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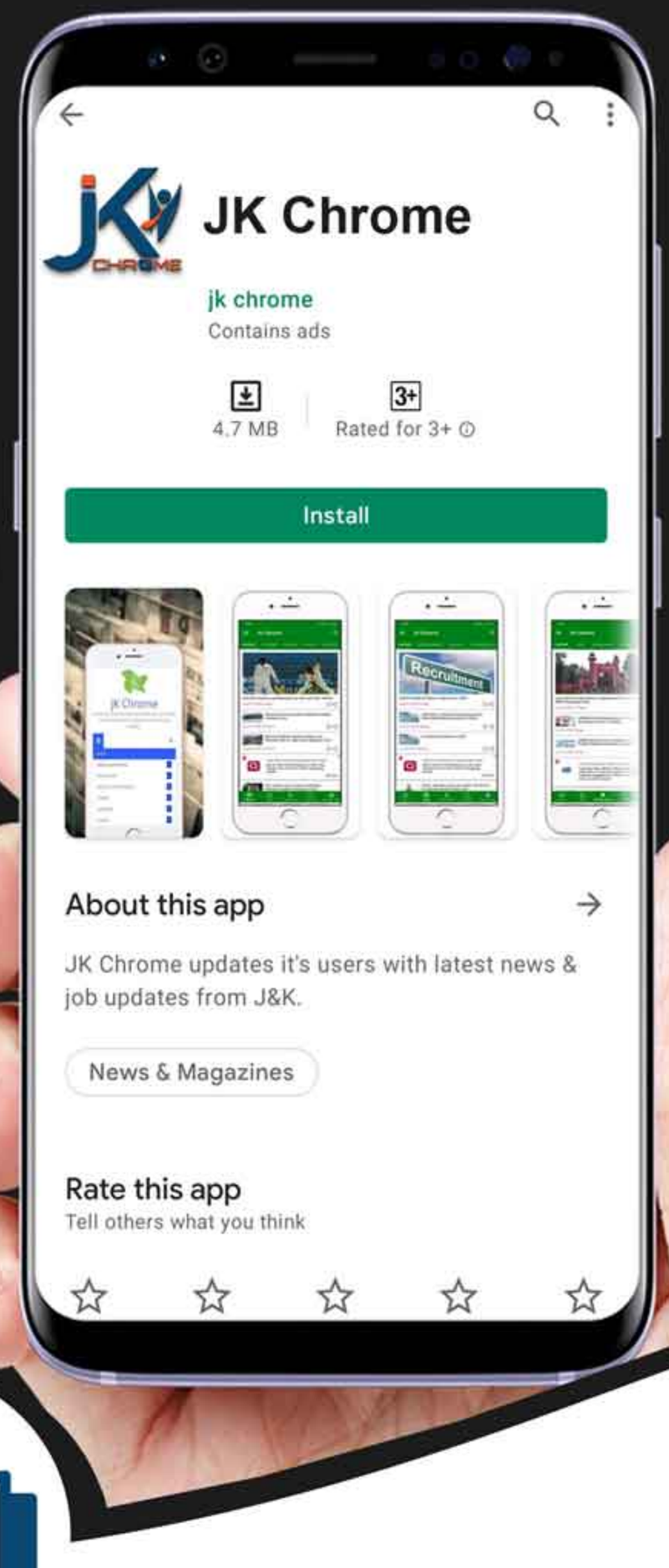

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CHAPTER

2 Simplification and Square & Cube Root

1. $\frac{0.125+0.027}{0.25-0.15+0.09}$ is equal to **(SSC CGL 1st Sit. 2010)**

(a) 0.3 (b) 0.5 (c) 0.8 (d) 0.9

2. The sum of the series $(1+0.6+0.06+0.006+0.0006+....)$ is **(SSC CGL 1st Sit. 2010)**

(a) $1\frac{2}{3}$ (b) $1\frac{1}{3}$ (c) $2\frac{1}{3}$ (d) $2\frac{2}{3}$

3. $\sqrt{\frac{0.009\times0.036\times0.016\times0.08}{0.002\times0.0008\times0.0002}}$ is equal to **(SSC CGL 1st Sit. 2010)**

(a) 34 (b) 36 (c) 38 (d) 39

4. The square root of 0.09 is **(SSC CGL 1st Sit. 2010)**

(a) 0.30 (b) 0.03 (c) 0.81 (d) 0.081

5. The number 0.121212.... in the form $\frac{p}{q}$ is equal to **(SSC CGL 1st Sit. 2010)**

(a) $\frac{4}{11}$ (b) $\frac{2}{11}$ (c) $\frac{4}{33}$ (d) $\frac{2}{33}$

6. By what least number should 675 be multiplied so as to obtain a perfect cube number ? **(SSC CGL 2nd Sit. 2010)**

(a) 3 (b) 5 (c) 24 (d) 40

7. $\left(1\frac{1}{2}+11\frac{1}{2}+111\frac{1}{2}+1111\frac{1}{2}\right)$ is equal to **(SSC CGL 2nd Sit. 2010)**

(a) 1236 (b) $1234\frac{1}{2}$ (c) 618 (d) 617

8. $0.\overline{001}$ is equal to **(SSC CGL 2nd Sit. 2010)**

(a) $\frac{1}{1000}$ (b) $\frac{1}{999}$ (c) $\frac{1}{99}$ (d) $\frac{1}{9}$

9. $\frac{4.41\times0.16}{2.1\times1.6\times0.21}$ is simplified to **(SSC CGL 2nd Sit. 2010)**

(a) 1 (b) 0.1 (c) 0.01 (d) 10

10. $\frac{256\times256-144\times144}{112}$ is equal to **(SSC CGL 2nd Sit. 2010)**

(a) 420 (b) 400 (c) 360 (d) 320

11. $(1^2+2^2+3^2+.....+10^2)$ is equal to **(SSC CGL 2nd Sit. 2010)**

(a) 380 (b) 385 (c) 390 (d) 392

12. $\left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right)\left(1-\frac{1}{5}\right)....\left(1-\frac{1}{25}\right)$ is equal to **(SSC CGL 2nd Sit. 2010)**

(a) $\frac{2}{25}$ (b) $\frac{1}{25}$

(c) $1\frac{19}{25}$ (d) $\frac{1}{325}$

13. Simplified form of $\left[\left(\sqrt[5]{x^{\frac{-3}{5}}}\right)^{-5/3}\right]^5$ is **(SSC CGL 2nd Sit. 2010)**

(a) x^5 (b) x^{-5} (c) x (d) $\frac{1}{x}$

14. $(0.1\times0.01\times0.001\times10^7)$ is equal to **(SSC CGL 2nd Sit. 2010)**

(a) 100 (b) $\frac{1}{10}$ (c) $\frac{1}{100}$ (d) 10

15. The least among the fractions $\frac{15}{16},\frac{19}{20},\frac{24}{25},\frac{34}{35}$ is **(SSC CGL 2nd Sit. 2010)**

(a) $\frac{34}{35}$ (b) $\frac{15}{16}$ (c) $\frac{19}{20}$ (d) $\frac{24}{25}$

16. $1.\overline{27}$ in the form $\frac{p}{q}$ is equal to **(SSC CGL 2st Sit. 2010)**

(a) $\frac{127}{100}$ (b) $\frac{73}{100}$ (c) $\frac{14}{11}$ (d) $\frac{11}{14}$

17. $\frac{3.25\times3.20-3.20\times3.05}{0.064}$ is equal to **(SSC CGL 2nd Sit. 2010)**

(a) 1 (b) $\frac{1}{2}$ (c) $\frac{1}{10}$ (d) 10

18. Out of six consecutive natural numbers, if the sum of first three is 27, what is the sum of the other three ?
(SSC CGL 2nd Sit. 2010)

(a) 36 (b) 35 (c) 25 (d) 24

19. $\left\{\frac{(0.1)^2-(0.01)^2}{0.0001}+1\right\}$ is equal to **(SSC CGL 2nd Sit. 2010)**

(a) 1010 (b) 110 (c) 101 (d) 100

20. $\sqrt{6+\sqrt{6+\sqrt{6+\sqrt{6+\ldots}}}} = ?$ **(SSC CGL 1st Sit. 2011)**

(a) 2.3 (b) 3 (c) 6 (d) 6.3

21. The square root of $\left(\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}\right)$ is **(SSC CGL 1st Sit. 2011)**

(a) $\sqrt{3}+\sqrt{2}$ (b) $\sqrt{3}-\sqrt{2}$

(c) $\sqrt{2}\pm\sqrt{3}$ (d) $\sqrt{2}-\sqrt{3}$

22. The value of $\frac{2\frac{1}{3}-1\frac{2}{11}}{3+\frac{1}{3+\frac{1}{3+\frac{1}{3}}}}$ is **(SSC CGL 1st Sit. 2011)**

(a) $\frac{38}{109}$ (b) $\frac{109}{38}$ (c) 1 (d) $\frac{116}{109}$

23. The value of $\frac{3\sqrt{2}}{\sqrt{3}+\sqrt{6}}-\frac{4\sqrt{3}}{\sqrt{6}+\sqrt{2}}+\frac{\sqrt{6}}{\sqrt{3}+\sqrt{2}}$ is
(SSC CGL 2011)

(a) 4 (b) 0 (c) $\sqrt{2}$ (d) $3\sqrt{6}$

24. $\frac{(0.05)^2+(0.41)^2+(0.073)^2}{(0.005)^2+(0.041)^2+(0.0073)^2}$ is **(SSC CGL 2011)**

(a) 10 (b) 100

(c) 1000 (d) None of these

25. If $9\sqrt{x}=\sqrt{12}+\sqrt{147}$, then $x=?$ **(SSC CGL 2011)**

(a) 2 (b) 3 (c) 4 (d) 5

26. $\sqrt[3]{1-\frac{127}{343}}$ is equal to **(SSC CGL 2nd Sit. 2011)**

(a) $\frac{5}{9}$ (b) $1-\frac{1}{7}$ (c) $\frac{4}{7}$ (d) $1-\frac{2}{7}$

27. If the sum of two numbers be multiplied by each number separately, the products so obtained are 247 and 114. The sum of the numbers is **(SSC CGL 2nd Sit. 2011)**

(a) 19 (b) 20 (c) 21 (d) 23

28. Find a number, one–seventh of which exceeds its eleventh part by 100. **(SSC CGL 2nd Sit. 2011)**

(a) 1925 (b) 1825 (c) 1540 (d) 1340

29. If $\frac{4\sqrt{3}+5\sqrt{2}}{\sqrt{48}+\sqrt{18}} = a+b\sqrt{6}$, then the values of a and b are respectively **(SSC CGL 2nd Sit. 2011)**

(a) $\frac{9}{15},-\frac{4}{15}$ (b) $\frac{3}{11},\frac{4}{33}$

(c) $\frac{9}{10},\frac{2}{5}$ (d) $\frac{3}{5},\frac{4}{15}$

30. If $x+\frac{2}{3+\frac{4}{5+\frac{7}{6}}}=10$, then the value of x is

(SSC CGL 2nd Sit. 2011)

(a) $\frac{1276}{135}$ (b) $\frac{53}{6}$ (c) 4.35 (d) 9

31. The value of $3+\frac{1}{\sqrt{3}}+\frac{1}{3+\sqrt{3}}+\frac{1}{\sqrt{3}-3}$ is
(SSC CGL 2nd Sit. 2011)

(a) $3+\sqrt{3}$ (b) 3 (c) 1 (d) 0

32. A student was asked to divide a number by 6 and add 12 to the quotient. He, however, first added 12 to the number and then divided it by 6, getting 112 as the answer. The correct answer should have been **(SSC CGL 2nd Sit. 2011)**

(a) 124 (b) 122 (c) 118 (d) 114

33. Last year my age was a perfect square number. Next year it will be a cubic number. What is my present age?
(SSC Sub. Ins. 2012)

(a) 25 years (b) 27 yearss

(c) 26 years (d) 24 years

34. What is the value of $(2.1)^2\times\sqrt{0.0441}$?
(SSC Sub. Ins. 2012)

(a) 0.9261 (b) 92.61 (c) 92.51 (d) 0.9251

35. The value of $\sqrt[3]{1372}\times\sqrt[3]{1458}$ is **(SSC Sub. Ins. 2012)**

(a) 116 (b) 126 (c) 106 (d) 136

36. If $\frac{547.527}{0.0082}=x$, then the value $\frac{547527}{82}$ is :
(SSC CHSL 2012)

(a) 10x (b) 100x (c) $\frac{x}{100}$ (d) $\frac{x}{10}$

37. If $\sqrt[3]{3^n}=27$, then the value of n is: **(SSC CHSL 2012)**

(a) 9 (b) 6 (c) 1 (d) 3

38. From 9.00 AM to 2.00 PM, the temperature rose at a constant rate from 21°C to 36°C. What was the temperature at noon ?
(SSC CHSL 2012)

(a) 27°C (b) 30°C (c) 32°C (d) 28.5°C

39. The value of $\left(\sqrt{6+\sqrt{6+\sqrt{6+.....\text{upto}...\infty}}}\right)$ is equal to **(SSC CGL 1st Sit. 2012)**

(a) 3 (b) 10 (c) 8 (d) 2

40. If $\sqrt{6}\times\sqrt{15}=x\sqrt{10}$, then the value of x is **(SSC CGL 2012)**

(a) 3 (b) ± 3 (c) $\sqrt{3}$ (d) $\sqrt{6}$

41. $3-\frac{3+\sqrt{5}}{4}-\frac{1}{3+\sqrt{5}}$ is equal to **(SSC CGL 2012)**

(a) 0 (b) $\frac{3}{2}$ (c) $\frac{\sqrt{5}}{2}$ (d) $\sqrt{5}$

42. A farmer divides his herd of n cows among his four sons, so that the first son gets one–half the herd, the second one–fourth, the third son $\frac{1}{5}$ and the fourth son 7 cows. Then the value of n is **(SSC CGL 2012)**

(a) 240 (b) 100 (c) 180 (d) 140

43. By what least number should 675 be multiplied to obtain a number which is a perfect cube? **(SSC CGL 2012)**

(a) 7 (b) 8 (c) 5 (d) 6

44. If $2\sqrt{x}=\frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}-\frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}}$, then the value of x is: **(SSC CGL 2nd Sit. 2012)**

(a) 6 (b) 30 (c) $\sqrt{15}$ (d) 15

45. $\frac{1+876542\times 876544}{876543\times 876543}$ is equal to **(SSC CGL 2012)**

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

46. The simplest value of

$$\frac{1}{\sqrt{2}+\sqrt{3}}+\frac{1}{\sqrt{3}+\sqrt{4}}+\frac{1}{\sqrt{4}+\sqrt{5}}+\frac{1}{\sqrt{5}+\sqrt{6}} \text{ is}$$

(SSC CGL 2012)

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

(d) $\sqrt{3}-1$ (d) $\sqrt{2}-1$

47. If 21 is added to a number, it becomes 7 less than thrice of the number. Then the number is **(SSC CGL 2012)**

(a) 14 (b) 161 (c) 18 (d) 19

48. The simplified value of $\frac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}}$ is **(SSC Multi-Tasking 2013)**

(a) 4 (b) 3 (c) 2 (d) 6

49. $\sqrt{\frac{9.5\times 0.085}{0.0017\times 0.19}}$ equals **(SSC Multi-Tasking 2013)**

(a) 5 (b) 50 (c) 500 (d) 0.05

50. The value of $1+\cfrac{1}{1+\cfrac{2}{3+\cfrac{4}{5}}}$ is: **(SSC Sub. Ins. 2013)**

(a) $\frac{12}{29}$ (b) $\frac{8}{19}$ (c) $\frac{48}{29}$ (d) $\frac{2}{19}$

51. The value of

$\sqrt{19.36}+\sqrt{0.1936}+\sqrt{0.001936}+\sqrt{0.00001936}$ is: **(SSC Sub. Ins. 2013)**

(a) 4.8484 (b) 4.8694 (c) 4.8884 (d) 4.8234

52. The greatest among the following numbers $(3)^{\frac{1}{3}},(2)^{\frac{1}{2}},1,(6)^{\frac{1}{6}}$ is: **(SSC Sub. Ins. 2013)**

(a) $(2)^{\frac{1}{2}}$ (b) 1 (c) $(6)^{\frac{1}{6}}$ (d) $(3)^{\frac{1}{3}}$

53. The value of $\sqrt{40+\sqrt{9\sqrt{81}}}$ is **(SSC CHSL 2013)**

(a) 11 (b) $\sqrt{111}$ (c) 9 (d) 7

54. Which is greater $\sqrt[3]{2}$ or $\sqrt{3}$? **(SSC CHSL 2013)**

(a) Equal (b) Cannot be compared

(c) $\sqrt[3]{2}$ (d) $\sqrt{3}$

55. Find the value of $3+\frac{1}{\sqrt{3}}+\frac{1}{\sqrt{3}+3}+\frac{1}{\sqrt{3}-3}$. **(SSC CHSL 2013)**

(a) 6 (b) 3

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

56. If a number is as much greater than 31 as it is less than 75, then the number is. **(SSC CHSL 2013)**

(a) 53 (b) 106 (c) 44 (d) 74

57. If $\left(\frac{3}{4}\right)^{3}\left(\frac{4}{3}\right)^{-7}=\left(\frac{3}{4}\right)^{2x}$, then x is : **(SSC CGL 1st Sit. 2013)**

(a) 2½ (b) –2 (c) 2 (d) 5

58. Number of digits in the square root of 62478076 is : **(SSC CGL 2013)**

(a) 3 (b) 4 (c) 5 (d) 6

59. A rational number between $\frac{3}{4}$ and $\frac{3}{8}$ is **(SSC CGL 2013)**

(a) $\frac{16}{9}$ (b) $\frac{9}{16}$

(c) $\frac{12}{7}$ (d) $\frac{7}{3}$

60. Find the simplest value of $2\sqrt{50}+\sqrt{18}-\sqrt{72}$ (given $\sqrt{2}=1.414$). **(SSC CGL 2013)**

(a) 10.312 (b) 8.484 (c) 4.242 (d) 9.898

61. The numerator of a fraction is 4 less than its denominator. If the numerator is decreased by 2 and the denominator is increased by 1, then the denominator becomes eight times the numerator. Find the fraction. **(SSC CGL 2013)**

(a) $\frac{4}{8}$ (b) $\frac{2}{7}$ (c) $\frac{3}{8}$ (d) $\frac{3}{7}$

62. If $x^2 = y + z$, $y^2 = z + x$ and $z^2 = x + y$, then the value of $\frac{1}{1+x}+\frac{1}{1+y}+\frac{1}{1+z}$ is **(SSC CGL 2013)**

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

63. If $a=2, b=3$, then $(a^b+b^a)^{-1}$ is **(SSC CGL 2nd Sit. 2013)**

(a) $\frac{1}{31}$ (b) $\frac{1}{17}$ (c) $\frac{1}{21}$ (d) $\frac{1}{13}$

64. The smallest positive integer which when multiplied by 392, gives a perfect square is **(SSC CGL 2nd Sit. 2013)**

(a) 2 (b) 3 (c) 5 (d) 7

65. The fourth root of 24010000 is **(SSC CGL 2nd Sit. 2013)**

(a) 7 (b) 491 (c) 490 (d) 70

66. The greatest 4 digit member which is a perfect square, is **(SSC CGL 2nd Sit. 2013)**

(a) 9999 (b) 9909 (c) 9801 (d) 9081

67. The value of $\frac{4+3\sqrt{3}}{7+4\sqrt{3}}$ is **(SSC CGL 2nd Sit. 2013)**

(a) $5\sqrt{3}-8$ (b) $5\sqrt{3}+8$

(c) $8\sqrt{3}+5$ (d) $8\sqrt{3}-5$

68. Which one of the following is the minimum value of the sum of two integers whose product is 24? **(SSC CGL 2nd Sit. 2013)**

(a) 25 (b) 11 (c) 8 (d) 10

69. If $(2^3)^2 = 4^x$ then 3^x is equal to **(SSC CGL 2nd Sit. 2013)**

(a) 3 (b) 6 (c) 9 (d) 27

70. Evaluate $\frac{\sqrt{24}+\sqrt{6}}{\sqrt{24}-\sqrt{6}}$ **(SSC Sub. Ins. 2014)**

(a) 2 (b) 3 (c) 4 (d) 5

71. The value of $3\div\left[(8-5)\div\left\{(4-2)\div\left(2+\frac{8}{13}\right)\right\}\right]$ is **(SSC Sub. Ins. 2014)**

(a) $\frac{15}{17}$ (b) $\frac{13}{17}$

(c) $\frac{15}{19}$ (d) $\frac{13}{19}$

72. If '+' means '÷', '×' means '–', '÷' means '×' and '–' means '+', what will be the value of the following expression? $9+3\div 4-8\times 2=?$ **(SSC Sub. Ins. 2014)**

(a) $6\frac{1}{4}$ (b) $6\frac{3}{4}$ (c) $-1\frac{3}{4}$ (d) 18

73. The next term of the sequence, $\left(1+\frac{1}{2}\right),\left(1+\frac{1}{2}\right)\left(1+\frac{1}{3}\right),\left(1+\frac{1}{2}\right)\left(1+\frac{1}{3}\right)\left(1+\frac{1}{4}\right),\_\_$ is **(SSC Sub. Ins. 2014)**

(a) 3 (b) $\left(1+\frac{1}{5}\right)$

(c) 5 (d) $\left(1+\frac{1}{2}\right)\left(1+\frac{1}{5}\right)$

74. The simplified value of $\left(\sqrt{6}+\sqrt{10}-\sqrt{21}-\sqrt{35}\right)\left(\sqrt{6}-\sqrt{10}+\sqrt{21}-\sqrt{35}\right)$ is **(SSC Sub. Ins. 2014)**

(a) 13 (b) 12 (c) 11 (d) 10

75. Ram left $\frac{1}{3}$ of his property to his widow and $\frac{3}{5}$ of the remainder to his daughter. He gave the rest to his son who received ` 6,400. How much was his original property worth? **(SSC CHSL 2014)**

(a) ` 16,000 (b) ` 32,000 (c) ` 24,000 (d) ` 1,600

76. Which one of the following is true ? **(SSC CHSL 2014)**

(a) $\sqrt{5}+\sqrt{3}>\sqrt{6}+\sqrt{2}$ (b) $\sqrt{5}+\sqrt{3}<\sqrt{6}+\sqrt{2}$

(c) $\sqrt{5}+\sqrt{3}=\sqrt{6}+\sqrt{2}$ (d) $(\sqrt{5}+\sqrt{3})(\sqrt{6}+\sqrt{2})=1$

77. Arrange the following in ascending order $3^{34}, 2^{51}, 7^{17}$, we get **(SSC CGL 1st Sit. 2014)**

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

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

78. 2km 5m is equal to: **(SSC Sub. Ins. 2015)**

(a) 2.005 km (b) 2.0005 km

(c) 2.5 km (d) 2.05 km

79. The simplified value of $\frac{(0.0539-0.002)\times 0.4+0.56\times 0.07}{0.04\times 0.25}$ is: **(SSC Sub. Ins. 2015)**

(a) 59.96 (b) 599.6 (c) 0.5996 (d) 5.996

80. $\frac{\sqrt{10+\sqrt{25+\sqrt{108+\sqrt{154+\sqrt{225}}}}}}{3\sqrt{8}}=?$ **(SSC Sub. Ins. 2015)**

(a) 8 (b) $\frac{1}{2}$ (c) $\sqrt{2}/3$ (d) 4

81. If $3^{2x-y} = 3^{x+y} = \sqrt{27}$, then the value of 3^{x-y} will be : **(SSC Sub. Ins. 2015)**

(a) $\frac{1}{\sqrt{3}}$ (b) $\frac{1}{\sqrt{27}}$ (c) $\sqrt{3}$ (d) 3

82. The simplified value of following is :

$$\left(\frac{3}{15}a^5b^5c^3 \times \frac{5}{9}ab^5c^4\right) \div \frac{10}{27}a^2bc^3$$ **(SSC CHSL 2015)**

(a) $\frac{9}{10}a^2bc^4$ (b) $\frac{1}{10}a^4b^4c^{10}$

(c) $\frac{3}{10}a^4b^{10}c^4$ (d) $\frac{3}{10}ab^4c^3$

83. In an exam the sum of the scores of A and B is 120, that of B and C is 130 and that of C and A is 140. Then the score of C is : **(SSC CHSL 2015)**

(a) 65 (b) 60 (c) 70 (d) 75

84. The sum of four numbers is 48. When 5 and 1 are added to the first two; and 3 & 7 are subtracted from the 3rd & 4th, the numbers will be equal. The numbers are **(SSC CGL 1st Sit. 2015)**

(a) 4, 12, 12, 20 (b) 5, 11, 13, 19

(c) 6, 10, 14, 18 (d) 9, 7, 15, 17

85. The value of

$$\frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{3-\sqrt{8}}$$ is

(SSC CGL 1st Sit. 2015)

(a) 0 (b) 1 (c) 5 (d) 7

86. Choose the incorrect relation(s) from the following:

(i) $\sqrt{6}+\sqrt{2} = \sqrt{5}+\sqrt{3}$ **(SSC CGL 1st Sit. 2015)**

(ii) $\sqrt{6}+\sqrt{2} < \sqrt{5}+\sqrt{3}$

(iii) $\sqrt{6}+\sqrt{2} > \sqrt{5}+\sqrt{3}$

(a) (i) (b) (ii)

(c) (i) and (iii) (d) (ii) and (iii)

87. If $x = \frac{1}{\sqrt{2}+1}$ then $(x+1)$ equals to **(SSC CGL 2nd Sit. 2015)**

(a) 2 (b) $\sqrt{2}-1$

(c) $\sqrt{2}+1$ (d) $\sqrt{2}$

88. If $\frac{3}{4}$ of a number is 7 more than $\frac{1}{6}$ of the number, then $\frac{5}{3}$ of the number is : **(SSC CGL 2015)**

(a) 15 (b) 18 (c) 12 (d) 20

89. The value of $\frac{(2.3)^3 + 0.027}{(2.3)^3 - 0.69 + 0.09}$ is : **(SSC CGL 2016)**

(a) 2 (b) 2.27 (c) 2.33 (d) 2.6

90. If the numbers $\sqrt[3]{9}, \sqrt[4]{20}, \sqrt[6]{25}$ are arranged in ascending order, then the right arrangement is **(SSC CGL 2016)**

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

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

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

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

91. If $\frac{1}{a+\frac{1}{b+\frac{1}{c+\frac{1}{2}}}} = \frac{16}{23}$, then the value of $a+b+c$

(SSC Sub Ins. 2016)

(a) 6 (b) 3 (c) 9 (d) 12

92. The sum of two numbers is $15\frac{1}{3}$ and their difference is $4\frac{2}{3}$. The product of the numbers is **(SSC Sub Ins. 2016)**

(a) 50 (b) $48\frac{2}{3}$ (c) $53\frac{1}{3}$ (d) 60

93. If $2x-3(2x-2) > x-1 < 2+2x$, then x can take which of the following values? **(SSC CHSL 2017)**

(a) 2 (b) –2 (c) 4 (d) –4

94. If $N = (\sqrt{7}-\sqrt{3})/(\sqrt{7}+\sqrt{3})$, then what is the value of N+(1/N)? **(SSC Sub. Ins. 2017)**

(a) $2\sqrt{2}$ (b) 5 (c) 10 (d) 13

95. What is the simplified value of $(2+1)(2^2+1)(2^4+1)(2^8+1)$? **(SSC Sub. Ins. 2017)**

(a) 2^8-1 (b) $2^{16}-1$ (c) $2^{32}-1$ (d) $2^{64}-1$

96. $\frac{5.75\times5.75\times5.75+3.25\times3.25\times3.25}{57.5\times57.5+32.5\times32.5-57.5\times32.5}$ is equal to:

(SSC Sub. Ins. 2018)

(a) 0.0009 (b) 0.9 (c) 0.009 (d) 0.09

97. The value of $3\frac{1}{5}-\left[2\frac{1}{2}-\left\{\frac{5}{6}-\left(\frac{2}{5}+\frac{3}{10}-\frac{4}{15}\right)\right\}\right]$ is:

(SSC Sub. Ins. 2018)

(a) $\frac{11}{10}$ (b) $\frac{9}{10}$ (c) $\frac{13}{5}$ (d) $\frac{6}{5}$

98. $5\frac{5}{6}+\left[2\frac{2}{3}-\left\{3\frac{3}{4}\left(3\frac{4}{5}\div9\frac{1}{2}\right)\right\}\right]$ is equal To:

(SSC Sub. Ins. 2018)

(a) $\frac{44}{7}$ (b) 7 (c) $\frac{43}{6}$ (d) $\frac{22}{3}$

99. The simplified value of $\frac{0.01404}{24^2+6^2-144}$ is :

(SSC CHSL-2018)

(a) 3×10^{-5} (b) 6×10^{-5}

(c) 2.4×10^{-4} (d) 3×10^{-4}

100. The simplified value of

$\frac{1}{2}$ of $\frac{8}{5}\div\left\{2\frac{1}{5}-\left(\frac{5}{16}+\frac{3}{5}\times1\frac{7}{8}\div\frac{2}{3}\right)\right\}$ is: **(SSC CHSL-2018)**

(a) $\frac{1}{4}$ (b) 4 (c) $\frac{1}{5}$ (d) 5

101. The value of $4.5-(3.2\div0.8\times5)+3\times4\div6$ is:

(SSC CGL-2018)

(a) -13.5 (b) 4.2 (c) -8.5 (d) 5.7

102. The value of $15.2+5.8\div2.9\times2-3.5\times2\div0.5$ is equal to:

(SSC CGL-2018)

(a) 4.8 (b) 3.2 (c) 5.2 (d) 5.4

103. What is the value of:

$(9\div30)^2\times2.4+0.3$ of $12\times(1-0.3)^2+9\times(0.3)^2=?$

(SSC MTS 2018)

(a) 3.43 (b) 3.69 (c) 2.79 (d) 2.17

104. What is the value of:

2 of $3\div3\times2+\{4\times3-(5\times2+3)\}=?$ **(SSC MTS 2018)**

(a) 3 (b) -24 (c) 6 (d) -21

105. If '+' means '–', '–' means '+', '×' means '÷' and '÷' means, '×', then the value of $\frac{42-12\times3+8\div2+15}{8\times2-4+9\div3}$ is :

(SSC CGL 2019-20)

(a) $\frac{15}{19}$ (b) $-\frac{5}{3}$ (c) $-\frac{15}{19}$ (d) $\frac{5}{3}$

106. What is the value of 32×4 of $2\times3+$

$\left[5\text{ of }6-\{7\text{ of }8(10+6\text{ of }\frac{5}{6}\times5-1)\div80\}\right]-7\times3\div2?$

(SSC MTS 2019-20)

(a) 7.5 (b) 17.5 (c) 12.5 (d) 24.5

107. What is the value of

$\frac{72\div9+3-6-(2\times3)+5\text{ of }3-(1+5\times2-2)}{8\div4+2-(6\times8\div2)+(7\times4-2\times2)}$?

(SSC MTS 2019-20)

(a) $\frac{11}{4}$ (b) $\frac{5}{4}$ (c) 0 (d) $\frac{15}{4}$

108. If $\frac{a}{b}=\frac{3}{4},\frac{b}{c}=\frac{4}{3}$ and $\frac{c}{d}=\frac{5}{6}$, then the sum of the numerator and the denominator (which are coprimes) of $\left(\frac{a}{d}\right)^{10}$ is :

(SSC MTS 2019-20)

(a) 1025 (b) 4097 (c) 2049 (d) 513

109. The value of $90\div20$ of $6\times[11\div4$ of $\{3\times2-(3-8)\}]\div(9\div3\times2)$ is: **(SSC CGL 2020-21)**

(a) $\frac{9}{8}$ (b) $\frac{3}{8}$ (c) $\frac{1}{36}$ (d) $\frac{1}{32}$

110. Simplify the following expression. **(SSC CHSL 2020-21)**

$5\frac{1}{3}\div\left[7-3\div\left(1-\frac{1}{4}\right)\times\frac{2}{3}+1\right]-3\div1+2$

(a) 15 (b) 0 (c) -4 (d) $\frac{1}{41}$

111. The value of $\frac{7}{10}\div\frac{7}{5}$ of $\left[\frac{21}{10}+\frac{13}{5}\right]+\left[\frac{1}{10}\times\frac{10}{47}-\frac{6}{47}\right]$ is :

(SSC MTS 2020-21)

(a) 1 (b) 10 (c) 0 (d) 5

112. What is the simplified value of **(SSC MTS 2020-21)**

$\left\{\left(4-\frac{2}{1+\frac{2}{1-\frac{1}{2+\frac{3}{4}}}}\right)\div1\frac{5}{12}\text{ of }\frac{72}{145}-(4+3\div0.5-1)\right\}$?

(a) 1 (b) -4 (c) -2 (d) 3

113. The value of $\frac{40-\frac{3}{4}\text{ of }32}{37-\frac{3}{4}\text{ of }(34-6)}$ is: **(SSC Sub-Inspector 2020-21)**

(a) $\frac{1}{2}$ (b) 1 (c) $-\frac{1}{2}$ (d) 0

114. The value of $8-3\div6$ of $2+(4\div4$ of $\frac{1}{4})\div8+(4\times8\div\frac{1}{4})\times\frac{1}{8}$ is : **(SSC Sub-Inspector 2020-21)**

(a) $\frac{7}{4}$ (b) $-\frac{97}{4}$ (c) $-\frac{7}{4}$ (d) $\frac{97}{4}$

115. The value of $\frac{6.35\times6.35\times6.35+3.65\times3.65\times3.65}{63.5\times63.5+36.5\times36.5-63.5\times36.5}$ is equal to: **(SSC Sub-Inspector 2020-21)**

(a) 0.1 (b) 10 (c) 1 (d) 0.01

HINTS & EXPLANATIONS

1. (c) If $0.5 = a$ and $0.3 = b$ then,

$$\text{Expression} = \frac{a^3+b^3}{a^2-ab+b^2}$$

$$= \frac{(a+b)(a^2-ab+b^2)}{a^2-ab+b^2} = a+b = 0.5+0.3 = 0.8$$

2. (a) $1+0.6+0.06+0.006+0.0006+\ldots = 1.666\ldots$

$$= 1.\bar{6} = 1\frac{6}{9} = 1\frac{2}{3}$$

3. (b) Expression

$$= \sqrt{\frac{0.009\times0.036\times0.016\times0.08}{0.002\times0.0008\times0.0002}} = \sqrt{\frac{9\times32\times16\times8}{2\times8\times2}}$$

$$= 3\times2\times3\times2 = 36$$

4. (a) $\sqrt{0.09} = \sqrt{0.3\times0.3} = 0.3$

5. (c) $0.121212\ldots. = 0.\overline{12} = \frac{12}{99} = \frac{4}{33}$

6. (b) $675 = 5\times5\times3\times3\times3 = 5$

No. to be multiplied

7. (a) $1\frac{1}{2}+11\frac{1}{2}+111\frac{1}{2}+1111\frac{1}{2} = 1234+2 = 1236$

8. (b) $0.\overline{001} = \frac{1}{999}$

9. (a) $\frac{4.41\times0.16}{2.1\times1.6\times0.21} = \frac{441\times16}{21\times16\times21} = 1$

10. (b) If $256 = a$ and $144 = b$, then

$$\frac{a^2-b^2}{a-b}$$

$[a-b = 256-144 = 112]$

$$= \frac{(a+b)(a-b)}{(a-b)} = a+b = 256+144 = 400$$

11. (b) $1^2+2^2+3^2+\ldots.+n^2 = \frac{n(n+1)((2n+1)}{6}$

$$\therefore 1^2+2^2+3^2+\ldots.+10^2 = \frac{10(10+1)(20+1)}{6} = 385$$

12. (a) $\left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right)\left(1-\frac{1}{5}\right)\ldots.\left(1-\frac{1}{24}\right)\left(1-\frac{1}{25}\right)$

$$= \frac{2}{3}\times\frac{3}{4}\times\frac{4}{5}\ldots..\times\frac{23}{24}\times\frac{24}{25} = \frac{2}{25}$$

13. (c) $\left[\left(\sqrt[5]{x^{-3/5}}\right)^{\frac{-5}{3}}\right]^5 = \left(x^{-\frac{3}{5}}\right)^{\frac{1}{5}\times\frac{-5}{3}\times5} = x^{-\frac{3}{5}\times\frac{-5}{3}} = x$

14. (d) $0.1\times0.01\times0.001\times10^7 = 10^{-6}\times10^7 = 10$

15. (b) $\frac{15}{16} = 0.94;\ \frac{19}{20} = 0.95$

$$\frac{24}{25} = 0.96;\ \frac{34}{35} = 0.97$$

16. (c) $1.\overline{27} = 1\frac{27}{99} = 1\frac{3}{11} = \frac{14}{11}$

17. (d) $\frac{3.20(3.25-3.05)}{0.064}$

$$= \frac{3.20\times0.20}{0.064} = 10$$

18. (a) $8+9+10 = 27$

$11+12+13 = 36$

So, let 3 consecutive no x, x + 1, x + 2

Next 3 consecutive no x + 3; x + 4, x + 5

i.e. sum of last 3 consecutive no. is 9 more than sum of first 3.

$= 27+9 = 36$

19. (d) $\frac{0.01-0.0001}{0.0001}+1 = \frac{0.0099}{0.0001}+1 = 99+1 = 100$

20. (b) $\sqrt{6+\sqrt{6+\sqrt{6.....}}} = x$

$6 = 3\times2$

By trick = 3 answer

21. (a) $\text{Expression} = \frac{(\sqrt{3}+\sqrt{2})}{(\sqrt{3}-\sqrt{2})}$

Rationalising the denominator,

$$\frac{(\sqrt{3}+\sqrt{2})(\sqrt{3}+\sqrt{2})}{(\sqrt{3}-\sqrt{2})(\sqrt{3}+\sqrt{2})} = \frac{(\sqrt{3}+\sqrt{2})^2}{3-2} = (\sqrt{3}+\sqrt{2})^2$$

$$\therefore \sqrt{\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}} = \sqrt{(\sqrt{3}+\sqrt{2})^2} = \sqrt{3}+\sqrt{2}$$

22. (a) Expression

$$= \frac{\frac{7}{3}-\frac{13}{11}}{3+\frac{1}{3+\frac{1}{\frac{9+1}{3}}}} = \frac{\frac{77-39}{33}}{3+\frac{1}{3+\frac{3}{10}}}$$

$$= \frac{\frac{38}{33}}{3+\frac{1}{\frac{30+3}{10}}} = \frac{\frac{38}{33}}{3+\frac{10}{33}} = \frac{\frac{38}{33}}{\frac{99+10}{33}} = \frac{38}{33}\times\frac{33}{109} = \frac{38}{109}$$

23. (b) Expression

$$= \frac{3\sqrt{2}}{\sqrt{3}+\sqrt{6}} - \frac{4\sqrt{3}}{\sqrt{6}+\sqrt{2}} + \frac{\sqrt{6}}{\sqrt{3}+\sqrt{2}}$$

$$= \frac{3\sqrt{2}(\sqrt{6}-\sqrt{3})}{(\sqrt{6}+\sqrt{3})(\sqrt{6}-\sqrt{3})} - \frac{4\sqrt{3}(\sqrt{6}-\sqrt{2})}{(\sqrt{6}+\sqrt{2})(\sqrt{6}-\sqrt{2})} + \frac{\sqrt{6}}{(\sqrt{3}+\sqrt{2})} \times \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-\sqrt{2}}$$

$$= \frac{3\sqrt{2}(\sqrt{6}-\sqrt{3})}{(6-3)} - \frac{4\sqrt{3}(\sqrt{6}-\sqrt{2})}{(6-2)} + \frac{\sqrt{6}(\sqrt{3}-\sqrt{2})}{(3-2)}$$

$$= \sqrt{2}(\sqrt{6}-\sqrt{3}) - \sqrt{3}(\sqrt{6}-\sqrt{2}) + \sqrt{6}(\sqrt{3}-\sqrt{2})$$

$$= \sqrt{12} - \sqrt{6} - \sqrt{18} + \sqrt{6} + \sqrt{18} - \sqrt{12} = 0$$

24. (b) $\dfrac{(0.05)^2 + (0.41)^2 + (0.073)^2}{(0.005)^2 + (0.041)^2 + (0.0003)^2}$

$$\frac{(0.05)^2 + (0.41)^2 + (0.073)^2}{\frac{1}{100}(0.05)^2 + (0.41)^2 + (0.073)^2} = 100$$

25. (b) $9\sqrt{x} = \sqrt{3\times2\times2} + \sqrt{3\times7\times7}$

$\Rightarrow 9\sqrt{x} = 2\sqrt{3} + 7\sqrt{3} = 9\sqrt{3}$

$\therefore\ x = 3$

26. (b) $\sqrt[3]{1 - \dfrac{127}{343}} = \sqrt[3]{\dfrac{343-127}{343}}$

$$= \sqrt[3]{\frac{216}{343}} = \sqrt[3]{\frac{(6)^3}{(7)^3}} = \frac{6}{7} = 1 - \frac{1}{7}$$

27. (a) Let the numbers be x and y.

$\therefore x(x+y) = 247$

and $y(x+y) = 114$

$\Rightarrow x^2 + xy = 247$ and $xy + y^2 = 114$

On adding;

$x^2 + xy + xy + y^2 = 247 + 114$

$\Rightarrow x^2 + 2xy + y^2 = 361$

$\Rightarrow (x+y)^2 = 19^2 \Rightarrow x + y = 19$

28. (a) Let the number be x.

$$\therefore \frac{x}{7} - \frac{x}{11} = 100$$

$$\Rightarrow \frac{11x - 7x}{11\times7} = 100$$

$$\Rightarrow 4x = 77 \times 100$$

$$\Rightarrow x = \frac{77\times100}{4} = 1925$$

29. (d) $\dfrac{4\sqrt{3}+5\sqrt{2}}{\sqrt{48}+\sqrt{18}}$

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

By Rationalising

$$\frac{1+2\sqrt{2}(4\sqrt{3}-3\sqrt{2})}{(4\sqrt{3}+3\sqrt{2})(4\sqrt{3}-3\sqrt{2})}$$

$$\frac{1+8\sqrt{6}-12}{48-18},\ \frac{1+8\sqrt{6}-12}{30},\ \frac{30-12+8\sqrt{6}}{30}$$

$$\frac{18}{30} + \frac{18}{30}\sqrt{6} = a + b\sqrt{6}$$

$$\frac{3}{5} + \frac{4}{15}\sqrt{6} = a + b\sqrt{6}$$

$$a = \frac{3}{5},\quad b = \frac{4}{15}$$

30. (a) $x + \dfrac{2}{\dfrac{3+\dfrac{4}{\dfrac{30+7}{6}}}} = 10$

$$\Rightarrow x + \frac{2}{3+\frac{4\times6}{37}}$$

$$\Rightarrow x + \frac{2}{3+\frac{24}{37}} = 10$$

$$\Rightarrow x + \frac{2}{\frac{111+24}{37}} = 10$$

$$\Rightarrow x + \frac{2\times37}{135} = 10$$

$$\Rightarrow x + \frac{74}{135} = 10$$

$$\Rightarrow x = 10 - \frac{74}{135} = \frac{1350-74}{135} = \frac{1276}{135}$$

31. (b) $3 + \dfrac{1}{\sqrt{3}} + \left(\dfrac{1}{3+\sqrt{3}} - \dfrac{1}{3-\sqrt{3}}\right)$

$$= 3 + \frac{1}{\sqrt{3}} + \left(\frac{3-\sqrt{3}-3-\sqrt{3}}{(3+\sqrt{3})(3-\sqrt{3})}\right)$$

$$= 3 + \frac{1}{\sqrt{3}} + \frac{-2\sqrt{3}}{9-3} = 3 + \frac{1}{\sqrt{3}} - \frac{\sqrt{3}}{3} = 3 + \frac{1}{\sqrt{3}} - \frac{1}{\sqrt{3}} = 3$$

32. (b) Let the number be x

$$\therefore \frac{x+12}{6} = 112$$

$\Rightarrow x + 12 = 672$

$\Rightarrow x = 672 - 12 = 660$

$\therefore$ Correct answer $= \dfrac{660}{6} + 12 = 110 + 12 = 122$

33. (c) By going options, 26 years is the present age. Present age be 26, then last year age was 25 which represents a perfect square and next year age would be 27 which represents a cubic number.

34. (a) Expression is $(2.1)^2 \times \sqrt{0.0441} = 4.41 \times 0.21$

$= 0.9261$

35. (b) $\sqrt[3]{1372} \times \sqrt[3]{1458}$

$= 7\sqrt[3]{4} \times 9\sqrt[3]{2} = 63 \times \sqrt[3]{4 \times 2} = 63 \times 2 = 126$

36. (d) $\frac{547.527}{0.0082} = x \Rightarrow \frac{547527}{1000} \times \frac{10000}{82} = x$

$\Rightarrow \frac{547527}{82} = \frac{x \times 1000}{10000} \Rightarrow \frac{x}{10}$

37. (a) $\left[3^n\right]^{\frac{1}{3}} = 27$

$\Rightarrow \quad 3^{\frac{n}{3}} = 3^3$

Comparing, $\frac{n}{3} = 3$

$x = 9$

38. (b) Time difference between 9.00 A.M & 2.00 P.M = 5 hours
Temperature difference between 21°C & 36°C
$= 36 - 21 = 15°C$
Now, Time difference between 9.00 A.M & 12.00 Noon
= 3 hrs.

In 5 hours $\xrightarrow[\text{difference}]{\text{temperature}} 15°C$

So, In 3 hours $\xrightarrow[\text{difference}]{\text{temperature}} \left(\frac{15}{5} \times 3\right) = 9°C$

So, temperature at noon = 21 + 9 = 30°C

39. (a) $x = \sqrt{6 + \sqrt{6 + \sqrt{6 + ...\infty}}}$

On squaring,

$x^2 = 6 + \sqrt{6 + \sqrt{6 + ...\infty}}$
$\Rightarrow x^2 = 6 + x$
$\Rightarrow x^2 - x - 6 = 0$
$\Rightarrow x^2 - 3x + 2x - 6 = 0$
$\Rightarrow x(x-3) + 2(x-3) = 0$
$\Rightarrow (x-3)(x+2) = 0$
$\Rightarrow x = 3$ because $x \neq -2$

By trick $3 \times 2 = 6$

40. (a) $\sqrt{6} \times \sqrt{15} = x\sqrt{10}$
$\Rightarrow \sqrt{2 \times 3} \times \sqrt{3 \times 5} = x\sqrt{10}$
$\Rightarrow \sqrt{2} \times \sqrt{5} \times 3 = x\sqrt{10}$
$\Rightarrow 3\sqrt{10} = x\sqrt{10}$
$\Rightarrow x = 3$

41. (b) $\frac{1}{3+\sqrt{5}} = \frac{3-\sqrt{5}}{(3+\sqrt{5})(3-\sqrt{5})}$

$= \frac{3-\sqrt{5}}{9-5} = \frac{3-\sqrt{5}}{4}$

$\therefore 3 - \frac{3+\sqrt{5}}{4} - \frac{3-\sqrt{5}}{4}$

$= \frac{12-3-\sqrt{5}-3+\sqrt{5}}{4} = \frac{6}{4} = \frac{3}{2}$

42. (d) According to the question,

$\frac{n}{2} + \frac{n}{4} + \frac{n}{5} + 7 = n$

$\Rightarrow \frac{10n + 5n + 4n}{20} + 7 = n$

$\Rightarrow \frac{19n}{20} + 7 = n \Rightarrow n - \frac{19n}{20} = 7$

$\Rightarrow \frac{n}{20} = 7 \Rightarrow n = 20 \times 7 = 140$

43. (c) $675 = 5 \times 5 \times 3 \times 3 \times 3$

$= 3^3 \times 5^2$

$\therefore$ Required number = 5

44. (d) $2\sqrt{x} = \frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}} - \frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}}$

$= \frac{(\sqrt{5}+\sqrt{3})^2 - (\sqrt{5}-\sqrt{3})^2}{(\sqrt{5}-\sqrt{3})(\sqrt{5}+\sqrt{3})} = \frac{4.\sqrt{5}.\sqrt{3}}{5-3} = 2\sqrt{15}$

$\therefore 2\sqrt{x} = 2\sqrt{15} \Rightarrow x = 15$

45. (c) $\frac{1 + 876542(876542+2)}{(876542+1)^2}$

$= \frac{1 + (876542)^2 + 2 \times 876542}{(876542+1)^2} = \frac{(876542+1)^2}{(876542+1)^2} = 1$

46. (b) $\frac{1}{\sqrt{2}+\sqrt{3}}$

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

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

$\therefore \frac{1}{\sqrt{4}+\sqrt{3}} = \sqrt{4} - \sqrt{3};$

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

$\frac{1}{\sqrt{5}+\sqrt{6}} = \sqrt{6} - \sqrt{5}$

$\therefore$ Expression

$= \sqrt{3} - \sqrt{2} + \sqrt{4} - \sqrt{3} + \sqrt{5} - \sqrt{4} + \sqrt{6} - \sqrt{5}$

$= \sqrt{6} - \sqrt{2} = \sqrt{2}(\sqrt{3} - 1)$

47. (a) If the number be x, then

$x+21=3x-7$

$\Rightarrow 3x-x=21+7$

$\Rightarrow 2x=28$

$\Rightarrow x=14$

48. (c) $\dfrac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}}=\dfrac{\sqrt{2\times2\times2\times2\times2}+\sqrt{2\times2\times2\times2\times3}}{\sqrt{2\times2\times2}+\sqrt{2\times2\times3}}$

$\Rightarrow \dfrac{4\sqrt{2}+4\sqrt{3}}{2\sqrt{2}+2\sqrt{3}}=\dfrac{2(2\sqrt{2}+2\sqrt{3})}{(2\sqrt{2}+2\sqrt{3})}=2$

49. (b) $\sqrt{\dfrac{9.5\times0.085}{0.0017\times0.19}}=\sqrt{\dfrac{95}{10}\times\dfrac{85}{1000}\times\dfrac{10000}{17}\times\dfrac{100}{19}}$

$\Rightarrow \sqrt{5\times5\times100}=50$

50. (c) $1+\dfrac{1}{1+\dfrac{2}{\dfrac{15+4}{5}}}=1+\dfrac{1}{1+\dfrac{2\times5}{19}}$

$=1+\dfrac{1}{\dfrac{19+10}{19}}=1+\dfrac{19}{29}=\dfrac{29+19}{29}=\dfrac{48}{29}$

51. (c) $\sqrt{19.36}+\sqrt{0.1936}+\sqrt{0.001936}+\sqrt{0.00001936}$

$=4.4+0.44+0.044+0.0044=4.8884$

52. (d) LCM of 3, 2 and 6 = 6

$\therefore (3)^{\frac{1}{3}}=(3^2)^{\frac{1}{6}}=(9)^{\frac{1}{6}}$

$2^{\frac{1}{2}}=(2^3)^{\frac{1}{6}}=(8)^{\frac{1}{6}}$

$(1)^{\frac{1}{6}}=1;(6)^{\frac{1}{6}}=(6)^{\frac{1}{6}}$

53. (d) $\sqrt{40+\sqrt{9\times9}}=\sqrt{49}=7$

54. (d) $\sqrt[3]{2}=2^{1/3}$ or $2^{\frac{1}{3}\times\frac{2}{2}}=2^{\frac{2}{6}}=\sqrt[6]{4}$

$\sqrt{3}=3^{\frac{1}{2}}$ or $3^{\frac{1}{2}\times\frac{3}{3}}=3^{\frac{3}{6}}=\sqrt[6]{27}$

$\sqrt{3}>\sqrt{2}$

55. (b) $3+\dfrac{1}{\sqrt{3}}+\dfrac{1}{3+\sqrt{3}}+\dfrac{1}{\sqrt{3}-3}$

$\Rightarrow 3+\dfrac{1}{\sqrt{3}}\times\dfrac{\sqrt{3}}{\sqrt{3}}+\dfrac{1}{3+\sqrt{3}}\times\dfrac{3-\sqrt{3}}{3-\sqrt{3}}+\dfrac{1}{\sqrt{3}-3}\times\dfrac{\sqrt{3}+3}{\sqrt{3}+3}$

$\Rightarrow \dfrac{3}{1}+\dfrac{\sqrt{3}}{3}+\dfrac{3-\sqrt{3}}{6}+\dfrac{\sqrt{3}+3}{-6}$

$\Rightarrow \dfrac{18+2\sqrt{3}+3-\sqrt{3}-\sqrt{3}-3}{6}$

$\Rightarrow \dfrac{18+2\sqrt{3}-2\sqrt{3}}{6}\Rightarrow 3$

56. (a) $x-31=75-x$

$2x=106$

$x=53$

57. (d) $\left(\dfrac{3}{4}\right)^3\times\left(\dfrac{4}{3}\right)^{-7}=\left(\dfrac{3}{4}\right)^{2x}\Rightarrow\left(\dfrac{3}{4}\right)^3\times\left(\dfrac{3}{4}\right)^7=\left(\dfrac{3}{4}\right)^{2x}$

$\Rightarrow\left(\dfrac{3}{4}\right)^{10}=\left(\dfrac{3}{4}\right)^{2x}\Rightarrow 2x=10\Rightarrow x=5$

58. (b) When no. of digit in a no. is 7 or 8 then in square root will be 4.

59. (b) $\dfrac{3}{4}=\dfrac{3\times4}{4\times4}=\dfrac{12}{16}$

$\dfrac{3}{8}=\dfrac{6}{16}$

$\therefore \dfrac{6}{16},\dfrac{7}{16},\dfrac{8}{16},\dfrac{9}{16},\dfrac{10}{16},\dfrac{11}{16},\dfrac{12}{16}$

$\therefore$ Required rational number $=\dfrac{9}{16}$

60. (d) Expression

$=2\sqrt{50}+\sqrt{18}-\sqrt{72}$

$=2\sqrt{2\times5\times5}+\sqrt{3\times3\times2}-\sqrt{2\times2\times2\times3\times3}$

$=10\sqrt{2}+3\sqrt{2}-6\sqrt{2}\ =7\sqrt{2}=7\times1.414=9.898$

61. (d) Original fraction $=\dfrac{x-4}{x}$

In case II,

$8(x-4-2)=x+1$

$\Rightarrow 8x-48=x+1$

$\Rightarrow 7x=49\Rightarrow x=7$

Original fraction $=\dfrac{7-4}{7}=\dfrac{3}{7}$

62. (d) $x^2=y+z$

$\Rightarrow x^2+x=x+y+z$

$\Rightarrow x(x+1)=x+y+z$

$\Rightarrow x+1=\dfrac{x+y+z}{x}$

$\Rightarrow \dfrac{1}{x+1}=\dfrac{x}{x+y+z}$

Similarly, $\dfrac{1}{y+1}=\dfrac{y}{x+y+z}$

$\dfrac{1}{z+1}=\dfrac{z}{x+y+z}$

$\therefore \dfrac{1}{1+x}+\dfrac{1}{1+y}+\dfrac{1}{1+z}$

$=\dfrac{x}{x+y+z}+\dfrac{y}{x+y+z}+\dfrac{z}{x+y+z}=\dfrac{x+y+z}{x+y+z}=1$

63. (b) $(a^b+b^a)^{-1}=(2^3+3^2)^{-1}=(8+9)^{-1}=(17)^{-1}=\dfrac{1}{17}$

64. (a) $392\times2=784\Rightarrow(28)^2$

Hence, 2 can be multiplied by 392 which gives perfect square.

65. (d) $\sqrt{24010000} = 4900$

Again, $\sqrt{4900} = 70$

$\therefore \sqrt[4]{24010000} = 70$

66. (c) $99 \times 99 = 9801$

Alternate Method:
$100^2 = 10000$ which is a 5 digits number
Hence, 99^2 is required number.

67. (a) Expression $= \dfrac{4+3\sqrt{3}}{7+4\sqrt{3}}$

Rationalising the denominator.

$$= \frac{(4+3\sqrt{3})(7-4\sqrt{3})}{(7+4\sqrt{3})(7-4\sqrt{3})} = \frac{28-16\sqrt{3}+21\sqrt{3}-12\times 3}{49-48}$$

$$= 28+5\sqrt{3}-36 = 5\sqrt{3}-8$$

68. (d) Product of 2 no is = 24

Possible pair of factor = (1, 24) (2, 12) (3, 8)

(4, 6) i,e., 4 + 6 is minimum = 10

69. (d) $(2^3)^2 = 4^x$

$2^6 = 2^{2x}$

$6 = 2x$

$x = 3$

$3^3 = 27$

70. (b) $\dfrac{\sqrt{24}+\sqrt{6}}{\sqrt{24}-\sqrt{6}} = \dfrac{2\sqrt{6}+\sqrt{6}}{2\sqrt{6}-\sqrt{6}} = \dfrac{3\sqrt{6}}{\sqrt{6}} = 3$

71. (b) $3 \div \left[3 \div \left\{2 \div \dfrac{34}{13}\right\}\right]$

$$3 \div \left[3 \div 2 \times \frac{13}{24}\right]$$

$$3 \div \left[3 \times \frac{34}{2\times 13}\right]$$

$$\frac{3\times 2\times 13}{3\times 34} = \frac{13}{17}$$

72. (d) $9 + 3 \div 4 - 8 \times 2 = ?$

Applying rules

$9 \div 3 \times 4 + 8 - 2 = ?$

$3 \times 4 + 8 - 2 = ?$

$20 - 2 = ?$

$? = 18$

73. (a) Next term will be

$$\left(1+\frac{1}{2}\right)\left(1+\frac{1}{3}\right)\left(1+\frac{1}{4}\right)\left(1+\frac{1}{5}\right) = \frac{3}{2}\times\frac{4}{3}\times\frac{5}{4}\times\frac{6}{5} = 3$$

74. (d)

$$\left[\left(\sqrt{6}-\sqrt{35}\right)+\left(\sqrt{10}-\sqrt{21}\right)\right]\left[\left(\sqrt{6}-\sqrt{35}\right)-\left(\sqrt{10}-\sqrt{21}\right)\right]$$

$$= \left(\sqrt{6}-\sqrt{35}\right)^2 - \left(\sqrt{10}-\sqrt{21}\right)^2$$

$$= 6+35-2\sqrt{6}.\sqrt{35}-10-21+2\sqrt{10}.\sqrt{21}$$

$$= 10-2\sqrt{210}+2\sqrt{210} = 10$$

75. (c) Let original property worth ` x

Property left for Ram's widow $= \dfrac{x}{3}$

Property left for his daughter $= \dfrac{3}{5}\times\dfrac{2x}{3} = \dfrac{2x}{5}$

Remaining property $= x - \left(\dfrac{x}{3}+\dfrac{2x}{5}\right) = \dfrac{4x}{15}$

$\dfrac{4x}{15} = 6,400$

$x = \dfrac{6,400\times 15}{4} = 24,000$

76. (a) $\sqrt{5}+\sqrt{3} > \sqrt{6}+\sqrt{2}$

Squaring both sides

$5+3+2\sqrt{15} > 6+2+2\sqrt{12}$

$\sqrt{15} > \sqrt{12}$ which is true

77. (b) $3^{34} = (3^2)^{17} = 9^{17}$

$2^{51} = (2^3)^{17} = 8^{17}$

$7^{17} > 8^{17} > 9^{17}$

or $7^{17} > 2^{51} > 3^{34}$

78. (a) 2km 5m $= 2 + \dfrac{5}{100} = 2.005$ km

79. (d) $0.0539 - 0.002 = 0.0519$

$0.56 \times 0.07 = 0.0392$

$0.0519 \times 0.4 = 0.02076$

$0.04 \times 0.25 = 0.01$

So $\dfrac{(0.0539-0.002)\times 0.4 + 0.56\times 0.07}{0.04\times 0.25}$

$$= \frac{0.0519\times 0.4+0.0392}{0.01} = \frac{0.02076+0.0392}{0.01} = 5.996$$

80. (c) $\dfrac{\sqrt{10+\sqrt{25+\sqrt{108+\sqrt{154+\sqrt{125}}}}}}{3\sqrt{8}}$

$$= \frac{\sqrt{10+\sqrt{25+\sqrt{108+\sqrt{154+15}}}}}{3\sqrt{8}} \quad \left(\because \sqrt{169} = 13\right)$$

$$= \frac{\sqrt{10+\sqrt{25+\sqrt{108+13}}}}{3\sqrt{8}} \quad \left(\because \sqrt{121} = 11\right)$$

$$= \frac{\sqrt{10+\sqrt{25+11}}}{3\sqrt{8}} \quad \left(\because \sqrt{25+11} = 6\right)$$

$$= \frac{\sqrt{10+6}}{3\sqrt{8}} = \frac{4}{3\sqrt{8}}$$

$$= \frac{4}{3\left(2\sqrt{2}\right)} = \frac{2}{3\sqrt{2}}\times\frac{\sqrt{2}}{\sqrt{2}} = \frac{2\sqrt{2}}{2\times 3} = \frac{2\sqrt{2}}{6} = \frac{\sqrt{2}}{3}$$

81. (c) $3^{2x-y} = 3^{x+y} = \sqrt{27} = 3^{\frac{3}{2}}$

$\Rightarrow 2x - y = \dfrac{3}{2} \quad x + y = \dfrac{3}{2}$

$4x-2y=3$ ...(i)

$2x+2y=3$ ...(ii)

Solving equation (i) and (ii)

$x=1 \quad y=\frac{1}{2} \Rightarrow 3^{1-\frac{1}{2}}=3^{\frac{1}{2}}=\sqrt{3}$

82. (c) $\left(\frac{3}{15}a^5\,b^6\,c^3\times\frac{5}{9}a\,b^5c^4\right)\div\frac{10}{27}a^2\,b\,c^3$

$=\frac{1}{9}a^6\,b^{11}\,c^7\div\frac{10}{27}a^2\,b\,c^3$

$=\frac{1}{9}a^6\,b^{11}\,c^7\times\frac{27}{10}a^{-2}\,b^{-1}\,c^{-3}=\frac{3}{10}a^{6-2}\,b^{11-1}\,c^{7-3}$

$=\frac{3}{10}a^4\,b^{10}\,c^4$

83. (d) $A+B=120$ ...(i)

$B+C=130$ ...(ii)

$C+A=140$ ...(iii)

Adding all three equations

$2A+2B+2C=390$

$A+B+C=195$

But, $A+B=120$

So, $C=195-120=75$

84. (c) Let four numbers are a, b, c, d, then

$a+b+c+d=48$ ...(i)

and $a+5=b+1$ ...(ii)

or, $a=b-4$ ...(iii)

and $c-3=d-7$ ...(iv)

$c=d-4$ ...(v)

Substituting equation (iii) and (v) in equation (i) we get

$b-4+b+d-4+d=48$

$b+d=28$ ...(vi)

But we know,

$b+1=d-7$

$\therefore \quad b=d-8$

Substituting in equation (vi) we get

$d-8+d=28$

$d=18$

Solving this way we get $a=6$, $b=10$, $c=14$ and $d=18$

85. (c) $\frac{1}{\sqrt{7}-\sqrt{6}}-\frac{1}{\sqrt{6}-\sqrt{5}}+\frac{1}{\sqrt{5}-2}-\frac{1}{\sqrt{8}-\sqrt{7}}+\frac{1}{3-\sqrt{8}}$

$\Rightarrow \frac{1}{\sqrt{7}-\sqrt{6}}\times\frac{\sqrt{7}+\sqrt{6}}{\sqrt{7}+\sqrt{6}}-\frac{1}{\sqrt{6}-\sqrt{5}}\times\frac{\sqrt{6}+\sqrt{5}}{\sqrt{6}+\sqrt{5}}+\frac{1}{\sqrt{5}-2}$

$\times\frac{\sqrt{5}+2}{\sqrt{5}+2}-\frac{1}{\sqrt{8}-\sqrt{7}}\times\frac{\sqrt{8}+\sqrt{7}}{\sqrt{8}+\sqrt{7}}+\frac{1}{3-\sqrt{8}}\times\frac{3+\sqrt{8}}{3+\sqrt{8}}$

$\Rightarrow \frac{\sqrt{7}+\sqrt{6}}{7-6}-\frac{\left(\sqrt{6}+\sqrt{5}\right)}{6-5}+\frac{\sqrt{5}+2}{5-4}$

$-\frac{\left(\sqrt{8}+\sqrt{7}\right)}{8-7}+\frac{3+\sqrt{8}}{9-8}$

$\Rightarrow \sqrt{7}+\sqrt{6}-\sqrt{6}-\sqrt{5}+\sqrt{5}+2-\sqrt{8}-\sqrt{7}+3+\sqrt{8}$

$\Rightarrow 5$

86. (c) By squaring the given relations, we get (i) and (iii) are incorrect relations from the given statement.

87. (d) $x=\frac{1}{\sqrt{2}+1}\times\frac{\sqrt{2}-1}{\sqrt{2}-1}=\sqrt{2}-1$

Now, $x+1=\sqrt{2}-1+1=\sqrt{2}$

88. (d) Let the number be x

$\Rightarrow \quad \frac{3}{4}x=\frac{1}{6}x+7$

$\Rightarrow \quad \frac{3}{4}x-\frac{1}{6}x=7$

$=\frac{+9x-2x}{12}=7$

$\frac{7x}{12}=7 \qquad \therefore x=12$

Now, $\frac{5}{3}$ of $x=\frac{5}{3}\times12=20.$

89. (d) $\frac{(2.3)^3+0.027}{(2.3)^3-0.69+0.09}$

$\Rightarrow \frac{(2.3+0.3)\left[(2.3)^2-0.69+0.09\right]}{\left[(2.3)^3-0.69+0.09\right]}$

$\Rightarrow 2.3+0.3=2.6$

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

LCM of 3, 4, 6 = 24

$\sqrt[24]{9^8}, \sqrt[24]{20^6}, \sqrt[24]{25^4}$

$\sqrt[24]{25^4}<\sqrt[24]{9^8}<\sqrt[24]{20^6}$

i.e. $\sqrt[6]{25}<\sqrt[3]{9}<\sqrt[4]{20}$

Alternate Method:

$9^{\frac{1}{3}}, 20^{\frac{1}{4}}, 25^{\frac{1}{6}}$

L.C.M of Numbers of Powers = 12

$12\sqrt{9^4}, 12\sqrt{20^3}, 12\sqrt{25^2}$

$\sqrt[12]{6561}\ \sqrt[12]{8000}, \sqrt[12]{625}$

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

91. (c)

92. (c) Let the numbers are x and y.

According to question

$x+y=\frac{46}{3}$ ... (i)

$x-y=\frac{14}{3}$ ... (ii)

Adding eqn. (i) & (ii)

$$2x = \frac{46+14}{3} \Rightarrow \frac{60}{3}$$

$$\Rightarrow x = 10$$

$$10 + y = \frac{46}{3}$$

$$\Rightarrow y = \frac{46}{3} - 10 = \frac{16}{3}$$

$$\text{Product of number} = 10 \times \frac{16}{3} = \frac{160}{3} = 53\frac{1}{3}$$

93. (b) Here,

$2x - 3(2x-2) > x - 1 < 2 + 2x$

$2x - 6x + 6 > x - 1$

$\Rightarrow 2x - 6x - x > -7$

$\Rightarrow -5x > -7$

$x < 7/5$ ...(i)

$(x-1) < (2+2x)$

$x - 1 < 2 + 2x$

$-3 < x$ ...(ii)

From (i) and (ii),

$x = -2$.

94. (b) Here,

$$N = \frac{\sqrt{7}-\sqrt{3}}{\sqrt{7}+\sqrt{3}},\ N + \frac{1}{N} = ?$$

Now,

$$N = \frac{\sqrt{7}-\sqrt{3}}{\sqrt{7}+\sqrt{3}} \times \frac{\sqrt{7}-\sqrt{3}}{\sqrt{7}-\sqrt{3}} \Rightarrow \frac{(\sqrt{7}-\sqrt{3})^2}{(\sqrt{7})^2 - (\sqrt{3})^2}$$

$$\Rightarrow \quad \frac{7+3-2.\sqrt{7}.\sqrt{3}}{7-3} = \frac{10-2\sqrt{21}}{4} = \frac{5-\sqrt{21}}{2}$$

$$\therefore \quad \frac{1}{N} = \frac{2}{5-\sqrt{21}}$$

$$\therefore \quad \left(N + \frac{1}{N}\right) = \frac{5-\sqrt{21}}{2} + \frac{2}{5-\sqrt{21}}$$

$$= \frac{25+21-10\sqrt{21}+4}{10-2\sqrt{21}}$$

$$= \frac{50-10\sqrt{21}}{10-2\sqrt{21}} = \frac{5(10-2\sqrt{21})}{10-2\sqrt{21}} = 5$$

95. (b) According to question.

$(2+1)(2^2+1)(2^4+1)(2^8+1) = ?$

$\Rightarrow (2+1)(2^8+1)(2^2+1)(2^4+1)$

$\Rightarrow (2^9+2+2^8+1)(2^6+2^2+2^4+1)$

$\Rightarrow (2^{15}+2^{14}+2^{13}+2^{12}+2^{11}+2^{10}+2^9+2^8+2^7+2^6+2^5+2^4+2^3+2^2+2)+1$

Here, $a = 2, n = 15\ r = 2$

$$\therefore \quad Sn = \frac{a(r^n-1)}{r-1}$$

$$Sn = \frac{2(2^{15}-1)}{2-1} = 2(2^{15}-1)$$

$\Rightarrow (2^{16}-2)$

$\therefore (2^{16}-2)+1 = (2^{16}-1)$

$\therefore (2+1)(2^2+1)(2^4+1)(2^8+1) = (2^{16}-1)$

96. (d) $$\frac{5.75\times5.75\times5.75+3.25\times3.25\times3.25}{57.5\times57.5+32.5\times32.5-57.5\times32.5}$$

$$= \frac{(5.75)^3+(3.25)^3}{100\{(5.75)^2+(3.25)^2-5.75\times3.25\}}$$

This is in the form of

$$\frac{a^3+b^3}{a^2+b^2-ab} = \frac{(a+b)(a^2+b^2-ab)}{(a^2+b^2-ab)} = (a+b)$$

Here $a = 5.75, b = 3.25$

$$\frac{(5.75)^3+(3.25)^3}{100\{(5.75)^2+(3.25)^2-5.75\times3.25\}}$$

$$= \frac{1}{100} \times (5.75+3.25)$$

$$= \frac{9}{100} = 0.09.$$

97. (a) $$3\frac{1}{5} - \left[2\frac{1}{2} - \left\{\frac{5}{6} - \left(\frac{2}{5} + \frac{3}{10} - \frac{4}{15}\right)\right\}\right]$$

$$\frac{16}{5} - \left[\frac{5}{2} - \left\{\frac{5}{6} - \left(\frac{12+9-8}{30}\right)\right\}\right]$$

$$\frac{16}{5} - \left[\frac{5}{2} - \left\{\frac{5}{6} - \frac{13}{30}\right\}\right] = \frac{16}{5} - \left[\frac{5}{2} - \left\{\frac{25-13}{30}\right\}\right]$$

$$\frac{16}{5} - \left[\frac{5}{2} - \frac{2}{5}\right]$$

$$\frac{16}{5} - \frac{21}{10} = \frac{32-21}{10} = \frac{11}{10}$$

98. (b) $$5\frac{5}{6} + \left[2\frac{2}{3} - \left\{3\frac{3}{4}\left(3\frac{4}{5} \div 9\frac{1}{2}\right)\right\}\right]$$

$$\frac{35}{6} + \left[\frac{8}{3} - \left\{\frac{15}{4}\left(\frac{19}{5} \div \frac{19}{2}\right)\right\}\right]$$

$$\frac{35}{6}+\left[\frac{8}{3}-\left\{\frac{15}{4}\left(\frac{19}{5}\times\frac{2}{19}\right)\right\}\right]$$

$$\frac{35}{6}+\left[\frac{8}{3}-\left\{\frac{15}{4}\times\frac{2}{5}\right\}\right]$$

$$\frac{35}{6}+\left[\frac{8}{3}-\frac{3}{2}\right]=\frac{35}{6}+\frac{16-9}{6}=\frac{35}{6}+\frac{7}{6}$$

$$\frac{35+7}{6}=\frac{42}{6}=7$$

99. (a) $\dfrac{0.01404}{24^2+6^2-144}=\dfrac{0.01404}{576+36-144}=\dfrac{0.01404}{468}$

$$=\frac{1404\times10^{-5}}{468}=3\times10^{-5}$$

100. (b) $\dfrac{1}{2}\text{of}\dfrac{8}{5}\div\left\{2\dfrac{1}{5}-\left(\dfrac{5}{16}+\dfrac{3}{5}\times1\dfrac{7}{8}\div\dfrac{2}{3}\right)\right\}$

$$\frac{1}{2}\text{of}\frac{8}{5}\div\left\{2\frac{1}{5}-\left(\frac{5}{16}+\frac{3}{5}\times\frac{15}{8}\times\frac{3}{2}\right)\right\}$$

$$\frac{1}{2}\text{of}\frac{8}{5}\div\left\{\frac{11}{5}-\left(\frac{5}{16}+\frac{27}{16}\right)\right\}$$

$$\frac{1}{2}\text{of}\frac{8}{5}\div\left\{\frac{11}{5}-\frac{32}{16}\right\}$$

$$\frac{1}{2}\text{of}\frac{8}{5}\div\left(\frac{11}{5}-2\right)$$

$$\frac{1}{2}\text{of}\frac{8}{5}\div\frac{1}{5}$$

$$\frac{1}{2}\times\frac{8}{5}\times5=4$$

101. (a) $4.5-(3.2\div0.8\times5)+(3\times4\div6)$

$$=4.5-(4\times5)+3\times\frac{2}{3}$$

$$=4.5-20+2=-13.5$$

102. (c) $15.2+5.8\div2.9\times2-3.5\times2\div0.5$

$15.2+2\times2-7\times2$

$15.2+4-14=5.2$

103. (c) $(9\div30)^2\times2.4+0.3\text{ of }12\times(1-0.3)^2+9\times(0.3)^2=?$

$\Rightarrow (0.3)^2\times2.4+3.6\times(0.7)^2+9\times(0.09)$

$\Rightarrow (0.09)\times2.4+1.764+9\times(0.09)$

$\Rightarrow 1.98+0.81$

$\Rightarrow 2.79$

104. (a) $2\text{ of }3\div3\times2+\{4\times3-(5\times2+3)\}$

$\Rightarrow 2\times1\times2+\{12-(13)\}$

$\Rightarrow 2\times2+\{-1\}$

$\Rightarrow 4-1$

$\Rightarrow 3$

105. (c) Here, + means −, − means +, × means ÷ and ÷ means ×.

Then, $\dfrac{42-12\times3+8\div2+15}{8\times2-4+9\times3}$

$$\Rightarrow\quad\frac{42+12\div3-8\times2-15}{8\div2+4-9\times3}$$

$$\Rightarrow\quad\frac{42+\frac{12}{3}-8\times2-15}{\frac{8}{2}+4-9\times3}$$

$$\Rightarrow\quad\frac{42+4-16-15}{4+4-27}=\frac{-15}{19}$$

106. (a) $12+[30-\{56(34)\div80\}]-\dfrac{21}{2}$

$\Rightarrow 12+[30-23.8-10.5]$

$\Rightarrow 12+[-4.3]$

$\Rightarrow 7.7$

107. (b) $\dfrac{5-6+15-9}{4-24+24}\Rightarrow\dfrac{5}{4}$

108. (a) $a:b:c:d$

$3:4:5:6$

$$\left(\frac{a}{d}\right)^{10}=\left(\frac{3}{6}\right)^{10}$$

$$=\frac{1}{2^{10}}=\frac{1}{1024}$$

Sum $=1+1024=1025$

109. (d) $90\div20\text{ of }6\times[11\div4\text{ of }\{3\times2-(3-8)\}]\div(9\div3\times2)$

$$\Rightarrow\quad90\div120\times[11\div4\text{ of }\{6+5\}]\div(3\times2)$$

$$\Rightarrow\quad\frac{3}{4}\times[11\div4\times11]\div6$$

$$\Rightarrow\quad\frac{3}{4}[11\div44]\div6$$

$$\Rightarrow\quad\frac{3}{4}\times\frac{1}{4}\div6$$

$$\Rightarrow\quad\frac{3}{4}\times\frac{1}{24}$$

$$\Rightarrow\quad\frac{1}{32}$$

110. (b) $5\dfrac{1}{3}\div\left[7-3\div\left(1-\dfrac{1}{4}\right)\times\dfrac{2}{3}+1\right]-3\div1+2$

$$=\frac{16}{3}\div\left[7-3\div\left(\frac{3}{4}\right)\times\frac{2}{3}+1\right]-3+2$$

$$=\frac{16}{3}\div\left[7-\frac{3}{\frac{3}{4}}\times\frac{2}{3}+1\right]-1$$

$$= \frac{16}{3} \div \left[7 - 4 \times \frac{2}{3} + 1\right] - 1$$

$$= \frac{16}{3} \div \left[8 - \frac{8}{3}\right] - 1$$

$$= \frac{16}{3} \div \left[\frac{16}{3}\right] - 1 \quad = \frac{16}{3} \times \left[\frac{3}{16}\right] - 1$$

$$= 1 - 1 = 0$$

111. (c) $\frac{7}{10} \div \frac{7}{5} \times \frac{21+26}{10} + \frac{1}{47} - \frac{6}{47}$

$$= \frac{7}{10} \div \frac{7}{5} \times \frac{47}{10} + \frac{(1-6)}{47}$$

$$= \frac{7}{10} \times \frac{50}{329} - \frac{5}{47}$$

$$= \frac{5}{47} - \frac{5}{47} = 0$$

112. (b) $\left\{\left(4 - \frac{2}{1 + \frac{2}{1 - \frac{1}{2 + \frac{3}{4}}}}\right) \div 1\frac{5}{12} \text{ of } \frac{72}{145} - (4 + 3 \div 0.5 - 1)\right\}$

$$= \left\{\left(4 - \frac{2}{1 + \frac{2}{1 - \frac{4}{11}}}\right) \div \frac{17}{12} \times \frac{72}{145} - \left(4 + \frac{30}{5} - 1\right)\right\}$$

$$= \left\{\left(4 - \frac{2}{1 + \frac{22}{7}}\right) \div \frac{17 \times 6}{145} - (9)\right\}$$

$$= \left\{\left(4 - \frac{14}{29}\right) \div \frac{17 \times 6}{145} - 9\right\} \quad = \left\{\frac{102}{29} \times \frac{145}{17 \times 6} - 9\right\}$$

$$= 5 - 9 = -4$$

113. (b) $\frac{400 - \frac{3}{4} \times 32}{37 - \frac{3}{4} \times 28} = \frac{40 - 24}{37 - 21} = \frac{16}{16} = 1$

114. (d) $8 - 3 \div 6 \times 2 + (4 \div 4 \times \frac{1}{4}) \div 8 + (4 \times 8 \times 4) \times \frac{1}{8}$

$$\Rightarrow \quad 8 - 3 \div 12 + \frac{1}{2} + 16$$

$$\Rightarrow \quad 8 - \frac{1}{4} + 16 + \frac{1}{2}$$

$$\Rightarrow \quad \frac{97}{4}$$

115. (a) $\frac{(6.35)^3 + (3.65)^3}{(63.5)^2 + (36.5)^2 - (63.5)(36.5)}$

$$\Rightarrow \quad \frac{10\left[(6.35)^2 + (3.65)^2 - (6.35 \times 3.65)\right]}{(63.5)^2 + (36.5)^2 - (63.5)(36.5)}$$

$$\Rightarrow \quad \frac{10\left[\frac{1}{10000}\right]}{\frac{1}{100}} = 0.1$$

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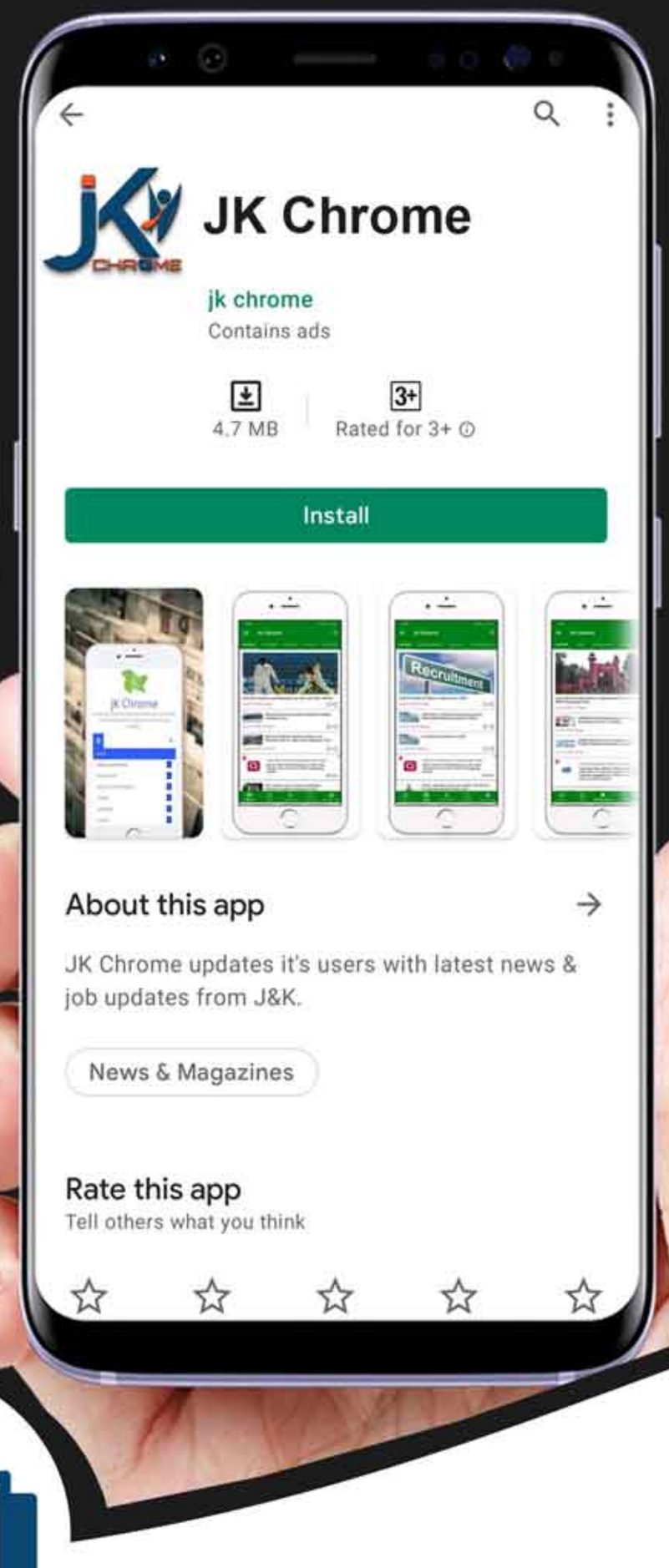

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