



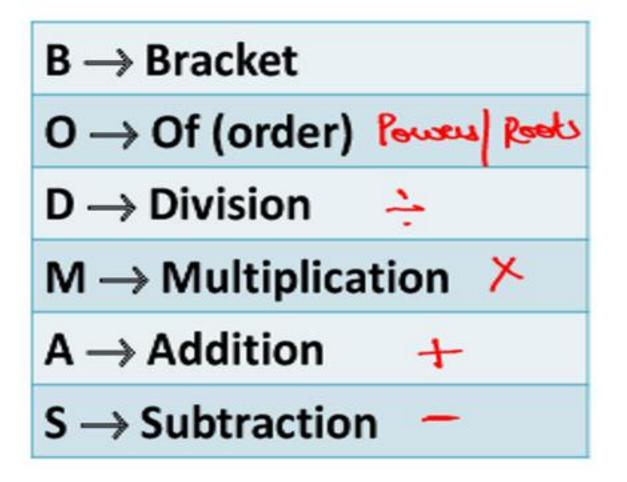
SIMPLIFICATION

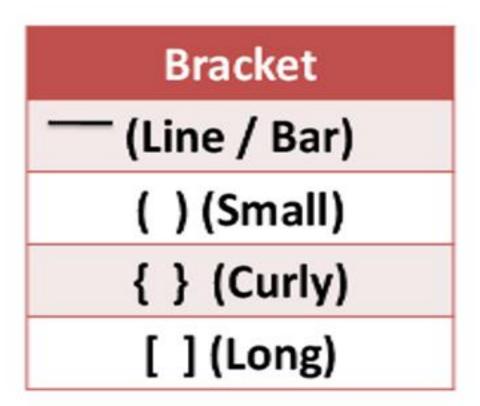






BODMAS







eg

2+2 - 2

2+1

= 3

eg

(2+2) - 2

4 - 2

_ 2

Q1.
$$1+1\div \left(1-1+2\right)^2 = 0$$

(a) $1\frac{1}{2}$

(c) $1\frac{2}{7}$

$$(d) 1\frac{2}{3}$$

1+1+ 21+1+(2)4 1+1- 51+-9

$$-1\frac{2}{3}$$





Q2. The simplified value of $\left(3\frac{7}{6} \text{ of } 2\frac{1}{5} \div \frac{4}{3}\right) \div 2\frac{4}{9} \text{ of } \left(\frac{7}{3} \div 1\frac{1}{6} \times 2\frac{2}{3} \text{ of } \frac{3}{4}\right)$ is:

$$(c) \frac{45}{64}$$

(b)
$$\frac{-36}{7}$$

$$(d)\frac{9}{22}$$





EXPONENTS

$$x^a \cdot x^b = x^{a+b}$$

$$Eg. 2^7 \cdot 2^5 = 2^{12}$$

$$\frac{x^a}{x^b} = x^{a-b}$$

$$Eg. \frac{2^{11}}{2^4} = 2^7$$

$$(x^a)^b = x^{a \cdot b}$$

$$Eg.(2^3)^4=2^{12}$$

$$(x)^0 = 1$$

$$Eg. 2^{\circ} = 1$$

$$x^{-m} = \frac{1}{x^m}$$

$$Eg. 2^{-3} = \frac{1}{2^3}$$



*
$$\left(\frac{3}{2}\right)^{9} = 2$$

* $\left(\frac{3}{2}\right)^{9} = 2$

* $\left(\frac{3}{2}\right)^{9} =$



Q3. Find the value of K.

$$2^{3^4} \div 2^{4^3} \times (2^3)^4 = 8^K$$

$$2^{81} + 2^{64} \times 2^{12}$$

$$2^{17} \times 2^{12} = (2^{3})^{K}$$

$$2^{29} = 2^{3K}$$



Ans. 29/3

Q4. Find the value of $\left(\frac{81}{16}\right)^{\frac{3}{4}} \times \left(\frac{25}{9}\right)^{\frac{3}{2}} \div \left(\frac{5}{2}\right)^{-3}$



Ans:1

Q5. If
$$\frac{9^n \times 3^2 \times \left(3^{\frac{-n}{2}}\right)^2 - \left(27\right)^n}{3^{3m} \times 2^3} = \frac{1}{27}$$

then find the value of m - n.

$$\frac{3^{2} \cdot 3 \cdot 3^{2} - 3^{3}}{3^{3} \cdot 3^{3} \cdot 3^{3}} = \frac{3^{3} \cdot 3^{2} - 3^{3}}{3^{3} \cdot 3^{3}} = \frac{1}{27}$$

$$\frac{3^{3} \cdot 3 \cdot 3^{3} - 3^{3}}{3^{3} \cdot 3^{3}} = \frac{1}{27}$$

$$\frac{3^{3} \cdot 3^{3} \cdot 3^{3}}{3^{3} \cdot 3^{3}} = \frac{1}{27}$$

$$\frac{3^{3} \cdot 3^{3} \cdot 3^{3}}{3^{3} \cdot 3^{3}} = \frac{1}{3^{3}}$$

$$\frac{3^{3} \cdot 3^{3} \cdot 3^{3}}{3^{3} \cdot 3^{3}} = 3^{-3}$$

$$\frac{3^{3} \cdot 3^{3} \cdot 3^{3}}{3^{3} \cdot 3^{3}} = 3^{-3}$$



Ans:1



Q6. If $4^x - 4^{x-1} = 24$, then the value of $(2x)^x$ is:

$$a 5\sqrt{5}$$

(c)
$$25\sqrt{5}$$

$$(5)^{\frac{5}{2}}$$



Ans : (c)



Q7. Find the value of m if
$$\left[\left(\frac{1}{7^2} \right)^{-2} \right]^{\frac{1}{3}} \right]^{\frac{1}{4}} = 7^m$$

$$\sqrt{(a)}-\frac{1}{3}$$

$$(c) - 3$$

(b)
$$\frac{1}{4}$$



Ans : (a)



RATIONALIZATION

Eg.
$$\frac{1}{3+\sqrt{5}} = ??$$

$$\frac{1}{3+\sqrt{5}} \times \frac{3-\sqrt{5}}{3-\sqrt{5}} = \frac{3-\sqrt{5}}{4}$$

Eg.
$$\frac{1}{5-3\sqrt{2}} = ??$$

$$\frac{1}{5-3\sqrt{2}} = \frac{5+3\sqrt{2}}{5+3\sqrt{2}} = \frac{5+3\sqrt{2}}{7}$$

$$Q8. \frac{1}{\sqrt{2} + \sqrt{1}} + \frac{1}{\sqrt{3} + \sqrt{2}} + \frac{1}{\sqrt{4} + \sqrt{3}} + \dots + \frac{1}{\sqrt{50} + \sqrt{49}} = ??$$



Ans. $\sqrt{50} - 1$



Q9. If a and b are rational numbers then find the value of a and b.

$$\frac{5 + 2\sqrt{3}}{7 + 4\sqrt{3}} = a + b\sqrt{3}$$

$$35-2051+1453-24$$

$$49-48$$

$$11-653=24553$$



Ans: a = 11, b = -6



Q10.
$$\frac{12}{3+\sqrt{5}+2\sqrt{2}}$$
 is equal to

(a)
$$1-\sqrt{5}+\sqrt{2}+\sqrt{10}$$

$$1+\sqrt{5}+\sqrt{2}-\sqrt{10}$$

(c)
$$1+\sqrt{5}-\sqrt{2}+\sqrt{10}$$

(d)
$$1-\sqrt{5}-\sqrt{2}+\sqrt{10}$$

$$\frac{12}{(3+\sqrt{5})+(2\sqrt{2})} \times \frac{(3+\sqrt{5})-2\sqrt{2}}{(3+\sqrt{5})-2\sqrt{2}}$$

$$\frac{212(3+5-252)}{6(6+1)}$$





Q11. Find the value of $\sqrt{12+\sqrt{12+\sqrt{12+\dots}}}$

Detailed

$$X = \sqrt{12 + x}$$
 $x^2 = 12 + x$
 $x^2 - x - 12 = 0$
 $(x - y)(x + 3) = 0$
 $(x - y)(x + 3) = 0$



If
$$y = \sqrt{a + \sqrt{a + \sqrt{a + \dots}}}$$

$$a=n(n+1)$$

$$y = \underline{n+1}$$



Q12. Find the value of $\sqrt{30 - \sqrt{30 - \sqrt{30 - \dots}}}$

Detailed

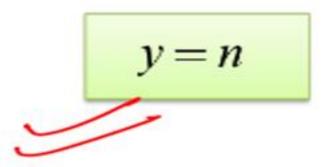
$$Y = \sqrt{30-Y}$$
 $Y^{2} = 30-Y$
 $Y^{2} + Y - 30 = 0$
 $Y = 0$

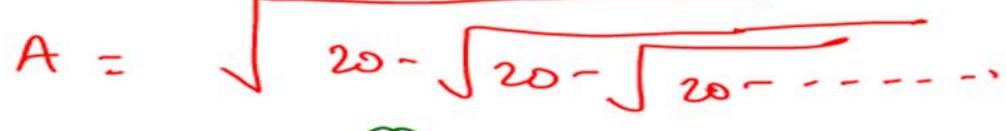




If
$$y = \sqrt{a - \sqrt{a - \sqrt{a - \dots}}}$$

$$a=n(n+1)$$







Q13. Find the value of $\sqrt{10 + \sqrt{10 + \sqrt{10 + \dots}}}$

$$Y = \int 10+Y$$
 $Y^{2} = 10+Y$
 $Y^{2} - Y - 10 = 0$
 $Y = \int 1 + \int 41$
 $= \int 1 + \int 41$

536 = 6

gradeup Ans.
$$\frac{1+\sqrt{41}}{2}$$



If
$$y = \sqrt{a + \sqrt{a + \sqrt{a + \dots}}}$$



$$y = \frac{1 + \sqrt{1 + 4a}}{2}$$



Q14. Find the value of $\sqrt{17} - \sqrt{17} - \sqrt{17} = \sqrt{1$

$$Y = \sqrt{17-7}$$
 $y^2 = 17-7$
 $y^2 + y - 17 = 0$
 $y = -1 \pm \sqrt{69}$
 $y = -1 + \sqrt{69}$

gradeup Ans.
$$\frac{-1+\sqrt{69}}{2}$$

If
$$y = \sqrt{a - \sqrt{a - \sqrt{a - \dots}}}$$

$$y = \frac{-1 + \sqrt{1 + 4a}}{2}$$



Q15. Find the value of

$$\sqrt{63+2\sqrt{63+2\sqrt{63+2\sqrt{63+.....??}}}$$

$$Y = \sqrt{63 + 2}$$
 $Y^{2} = 63 + 2Y$
 $Y^{2} - 2Y - 63 = 0$
 $Y = 9$



Ans. 9



Q16. Find the value of $\sqrt{7\sqrt{7\sqrt{7}}}$

$$Y = \sqrt{77}$$

$$Y' = 7Y$$

$$Y' - 7Y = 0$$

$$Y(Y - 7) = 0$$

$$Y(Y - 7) = 0$$





Q17. Find the value of $\sqrt{5}\sqrt{5}\sqrt{5}$

=
$$\sqrt{\frac{12}{2-12}}$$







Q18. Find the value of
$$\sqrt{2\sqrt[3]{4\sqrt{2\sqrt[3]{4}\sqrt{2\sqrt[3]{4}\dots }}}$$

$$X = \sqrt{23/4}$$

$$X^{2} = \sqrt{23/4}$$

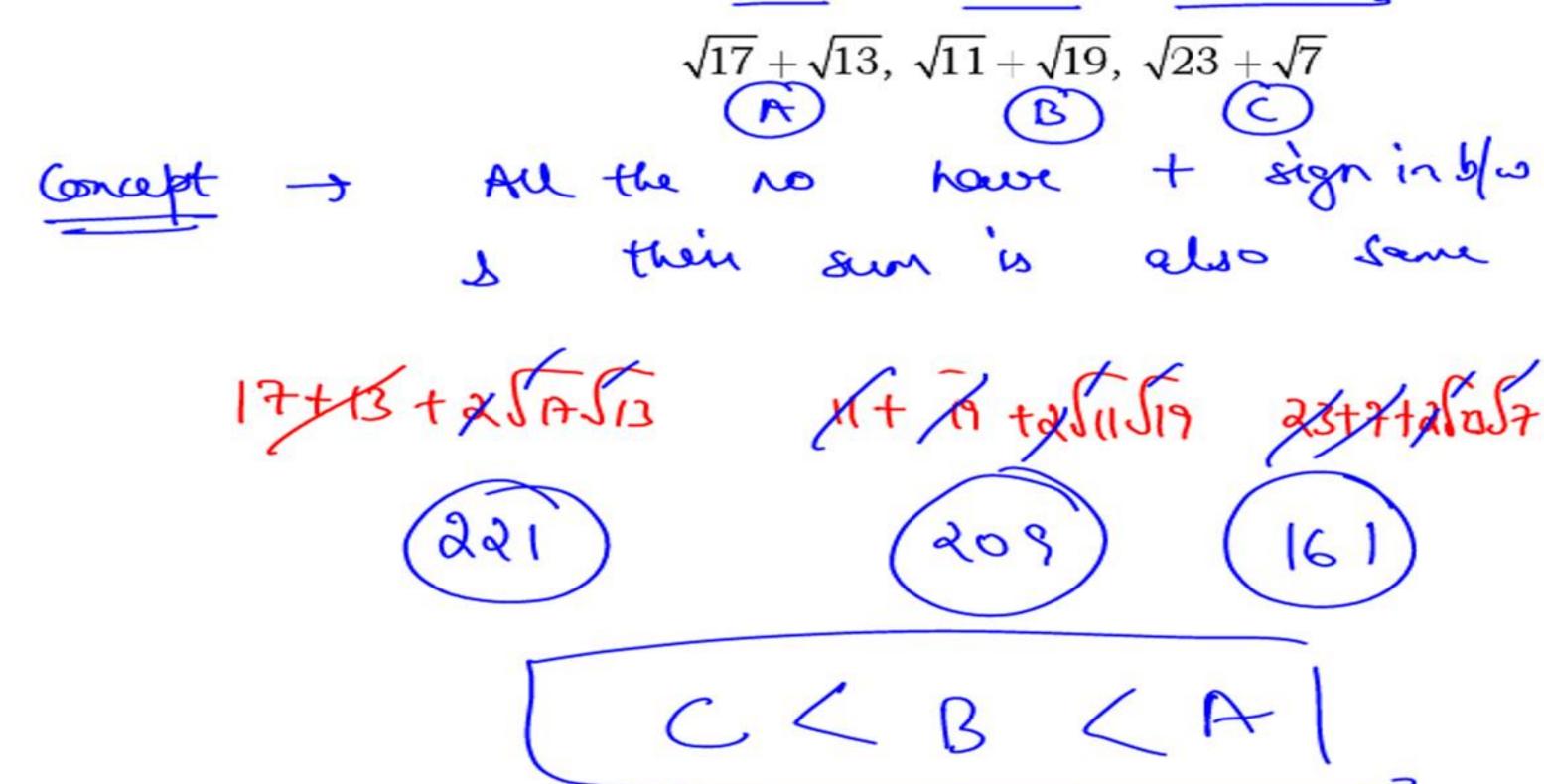
$$X^{6} = \sqrt{2} \cdot 4X$$

$$X^{6} = \sqrt{2}$$



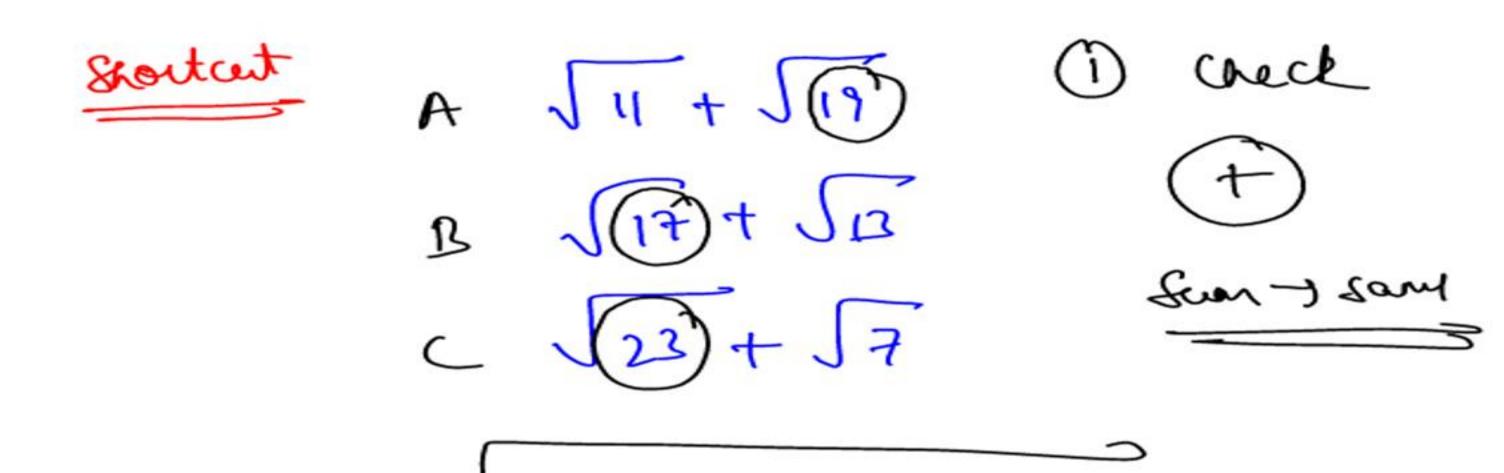


Q19. Arrange the numbers in ascending order:





Ans. $\sqrt{23} + \sqrt{7}, < \sqrt{11} + \sqrt{19}, < \sqrt{17} + \sqrt{13}$





A = \J38 + \J62

B = J41 + J59

c = 1(71) J29

D = (63) + \J37

Arrange the numbers in ascending order

 $C \subset D \subset A \subset B$



Q20. Arrange the numbers in ascending order:

$$\sqrt{15} - \sqrt{8}, \sqrt{19} - \sqrt{12}, \sqrt{17} - \sqrt{10}$$
 $\sqrt{15} - \sqrt{8}, \sqrt{19} - \sqrt{12}, \sqrt{17} - \sqrt{10}$
 $\sqrt{15} - \sqrt{8}, \sqrt{19} - \sqrt{12}, \sqrt{17} - \sqrt{10}$
 $\sqrt{15} - \sqrt{8}, \sqrt{19} - \sqrt{12}, \sqrt{17} - \sqrt{10}$
 $\sqrt{15} - \sqrt{8}, \sqrt{19} - \sqrt{12}, \sqrt{17} - \sqrt{10}$
 $\sqrt{15} - \sqrt{8}, \sqrt{19} - \sqrt{12}, \sqrt{17} - \sqrt{10}$
 $\sqrt{15} - \sqrt{8}, \sqrt{19} - \sqrt{12}, \sqrt{17} - \sqrt{10}$
 $\sqrt{15} + \sqrt{8}$
 $\sqrt{15} + \sqrt{8}$
 $\sqrt{15} + \sqrt{8}$
 $\sqrt{15} + \sqrt{8}$

Ans. $\sqrt{19} - \sqrt{12} < \sqrt{17} - \sqrt{10} < \sqrt{15} - \sqrt{8}$



29 A J7-J4

Augge the B J8-J5

10 in C J9-J6

ascerding

order

D

J6 - J3

CABCACO



Q21. Arrange the numbers in ascending order:

$$\sqrt{2}$$
, $\sqrt[3]{3}$, $\sqrt[6]{6}$



gradeup Ans. $\sqrt[6]{6} < \sqrt[3]{3} < \sqrt{2}$



Q22. If the numbers $\sqrt[3]{9}$, $\sqrt[4]{20}$, $\sqrt[6]{25}$ are arranged in ascending order, then the right arrangement is

(a)
$$\sqrt[6]{25} < \sqrt[4]{20} < \sqrt[3]{9}$$

$$q^{4}$$
 25 $(c) \sqrt[4]{20} < \sqrt[3]{25}$

(b)
$$\sqrt[3]{9} < \sqrt[4]{20} < \sqrt[6]{25}$$

(c)
$$\sqrt[4]{20} < \sqrt[6]{25} < \sqrt[3]{9}$$

(d)
$$\sqrt[6]{25} < \sqrt[3]{9} < \sqrt[4]{20}$$

CCACR



Q23. Arrange the numbers in ascending order:

 $^{\text{gradeup}}_{\text{Ans.}}$ Ans. $35^{48} < 11^{72} < 7^{96} < 5^{120}$



Q24. The value of $999\frac{995}{999} \times 999$ is

(c) 999824

$$\left(\frac{999 + 995}{999} \right) \times \frac{999}{999}$$
 $\left(\frac{999 + 995}{999} \right) \times \frac{999}{995}$
 $\left(\frac{999}{9999} \right) \times \frac{999}{998995}$

Q25.
$$999\frac{1}{7} + 999\frac{2}{7} + 999\frac{3}{7} + 999\frac{4}{7} + 999\frac{5}{7} + 999\frac{6}{7}$$
 is simplified to :

(a) 5997

(c) 5994

(b) 5979

(d) 2997



Q26. The value of $4 - \frac{5}{1}$ is

$$1 + \frac{1}{3 + \frac{1}{2 + \frac{1}{4}}}$$

(a)
$$\frac{1}{8}$$

b)
$$\frac{1}{64}$$

(c)
$$\frac{1}{16}$$

d)
$$\frac{1}{32}$$



Q27. The value of (11111)2 is

(a) 12344321

(b) 121212121

(c) 123454321

(d) 11344311



Q28. 12345679 × 72 is equal to :

(a) 88888888 (b) 999999998

(c) 888888888 (d) 898989898

Q29. If
$$\frac{37}{13} = 2 + \frac{1}{x + \frac{1}{y + \frac{1}{z}}}$$

where x, y, z are natural numbers, then x, y, z are:





SQUARE ROOT OF IRRATIONAL NUMBERS

$$Eg. \sqrt{7+4\sqrt{3}} = ??$$





Eg.
$$\sqrt{37+20\sqrt{3}}=??$$



$$Eg. \sqrt{33-20\sqrt{2}} = ??$$



Q30. If
$$M = \sqrt{3 - \sqrt{5} + \sqrt{9 - 4\sqrt{5}}}$$
 and $N = \sqrt{\sqrt{7 - 1 - \sqrt{11 - 4\sqrt{7}}}}$

What is the value of $\frac{M-N}{M+N}$?

- (a) 0 (b) 1
- (c) -1 (d) None of these





Note:

$$\sqrt{2+\sqrt{3}} = \frac{\sqrt{3}+1}{\sqrt{2}}$$

$$\sqrt{2-\sqrt{3}} = \frac{\sqrt{3}-1}{\sqrt{2}}$$





PRACTICE QUESTIONS



Q1.
$$\sqrt{1+\sqrt{1+\sqrt{1+\dots}}}$$

- (a) equals 1
- (b) lies between 0 and 1
- (c) lies between 1 and 2
- (d) is greater than 2





Q2. If m =
$$\sqrt{5+\sqrt{5+\sqrt{5+......}}}$$
 and n = $\sqrt{5-\sqrt{5-\sqrt{5-......}}}$, then among the following the relation between m and n holds is

(a)
$$m - n + 1 = 0$$

(b)
$$m + n - 1 = 0$$

(c)
$$m + n + 1 = 0$$

(d)
$$m - n - 1 = 0$$





Q3. Find the value of $\sqrt{63-2\sqrt{63-2\sqrt{63-2\sqrt{63-2\sqrt{63-....??}}}}$





Q4. The value of $\frac{1}{\sqrt{(12-\sqrt{140})}} - \frac{1}{\sqrt{(8-\sqrt{60})}} - \frac{2}{\sqrt{10+\sqrt{84}}}$ is :

(a) 0 (b) 1 (c) 2 (d) 3





Q5. If $x = 5 - \sqrt{21}$, then the value of $\frac{\sqrt{x}}{\sqrt{32 - 2x} - \sqrt{21}}$

(a)
$$\frac{1}{\sqrt{2}} \left(\sqrt{3} - \sqrt{7} \right)$$
 (b) $\frac{1}{\sqrt{2}} \left(\sqrt{7} - \sqrt{3} \right)$

(c)
$$\frac{1}{\sqrt{2}} \left(\sqrt{7} + \sqrt{3} \right)$$
 (d) $\frac{1}{\sqrt{2}} \left(7 - \sqrt{3} \right)$





Q6. Find the value of
$$\frac{1}{5}$$
 + 999 $\frac{494}{495}$ × 99

(a) 90000

(c) 90900

(b) 99000

(d) 99990





Q7.
$$\left(999 \frac{999}{1000} \times 7\right)$$
 is equal to:

(a)
$$6993\frac{7}{1000}$$
 (b) $7000\frac{7}{1000}$

(b)
$$7000\frac{7}{1000}$$

(c)
$$6633\frac{7}{1000}$$
 (d) $6999\frac{993}{1000}$

d)
$$6999 \frac{993}{1000}$$





Q8. The value of
$$1 - \frac{a}{1 - \frac{1}{1 - a}}$$
 is $1 + \frac{a}{1 - a}$





Q9. The smallest of $\sqrt{8} + \sqrt{5}$, $\sqrt{7} + \sqrt{6}$, $\sqrt{10} + \sqrt{3}$ and

$$\sqrt{11} + \sqrt{2}$$
 is:

(a)
$$\sqrt{8} + \sqrt{5}$$

(b)
$$\sqrt{7} + \sqrt{6}$$

(c)
$$\sqrt{10} + \sqrt{3}$$

(d)
$$\sqrt{11} + \sqrt{2}$$





Q10. The greatest among $\sqrt{7} - \sqrt{5}$, $\sqrt{5} - \sqrt{3}$, $\sqrt{9} - \sqrt{7}$, $\sqrt{11} - \sqrt{9}$ is

(a)
$$\sqrt{7} - \sqrt{5}$$

(a)
$$\sqrt{7} - \sqrt{5}$$
 (b) $\sqrt{5} - \sqrt{3}$

(c)
$$\sqrt{9} - \sqrt{7}$$

(d)
$$\sqrt{11} - \sqrt{9}$$





Q11. The smallest among the numbers 2^{250} , 3^{150} , 5^{100} and 4^{200}

(a) 4²⁰⁰

(b) 5¹⁰⁰

(c) 3¹⁵⁰

(d) 2²⁵⁰





Q12. Arranging the following in ascending order 3³⁴, 2⁵¹, 7¹⁷ we get

(a)
$$3^{34} > 2^{51} > 7^{17}$$

(b)
$$7^{17} > 2^{51} > 3^{34}$$

(c)
$$3^{34} > 7^{17} > 2^{51}$$

(d)
$$2^{51} > 3^{34} > 7^{17}$$



Q13. The simplified value of:

$$\left\{ \left(1 + \frac{1}{10 + \frac{1}{10}}\right) \left(1 + \frac{1}{10 + \frac{1}{10}}\right) - \left(1 - \frac{1}{10 + \frac{1}{10}}\right) \left(1 - \frac{1}{10 + \frac{1}{10}}\right) \right\} \div \left\{ \left(1 + \frac{1}{10 + \frac{1}{10}}\right) \left(1 - \frac{1}{10 + \frac{1}{10}}\right) \right\}$$

(a)
$$\frac{4040}{10101}$$

(b)
$$\frac{100}{101}$$

(d)
$$\frac{90}{101}$$





Q14. The ascending order of

 $(2.89)^{0.5}$, $2-(0.5)^2$, $\sqrt{3}$ and $\sqrt[3]{0.008}$ is

(a)
$$2-(0.5)^2$$
, $\sqrt{3}$, $\sqrt[3]{0.008}$, $(2.89)^{0.5}$

(b)
$$\sqrt[3]{0.008}$$
, $(2.89)^{0.5}$, $\sqrt{3}$, $2-(0.5)^2$

(c)
$$\sqrt[3]{0.008}$$
, $\sqrt{3}$, $(2.89)^{0.5}$, $2-(0.5)^2$

(d)
$$\sqrt{3}$$
, $\sqrt[3]{0.008}$, 2- $(0.5)^2$, $(2.89)^{0.5}$





Q15. What is the value of:

$$\left[\frac{1}{\sqrt{9}-\sqrt{8}}\right] - \left[\frac{1}{\sqrt{8}-\sqrt{7}}\right] + \left[\frac{1}{\sqrt{7}-\sqrt{6}}\right] - \left[\frac{1}{\sqrt{6}-\sqrt{5}}\right] + \left[\frac{1}{\sqrt{5}-\sqrt{4}}\right]$$

- (a) 6
- (c) -7

- (b) 5
- (d) -1





Q16. If
$$\frac{97}{19} = a + \frac{1}{b + \frac{1}{c}}$$
,

where a, b and c are positive integers, then what is the sum of a, b and c?

(a) 16

(b) 9

(c) 20

(d) 18





Q17. Find the value of expression of :

$$\frac{4^{n} \times 20^{m-1} \times 12^{m-n} \times 15^{m+n-2}}{16^{m} \times 5^{2m+n} \times 9^{m-1}}$$

- (a) 500
- (c) 200

- (b) 1
- (d) 1/500





Q18. Find the square root of $7 + \sqrt{48}$

a
$$2 - \sqrt{3}$$

b
$$2 + \sqrt{3}$$

d $3 - \sqrt{2}$

c
$$3 + \sqrt{2}$$

$$1 \ 3 - \sqrt{2}$$





Q19. If $\sqrt{6} = 2.449$, then the value of

$$\frac{\sqrt{6}}{2} - \frac{12}{\sqrt{6}} + \sqrt{216}$$
 is equal to:

- (a) 11.021
- (c) 13.079
- (b) 12.067
- (d) 12.187





Q20. Find the value of:

$$\left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right)\left(1-\frac{1}{5}\right)....\left(1-\frac{1}{100}\right)$$

$$a \frac{1}{5}$$

$$\frac{1}{10}$$

$$c \frac{1}{50}$$

$$1\frac{2}{5}$$







Sahi Prep Hai Toh Life Set Hai

Practise topic-wise quizzes

Keep attending live classes



