 400 (d) 600
25. A shepherd had 17 sheep. All but nine died. How many was he left with?  
 (a) 0 (b) 8  
 (c) 9 (d) 17
26. In a exam, a student gets 4 marks for each correct answer, but loses one for a wrong answer, There were 60 questions and got 130 marks. Find the correct number of answer.  
 (a) 42 (b) 35  
 (c) 38 (d) 40
27. In each 1 km distance a bike is standing. Then how many bikes are there in 10 km distance?  
 (a) 10 (b) 9  
 (c) 11 (d) 12
28. The number of boys in a class is three times the number of girls, which one of the following numbers cannot represent the total number of children in the class?  
 (a) 48 (b) 44  
 (c) 42 (d) 40
29. what is the sum of numbers from 1 to 5000?  
 (a) 1250500 (b) 12505200  
 (c) 1205500 (d) 12502500
30. How many words with or without meaning can be made using the letters of word 'INDIA'?  
 (a) 40 (b) 60  
 (c) 80 (d) 45

**Practice Set Solutions**

1. (c);  $16 \div 8 \times 4 + 3 - 9 \Rightarrow 8 + 3 - 9 = 2$



4. (b);  $4 \times 9 = 36 ; 3 + 6 = 9 \Rightarrow 369$

$6 \times 4 = 24 ; 2 + 4 = 6 \Rightarrow 246$

$7 \times 3 = 21 ; 1 + 2 = 3 \Rightarrow 213$

5. (b);  $6 \div 3 > 4 + 5$

$\rightarrow 2 > 9$  in correct

6. (d);  $13 \times 12 \Rightarrow 31 \times 21 = 651$

$41 \times 23 \Rightarrow 14 \times 32 = 448$

Similarly,

$24 \times 22 \Rightarrow 42 \times 22 = 924$

7. (d);  $6 > 2 > 3^8 \vee 4 + 13$

$\Rightarrow 6 \div 2 \div 3 - 8 \times 4 = 13$

$\Rightarrow 1 - 32 \neq 13$

$6^2 < 3 > 8 < 4 - 13$

$\Rightarrow 6 - 2 + \frac{3}{8} + 4 > 13$

$\Rightarrow \frac{48 - 16 + 3 + 32}{8} > 13$

$\Rightarrow \frac{67}{8} > 13$

$6 \vee 2 < 3^8 > 4 \times 13$



$$\Rightarrow 6 \times 2 + 3 - 8 \div 4 < 13$$

$$\Rightarrow 12 + 3 - 2 < 13$$

$$\Rightarrow 13 < 13$$

$$6 > 2 \vee 3 < 8 \wedge 4 + 13$$

$$\Rightarrow 6 \div 2 \times 3 + 8 - 4 = 13$$

$$\Rightarrow 3 \times 3 + 8 - 4 = 13$$

$$\Rightarrow 9 + 8 - 4 = 13$$

8. (a);  $96 \div 6 = 8 \times 2$

$$\Rightarrow 16 = 16$$

9. (c);  $a = 12$  (390)  $8 \Rightarrow 12 + 8 = 20$ ;

$$20 \times 20 - 10 = 390$$

$$b = 7$$
 (134)  $5 \Rightarrow 7 + 5 = 12$ ;

$$12 \times 12 - 10 = 134$$

$$c \Rightarrow 5 + 12 = 17$$
;  $17 \times 17 - 10$

$$= 289 - 10 = 279$$

10. (d);  $8 \quad 3 \quad 7 \quad 1 \quad 0 \quad 6$

$$\downarrow \downarrow \downarrow \quad \downarrow \downarrow \downarrow$$

$$4 \quad 5 \quad 2 \quad 7 \quad 6 \quad 9$$

$$7 \quad 0 \quad 8 \quad 7 \quad 7$$

$$\downarrow \downarrow \downarrow \quad \downarrow \downarrow$$

$$2 \quad 6 \quad 4 \quad \text{and} \quad 2 \quad 2$$

$$\text{Now, } 264 \div 22 = 12$$

11. (b);  $9 \times 4 - 22$

$$36 - 22 = 14$$

12. (a);  $8 \times 5 = 27 - 3 + 16$

$$\Rightarrow 40 = 43 - 3$$

$$\Rightarrow 40 = 40$$

13. (b);

$X \Rightarrow +$	$V \Rightarrow -$	$U \Rightarrow =$	$\theta \Rightarrow <$
$\wedge \Rightarrow \div$	$\Sigma \Rightarrow \times$	$\sigma \Rightarrow >$	

$$3 X 8 V 2 U 12 \wedge 3$$

$$\Rightarrow 3 + 8 - 2 = 12 \div 3$$

$$\Rightarrow 9 \neq 4$$

$$13 V 12 X 9 V 2 \sigma 5 \Sigma 1$$

$$\Rightarrow 13 - 12 + 9 - 2 > 5 \times 1$$

$$\Rightarrow 8 > 5$$

$$2 \Sigma 3 \Sigma 4 \sigma 5 1 \wedge 3$$

$$\Rightarrow 2 \times 3 \times 4 < 51 \div 3$$

$$\Rightarrow 24 \not\leq 17$$

$$3 \Sigma 2 \Sigma 4 U 2 X 7 V 3$$

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

$$\Rightarrow 24 \neq 6$$

14. (b);  $10 - 3 = 7$ ;  $7 + 5 = 12$

$$12 - 4 = 8$$
;  $8 + 5 = 13$

$$14 - 5 = 9$$
;  $9 + 5 = 14$

$$16 - 6 = 10$$
;  $10 + 5 = 15$

15. (d);  $(18 \div 6) \times 12 = 36$

16. (b,d); Option (b)

$$24 = 4 \times 5 + 4$$

$$\Rightarrow 24 = 20 + 4$$

Option (d)

$$24 = 4 + 5 \times 4$$

$$\Rightarrow 24 = 4 + 20$$

Both options (b) and (d) are correct.

17. (a);  $A = 51 \times 14 = 714$

$$B = 61 \times 15 = 915$$

$$C = 71 \times 16 = 1136$$

$$D = 81 \times 17 = 1377$$

18. (b);  $5 = 15 \div 3$

19. (a);  $25 \times 2 - 6 = 4 \times 11 + 0$

$$\Rightarrow 50 - 6 = 44 + 0 \Rightarrow 44 = 44$$

20. (b);  $70 \div 2 - 4 \times 5 + 6 = 44$

$$\Rightarrow 35 - 20 + 6 = 44$$

$$\Rightarrow 15 + 6 \neq 44$$

$$70 \div 2 - 4 \times 5 + 6 = 21$$

$$\Rightarrow 35 - 20 + 6 = 21$$

$$\Rightarrow 41 - 20 = 21$$

21. (c);

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

$$19 \times 5 \div 4 + 2 - 4 = 11$$

$$\Rightarrow \frac{19 \times 5}{4} + 2 - 4 \neq 11$$

$$19 + 5 \div 4 - 2 \times 4 = 16$$

$$\Rightarrow 19 + \frac{5}{4} - 8 = 16$$

$$\Rightarrow 76 + 5 - 32 = 16 \times 4$$

$$\Rightarrow 81 - 32 \neq 64$$

$$\Rightarrow 19 - 5 \times 4 \div 2 + 4 = 13$$

$$\Rightarrow 19 - 5 \times 2 + 4 = 13$$

$$\Rightarrow 19 - 10 + 4 = 13$$

$$19 - 5 \times 4 \times 2 - 4 = 20$$

$$\Rightarrow 19 - 40 - 4 \neq 20$$

22. (a);  $30 - 6 + 5 \times 4 \div 2 = 27$

$$\Rightarrow 30 \div 6 \times 5 + 4 - 2 = 27$$

$$\Rightarrow 25 + 4 - 2 = 27$$

$$30 + 6 - 5 \div 4 \times 2 = 30$$

$$\Rightarrow 30 \times 6 \div 5 - 4 + 2 = 30$$

$$\Rightarrow 36 - 4 + 2 \neq 30$$

$$30 \times 6 \div 5 - 4 + 2 = 32$$

$$\Rightarrow 30 + 6 - 5 \div 4 \times 2 \neq 32$$

$$30 \div 6 \times 5 + 4 - 2 = 40$$

$$30 - 6 + 5 \times 4 \div 2 = 40$$

$$\Rightarrow 30 - 6 + 10 \neq 40$$



23. (a);  $16 + 5 - 10 \times 4 \div 3 = 9$   
 $\Rightarrow 16 \times 5 \div 10 + 4 - 3 = 9$   
 $\Rightarrow 8 + 4 - 3 = 9$

24. (d);

$+\Rightarrow\delta$	$-\Rightarrow\bullet$	$\times\Rightarrow\gamma$	$\div\Rightarrow\eta$
$=\Rightarrow w$	$>\Rightarrow\beta$	$<\Rightarrow\alpha$	

Option (1)

$3\gamma 6\eta 2\delta 8\bullet 4\omega 5$   
 $\Rightarrow 3 \times 6 \div 2 + 8 - 4 = 5$   
 $\Rightarrow 3 \times 3 + 8 - 4 = 5$   
 $\Rightarrow 17 - 4 \neq 5$

Option (2)

$3\eta 6\gamma 2\delta 8\bullet 4\beta 5$   
 $\Rightarrow 3 \div 6 \times 2 + 8 - 4 > 5$   
 $\Rightarrow \frac{3}{6} \times 2 + 8 - 4 > 5$   
 $\Rightarrow 5 > 5$

Option (3)

$3\gamma 6\bullet 2\delta 8\eta 4\alpha 5$   
 $\Rightarrow 3 \times 6 - 2 + 8 \div 4 < 5$   
 $\Rightarrow 3 \times 6 - 2 + 2 < 5$   
 $\Rightarrow 18 - 2 + 2 < 5$

Option (4)

$3\delta 6\bullet 2\gamma 8\eta 4\omega 5$   
 $\Rightarrow 3 + 6 - 2 \times 8 \div 4 = 5$   
 $\Rightarrow 3 + 6 - 2 \times 2 = 5$   
 $\Rightarrow 9 - 4 = 5$

25. (a);  $(\square \times \Delta) \div \diamond = ?$   
 $\Rightarrow ? = (8 \times 3) \div 4$   
 $\Rightarrow ? = 24 \div 4 = 6 \Rightarrow \square$

26. (b);  $B > A > E$   
 $C > B, B > D > A$   
 $\therefore C > B > D > A > E$

27. (b); Chitra > Sunitha > Anitha ... (i)  
 Banu > Reena > Chitra ... (ii)  
 From statements (i) and (ii)  
 Anitha is the shortest.

28. (d); At the birth of son, the age of mother =  $35 - 7 = 28$  years  
 Difference in age  
 =  $32 - 28 = 4$  years

29. (c); Suppose the age of son is  $x$  years  
 Therefore, the age of father will be  $5x + 1$   
 Again,  $4(x + 3) - 2 = 5x + 1 + 3$   
 $\Rightarrow 4x + 12 - 2 = 5x + 4$

$\Rightarrow 10 - 4 = 5x - 4x$   
 $\therefore x = 6$

Age of father =  $5x + 1$   
 =  $5 \times 6 + 1 = 31$  years

30. (b); According to question  
 $2x - 2 = 16 \Rightarrow 2x = 16 + 2$   
 $\therefore x = 9$  years

31. (c); Suppose the age of Johnny is  $x$  years and that of Rahul is  $y$  years.

According to question

Age of Hari =  $2x = 5y$

or,  $2x - 5y = 0$  ... (i)

Again  $x = 3 + y$

or,  $x - y = 3$  ... (ii)

On solving equations (i) and (ii), we get  
 $y = 2$

$\therefore$  Age of Johnny =  $3 + y = 3 + 2 = 5$  years

32. (b); Suppose the present age of Geetha is  $x$  years

Present age of Hema  
 =  $40 - 10 = 30$  years

According to question

$2(x - 10) = 30 - 10$

$\Rightarrow 2x - 20 = 20$

$\Rightarrow 2x = 20 + 20 = 40$

$\therefore x = \frac{40}{2} = 20$  years

33. (b); Suppose the present age of Ashok is  $x$  years and that of his mother is  $y$  years.

5 years ago

$3(x - 5) = (y - 5)$

$\Rightarrow 3x - 15 = y - 5$

$\Rightarrow 3x - y = 10$  ... (i)

5 years hence.

$2(x + 5) = (y + 5)$

$\Rightarrow 2x + 10 = y + 5$

$\Rightarrow 2x - y = -5$  ... (ii)

From equations (i) and (ii)

$x = 15$  years.

34. (d); Suppose the present age of son is  $x$  years.  
 Therefore, present age of the father =  $4x$  years.  
 According to question

$x + 3 = 15$

$\therefore x = 15 - 3 = 12$

The present age of Father =  $4x = 4 \times 12 = 48$

$\therefore$  The present age of man's wife  
 =  $48 - 3 = 45$  years



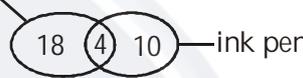
35. (d); Suppose the age of Naresh's brother =  $x$  years  
 $\therefore$  Age of Naresh =  $2x - 4$
36. (a); Age of Shan = 55 years  
 Age of Sathian =  $55 - 5 = 50$  years  
 Age of Balan =  $50 - 6 = 44$  years  
 Age of Devan =  $44 - 7 = 37$  years  
 Difference between the ages of Shan and Devan  
 =  $55 - 37 = 18$  years
37. (c); Suppose his present age is  $x$  years  
 According to question  

$$\frac{x}{4} + \frac{x}{5} + \frac{x}{3} = x - 13$$

$$\Rightarrow \frac{15x + 12x + 20x}{60} = x - 13$$

$$\Rightarrow 47x = 60x - 780 \quad \Rightarrow 60x - 47x = 780$$

$$\Rightarrow 13x = 780$$

$$\therefore x = \frac{780}{13} = 60 \text{ years}$$
38. (b); Suppose the age of daughter is  $x$  years.  
 Age of brother =  $x + 5$   
 Age of mother =  $2x$  years  
 $\therefore 2x - 20 = x + 5$   
 $\Rightarrow 2x - x = 5 + 20$   
 $\Rightarrow x = 25$  years  
 Age of mother =  $2x = 2 \times 25 = 50$  years  
 Age of father =  $50 + 10 = 60$  years
39. (c); Suppose the number of rabbits =  $x$   
 Number of pigeons =  $y$ .  
 According to question,  
 $x + y = 200$  ... (i)  
 and  $4x + 2y = 580$  ... (ii)  
 From equation (i) and (ii)  
 $x = 90$   
 $y = 200 - 90 = 110$
40. (d); The man and his wife = 2 members  
 Three sons and their wives = 6 members  
 Three children each of three sons =  $3 \times 3 = 9$   
 members.  
 Total number of candidates =  $2 + 6 + 9 = 17$ .
41. (c); Total no. of apples =  $14 \times 12 = 168$   
 Ten apples were removed, remaining apples  
 =  $168 - 10 = 158$   
 Now  $\frac{158}{2} = 79$ .
42. (a); Mother = 1, wives = 4, unmarried daughters = 2  
 Daughters =  $3 \times 2 = 6$ .  
 Total number of female members  
 $1 + 4 + 2 + 6 = 13$
43. (b); Relative speed  $(54 - 45) = 9$  kmph  
 Stoppage per hour =  $\frac{9}{54} \times 60 = 10$  minutes
44. (a);  $\frac{\text{Arithmetic marks}}{3} = \frac{\text{English}}{2}$   
 $\Rightarrow 2A - 3E = 0$  ... (i)  
 $\Rightarrow A + E = 150$  ... (ii)  
 From equation (i) and (ii)  $E = 60$
45. (b); Colour Pencil  
  
 Total Strength =  $18 + 4 + 10 = 32$
46. (d); There are 100 students in computer science  
 which include students of electronics too.  
 Number of students opting for computer science  
 only  
 =  $100 - 80 = 20$ .
47. (b); Fare of city B from city A = Rs.  $x$   
 Fare of city C from city A = Rs.  $y$   
 Then  $2x + 3y = 77$  ... (i)  
 $3x + 2y = 73$  ... (ii)  
 By solving equation (i) and (ii)  $y = 17$ , then  $x = 13$ .
48. (b); Suppose the number of women boarded the bus  
 at delhi is  $x$ . Therefore then number of men =  $2x$ .  
 According to the question  
 $2x - 10 = x + 5$   
 $\Rightarrow x = 15$   
 Total number of passengers boarded the bus  
 initially =  $3x = 3 \times 15 = 45$
49. (c); Since B and D are twins, so  $B = D$   
 Now,  $A = B + 3$  and  $A = C - 3$   
 Thus  $B + 3 = C - 3$   
 $D + 3 = C - 3$   
 $C - D = 6$
50. (d); Let salary =  $x$  Rs. Then tips  $\frac{5}{4}x$   
 Total income = Rs.  $\left(x + \frac{5}{4}x\right) = \frac{9x}{4}$   
 Required fraction =  $\frac{5x}{4} \times \frac{4}{9x} = \frac{5}{9}$



**Distinct Solutions**

51. (b): Since each pole at the corner of the plot is common to its two sides, so we have total number of poles needed

$$= 27 \times 4 - 4 = 108 - 4 = 104$$

52. (b): Tom covered distance in  $\frac{210}{42} = 5$  hours.

Time taken by jack to cover 210 k m

$$= 5.00 - 1.30 = 3.30 \text{ hours} = 3\frac{1}{2} \text{ hr.}$$

$$\therefore \text{Average speed of jack} = \frac{210}{\frac{7}{2}} = \frac{210 \times 2}{7} = 60 \text{ km/h}$$

53. (c): Difference in the distance covered by both the cars

$$= (30 - 20) \text{ miles} = 10 \text{ miles.}$$

The faster car travelling 20 MPH faster, covers 10 miles more. Therefore, the time of journey =

$$\frac{10}{20} = \frac{1}{2} \text{ hours} = 30 \text{ min.}$$

54. (c): These fraction of boys and girl are dependent on a digit which is not given in question, so given data is inadequate.

55. (d): Number of cuts made to cut a roll into 10 pieces = 9

Therefore required number of rolls

$$= (45 \times 24) / 9 = 120$$

56. (d):  $(14 + 15) \times 10$

$$= 29 \times 10 = 290$$

$$(16 + 17) \times 10 = 33 \times 10 = 330$$

Therefore,

$$(18 + 19) \times 10 = 37 \times 10 = 370$$

57. (a):  $6 \times 5 = 30$

$$30 \times 3 = 91$$

$$8 \times 7 = 56$$

$$56 \times 3 + 1 = 169$$

$$10 \times 7 = 70$$

$$70 \times 3 + 1 = 211$$

Similarly,

$$11 \times 10 = 110$$

$$110 \times 3 + 1 = 331$$

58. (c):  $\sqrt{324} = 18$ ;  $\sqrt{289} = 17$

$$18 + 17 = 35$$

$$\sqrt{441} = 21$$
;  $\sqrt{484} = 22$

$$21 + 22 = 43$$

$$\sqrt{625} = 25$$
;  $\sqrt{400} = 20$

$$25 + 20 = 45$$

$$\sqrt{256} = 16$$
;  $\sqrt{729} = 27$

$$16 + 27 = 43$$

59. (c):  $9 \times 4 + 1 \times 6 = 36 + 6 = 42$

$$8 \times 9 + 2 \times 3 = 72 + 6 = 78$$

Similarly

$$6 \times 3 + 4 \times 5 = 18 + 20 = 38$$

60. (a):  $2^2 \times 3^2 \times 4^2 \times 5^2 = 14400$

**Previous Year Solutions**

1. (c):  $16 \div 64 - 8 \times 4 + 2$   
 $\Rightarrow 16 + 64 \div 8 - 4 \times 2$

$$\Rightarrow 16 + 8 - 8$$

$$\Rightarrow 16$$

2. (a):  $18 + 6 - 4 \times 2 \div 3 = 26$

$$\Rightarrow 18 \times 6 \div 4 + 2 - 3$$

$$\Rightarrow 27 + 2 - 3$$

$$\Rightarrow 26$$

3. (b):  $46 - 6 + 4 \times 5 \div 3 = 71$

$$\Rightarrow 46 \times 6 \div 4 + 5 - 3$$

$$\Rightarrow 69 + 5 - 3$$

$$\Rightarrow 71$$

4. (d):  $9 + 7 = 16$ ;

$$16 \times 2 = 32$$

$$13 + 7 = 20$$
;

$$20 \times 6 = 120$$

$$9 - 7 = 2$$

$$13 - 7 = 6$$

$$17 + 9 = 26$$
;

$$26 \times 8 = 208$$

$$19 + 11 = 30$$
;

$$30 \times 8 = 240$$

$$17 - 9 = 8$$

$$19 - 11 = 8$$

5. (d):  $48 \times 4 \div 12 + 20 + 4$

$$\Rightarrow 48 \div 4 + 12 - 20 - 4$$

$$\Rightarrow 12 + 12 - 20 - 4$$

$$\Rightarrow 24 - 24 = 0$$

6. (a):  $6 + 8 \times 2 - 7 = 0$

$$\Rightarrow 6 - 7 \times 2 + 8 = 0$$

$$\Rightarrow 6 - 14 + 8 = 0$$

7. (b): Suppose x years ago, kelvin's age was half of John's then

$$\frac{42 - x}{2} = 26 - x, \quad 42 - x = 52 - 2x$$

$$x = 10 \text{ year}$$



8. (a);  $(\sqrt{121} + 9) \div 5 \times 1 = 4$   
 $(11 + 9) \div 5 = 4$   
 $20 \div 5 = 4 \Rightarrow 4 = 4$
9. (a);  $52 \div 4 + 5 \times 8 - 2 = 36$   
 $52 - 4 \times 5 + 8 \div 2 = 36$   
 $52 - 20 + 4 = 36$   
 $56 - 20 = 36$   
 $36 = 36$
10. (c);  $49 - 7 + 7 = 14$   
 $\Rightarrow 49 \div 7 + 7 = 14$   
 $\Rightarrow 7 + 7 = 14$
11. (b); Present ages ratio is 4 : 5  
 After 6 years =  $\frac{4x+6}{5x+6} = \frac{14}{17}$   
 $17(4x + 6) = 14(5x + 6)$   
 $68x + 102 = 70x + 84$   
 $2x = 18, x = 9$   
 So present age of Sunita and Vinita is 36 & 45 respectively  
 After 12 years =  $\frac{48}{57} = \frac{16}{19}$
12. (d);  $(8 \times 5 \times 6) \div 10 = 24$   
 $240 \div 10 = 24, 24 = 24$
13. (c); 16 P 24 M 8 Q 6 M 2 L 3  
 $\Rightarrow 16 + 24 \div 8 - 6 \div 2 \times 3$   
 $\Rightarrow 16 + 3 - 3 \times 3$   
 $\Rightarrow 19 - 9$   
 $\Rightarrow 10$
14. (c); 10 P 2 X 5 Y 5  
 $\Rightarrow 10 \times 2 + 5 - 5$   
 $\Rightarrow 20 + 5 - 5$   
 $\Rightarrow 25 - 5$   
 $\Rightarrow 20$
15. (a)  $28 * 4 * 9 * 16$   
 $\Rightarrow 28 \div 4 + 9 = 16$   
 $\Rightarrow 7 + 9 = 16$   
 $\Rightarrow 16 = 16$
16. (d);  $11 - 6 \div 4 + 2 = 64$   
 $11 \div 6 - 4 \times 2 = 64$   
 $11 \div 6 - 8 \neq 64$   
 $1.83 - 8 \neq 64$   
 $12 + 4 \div 280 - 7 = 8$   
 $12 \times 4 - 280 \div 7 = 8$   
 $48 - 40 = 8, 8 = 8$
17. (a);  $16 + 24 \div 8 - 6 \div 2 \times 3$   
 $\Rightarrow 16 + 3 - 3 \times 3$   
 $\Rightarrow 16 + 3 - 9 \Rightarrow 16 - 6 = 10$
18. (d);  $8 - 8 + 1 = 11 \div 11 = 1 = 1$
19. (c);  $7 \times 5 + 5 = 4 \times 10$   
 $35 + 5 = 40, 40 = 40$
20. (a);  $44 \times 9 \div 12 - 6 \times 4 + 16$   
 $44 \times \frac{9}{12} - 6 \times 4 + 16$   
 $33 - 24 + 16 = 49 - 24 = 25$
21. (a); Total number of head = 77  
 Step I:  $77 \times 4 = 308$   
 Step II:  $308 - 224 = 84$   
 Step III: No. of ducks =  $\frac{84}{2} = 42$   
 No of goats =  $77 - 42 = 35$
22. (c); No. of 6 b/w 501 to 599 at tens place = 10  
 No. of 6 b/w 501 to 599 at unit place = 10  
 No. of 6 b/w 600 to 699 at hundred place = 100  
 No. of 6 b/w 601 to 699 at tens place = 10  
 No. of 6 b/w 601 to 699 at unit place = 10  
 $\therefore$  Total =  $10 + 10 + 100 + 10 + 10 = 140$
23. (b); Total no. of words =  $300 \times 10 \times 20 = 60,000$
24. (d); Let total no. of oranges = x  
 and Number of oranges given to each children = y  
 $\therefore 40y = x$  ... (i)  
 Again,  $60(y - 5) = x$   
 $60y - 300 = x$  ... (ii)  
 from (i) and (ii)  
 $40y = 60y - 300$   
 $y = 15$   
 $\therefore$  No. of oranges (x) =  $40 \times 15 = 600$
25. (c); 'All but nine died' means 'All except nine died i.e. nine sheep remained alive.'
26. (c); Let the no. of correct answer = x  
 Then no. of wrong answer =  $60 - x$   
 A.T.Q.  $\Rightarrow 4x - (60 - x) = 130$   
 $5x - 60 = 130$   
 $5x = 190, x = 38$
27. (c); Total bike =  $10 + 1 = 11$
28. (c); Boys: Girls = 3 : 1  
 42, is not possible as it is not divisible by  $(3 + 1) = 4$
29. (d); Sum =  $\frac{n(n+1)}{2} = \frac{5000 \times (5000 + 1)}{2}$   
 $= 2500 \times 5001 = 12502500$
30. (b); No. of words =  $\frac{5 \times 4 \times 3 \times 2 \times 1}{2 \times 1} = 60$

