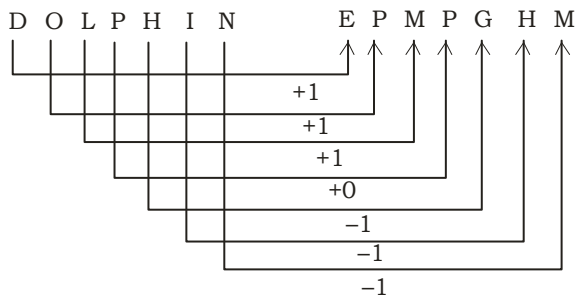


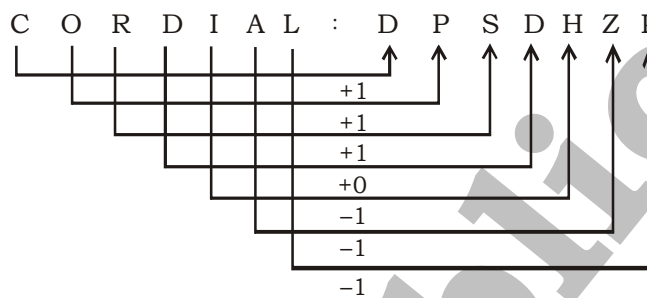
13 AUGUST (12 PM) (SOLUTION)

1. (3) $l \underline{g} c h t l g c \underline{h} t l g c h t l g c \underline{h} t l g c h t$

2. (3) As,



Similarly



3. (4) Except 13 : 506, second number is divided by first number.

4. (4) SI unit of Resistance of Ohm, while SI unit of Angle is Radians.

5. (4) Except Deteriorate, others are related to each other.

6. (1) As,

$$12 \times 2.5 = 30$$

$$30 \times 2 + 1 = 61$$

Similarly,

$$18 \times 2.5 = 45$$

$$45 \times 2 + 1 = 91$$

7. (2) $4 \times 2 + 3 = 11$

$$11 \times 3 - 2 = 31$$

$$31 \times 2 + 3 = 65$$

$$65 \times 3 - 2 = 193$$

$$193 \times 2 + 3 = 389$$

8. (1) As, $24 - 10 = 14^2 \times 2 = 392$

$$\text{Similarly, } 29 - 18 = 11^2 \times 2 = 242$$

9. (1) 10. (2)

11. (3) $17 \times 17 + 4 = 293$

$$22 \times 22 + 4 = 488$$

$$21 \times 21 + 4 = 445$$

12. (3)

13. (2) $60 * 2 * 3 * 6 * 5 * 43$

Put the signs

$$60 \div 2 + 3 \times 6 - 5 = 43$$

$$48 - 5 = 43$$

$$43 = 43$$

14. (3) 15. (4)

A Venn diagram illustrating the relationship between four professions: Director, Choarographer, Actor, and Producer. The diagram consists of three nested ellipses on the left and one separate ellipse on the right. The innermost ellipse is labeled 'Director'. The middle ellipse is labeled 'Choarographer' and contains the 'Director' ellipse. The outermost ellipse is labeled 'Actor' and contains the 'Choarographer' ellipse. A horizontal line connects the right side of the 'Actor' ellipse to the left side of a separate ellipse labeled 'Producer'.

Hence, all the conclusions follow. $\square$

18. (3) (1) $L \xrightarrow{+2} N \xrightarrow{+3} Q \xrightarrow{\text{Opposite letter}} J$
 (2) $B \xrightarrow{+2} D \xrightarrow{+3} G \xrightarrow{\text{Opposite letter}} T$
 (3) $H \xrightarrow{+2} J \xrightarrow{+3} M \xrightarrow{+3} P$
 (4) $T \xrightarrow{+2} V \xrightarrow{+3} Y \xrightarrow{\text{Opposite letter}} B$

19. (4) C M Q R B O N V A Q K Z Z S H D Y U E H

Diagram illustrating a sequence of operations (arrows) applied to a sequence of letters (C, M, Q, R, B, O, N, V, A, Q, K, Z, Z, S, H, D, Y, U, E, H). The operations are labeled with numbers: -1, +2, -3, +4.

Letter	Operation
C	
M	
Q	
R	
B	-1
O	+2
N	-3
V	+4
A	-1
Q	+2
K	-3
Z	+4
Z	-1
S	+2
H	-3
D	+4
Y	-1
U	+2
E	-3
H	+4

21. (2) Let the present age of Anamika be A, Malini be M and that of Srinidhi be S.
ATQ,

$$A + 7 = M - 4$$

S = 2 years

The average age of Anamika, Malini and Srinidhi 10 years from now will be 33 years.

$$(A + 10 + M + 10 + S + 10 = 33 \times 3$$
$$A + M + S + 30 = 33 \times 3$$
$$A + M + S = 99 - 30$$
$$A + M + S = 69$$

Now, by substituting the above values,

$$A + (A + 11) + 2 = 69$$
$$2A + 13 = 69$$
$$A = 56 \div 2$$

A = 28 years

23. (A) $x \Leftrightarrow M^+$
 $\quad \quad \quad |$
 $\quad \quad \quad v$

Hence, x is the mother of y .

25. (2) (The sum of the alphabets in the opposite positional values) $\times$ (Number of Vowels in word)
VIRTUE is coded as 201
Number of Vowels in the given word = 3

	22	9	18	20	21	5	
	V	I	R	T	U	E	
Opposite place value	↓	↓	↓	↓	↓	↓	No. of Vowels
	5	18	9	7	6		

$$5 + 18 + 9 + 7 + 6 = 22 = 67 \times 3 = 201$$

'TRAGED' is coded as 218

Number of vowels in the given word = 2

	20	18	1	7	5	4	25	
	T	R	A	G	E	D	Y	
Opposite place value	↓	↓	↓	↓	↓	↓	↓	No. of Vowels
	7	9	26	20	22	23	2	

$$7 + 9 + 26 + 20 + 22 + 23 + 2 = 109 \times 2 = 118$$

Similarly,

PROFANE = ?

Number of Vowels in the given word = 3

	16	18	15	6	1	14	5	
	P	R	O	F	A	N	E	
Opposite place value	↓	↓	↓	↓	↓	↓	↓	No. of Vowels
	11	9	12	21	26	13	22	

$$11 + 9 + 12 + 21 + 26 + 13 + 22 = 114 \times 3 = 342$$

26. (2) Article 63 of Indian Constitution states that "There shall be a vice president of India." The vice president acts as president in the absence of the president due to death, resignation, impeachment, or other situations. The vice president of India is also ex officio chairperson of the Rajya Sabha.
29. (2) The Mysore Palace, officially known as Mysuru Palace, is a historical palace and the royal residence (house) at Mysore in the Indian state of Karnataka. It is the official residence of the Wadiyar dynasty and the seat of the Kingdom of Mysore.
30. (3) Curzon Wylie was assassinated on 1 July 1909 in London by the Indian revolutionary Madan Lal Dhillon, who was a member of India House in London.
31. (2) However, some parts of the GOI Act 1935 came into force for example : the Federal Bank (The Reserve Bank of India) and the Federal Court were established in 1935 and 1937 respectively. The other parts of the Act, particularly provincial Autonomy, came into force on 1st April 1937.
32. (3) Lakshya Sen (born 16 August 2001) is an Indian badminton player. Sen, born in Almora, belongs to a badminton family. His father, D. K. Sen, is a coach in India and his brother, Chirag Sen, is also an international badminton player.
33. (2) Since beginning of Pattachitra painting, Lord Jagannath, considered an incarnation of Lord Krishna, has been the major source of inspiration. The subject matter of Pattachitra is mostly mythology, religious stories, and folklore.
35. (2) India, Afghanistan sign MoU for construction of Lalandar [Shatoot] Dam. A signing ceremony of the Memorandum of Understanding for the construction of the Lalandar [Shatoot] Dam in Afghanistan took place over VTC today.

36. (3) Veer Surendra Sai - Freedom Fighters of Sambalpur, Odisha Orissa. Surendra Sai was born in 1809, in a small town Khinda about 21 miles away from Sambalpur.
37. (3) A seismic wave is an elastic wave generated by an impulse such as an earthquake or an explosion. Seismic waves may travel either along or near the earth's surface (Rayleigh and Love waves) or through the earth's interior.
39. (1) Rowa Wildlife Sanctuary is a Wildlife Sanctuary in Tripura, India. It covers an area of only 0.86 square kilometres (0.33 sq mi). This national park will bring you closer to several species of birds, mammals, reptiles, etc. It is open for tourists throughout the year.
40. (4) Shashi Shekhar Vempati was elected as the Vice President of Asia Pacific Broadcasting Union (ABU) in December 2020.
41. (3) Mizoram has the highest HIV/AIDS prevalence rate in India and the campaign aims to educate people on the disease by launching the 'Love Brigade'.
46. (2) The health department in Madhya Pradesh has launched the Social Awareness and Action to Neutralise Pneumonia Successfully ('SAANS') campaign
48. (4) His appointment is with effect from 30 January, 2021 for a period of two years subject to all the requisite approvals including that of the shareholders.
49. (2) The Mughal Empire was founded by Babur (reigned 1526-1530), a Central Asian ruler who was descended from the Turco-Mongol conqueror Timur (the founder of the Timurid Empire) on his father's side, and from Genghis Khan on his mother's side.

51. (1) $16x^2 + y^2 = 48$

$$(4x + y)^2 - 2 \times 4x \times y = 48$$

$$(4x + y)^2 - 8 \times 2 = 48$$

$$(4x + y)^2 = 64$$

$$4x + y = 8$$

$$\therefore 64x^3 + y^3$$

$$= (4x)^3 + (y)^3$$

$$= (4x + y)^3 - 3 \times 4x \times y(4x + y)$$

$$= (8)^3 - 12 \times 2 \times 8$$

$$= 512 - 192 = 320$$

52. (3) Required ratio = $(50 + 50 + 65) : (65 + 70 + 80) - (50 + 45 + 75) = 165 : 45 = 11 : 3$

53. (1) $x - \frac{1}{x} = 5$

$$x^3 - \frac{1}{x^3} - 3 \times x \times \frac{1}{x}(x - y) = 125$$

$$x^3 - \frac{1}{x^3} = 140$$

$$\therefore \frac{x^6 - 5x^3 - 1}{x^6 + 7x^3 - 1} = \frac{x^3 - \frac{1}{x^3} - 5}{x^3 - \frac{1}{x^3} + 7} \quad (\text{Divide numerator and denominator by } x^3)$$

$$= \frac{140 - 5}{140 + 7} = \frac{135}{147} = \frac{45}{49}$$

$$54. (4) \frac{1}{x} - \frac{1}{y} = \frac{11}{24} = \frac{y-x}{xy} = \frac{11}{24}$$

$$= \frac{-(x-y)}{-xy} = \frac{11}{24}$$

$$\text{Now, } xy = -24$$

$$\begin{aligned} \therefore x^3 - y^3 + x^2y^2 &= (x-y)^3 + 3xy(x-y) + (xy)^2 \\ &= 11^3 + 3 \times -24 \times 11 + 24^2 \\ &= 1331 - 792 + 576 = 1115 \end{aligned}$$

$$55. (2) \text{ Let the length be } l \text{ and breath be } b.$$

Original area of reatangle = lb

Now,

$$l = 3l$$

$$b = \frac{b}{2}$$

$$\text{Area} = 3l \times \frac{b}{2} = \frac{3lb}{2}$$

$$\therefore \text{ Required ratio} = lb : \frac{3lb}{2} = 2 : 3$$

$$56. (2) 2\cos^2 \theta = 3\sin \theta$$

$$2 - 2\sin^2 \theta = 3\sin \theta$$

$$2\sin^2 \theta + 3\sin \theta - 2 = 0$$

$$2\sin^2 \theta + 4\sin \theta - \sin \theta - 2 = 0$$

$$(2\sin \theta - 1)(\sin \theta + 2) = 0$$

$$\sin \theta = \frac{1}{2}, -2$$

$$\theta = 30^\circ$$

Now,

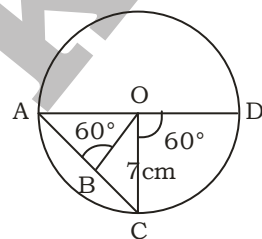
$$\sec^2 \theta - \tan^2 \theta + \cos^2 \theta$$

$$= \sec^2 30^\circ - \tan^2 30^\circ + \cos^2 30^\circ$$

$$= \left(\frac{2}{\sqrt{3}}\right)^2 - \left(\frac{1}{\sqrt{3}}\right)^2 + \left(\frac{\sqrt{3}}{2}\right)^2 = \frac{4}{3} - \frac{1}{3} + \frac{3}{4}$$

$$= \frac{16 - 4 + 9}{12} = \frac{21}{12} = \frac{7}{4}$$

$$57. (4)$$



AD is diameter

AC is chord

OB = 7 cm

$$\angle OBA = 60^\circ$$

$$\angle DOC = 60^\circ$$

$$\angle DOC + \angle AOC = 180^\circ \quad (\text{Sum of angle on a straight line})$$

$$\angle AOC = 180^\circ - 60^\circ = 120^\circ$$

In $\triangle AOC$,

AO = OC (Radius)

$$\angle OAC = \angle OCA = \frac{180^\circ - 120^\circ}{2} = 30^\circ$$

$$\angle OBC = 180^\circ - 60^\circ = 120^\circ$$

$$\angle BOC = 180^\circ - 120^\circ - 30^\circ = 30^\circ$$

$$\angle BOC = \angle OCB = 30^\circ$$

In $\triangle BOC$,

OB = BC

OB = 7 cm

$\therefore$ BC = 7 cm

$$58. (1) \text{ First CP} = \frac{10591}{119} \times 100 = 8900$$

$$\text{Second CP} = \frac{10591}{89} \times 100 = 11900$$

$$\text{Total CP} = 8900 + 11900 = 20800$$

$$\text{Total SP} = 10591 \times 2 = 21182$$

$$\text{Profit} = 21182 - 20800 = 382$$

$$\therefore \text{Over profit\%} = \left(\frac{382}{20800} \times 100 \right) \% = 1.8\%$$

$$59. (4) \text{ SP} = 176$$

$$\text{MP} = \frac{176}{88} \times 100 = 200$$

$$\text{CP} = \frac{200}{125} \times 100 = 160$$

$$60. (4) \text{ Total number of girls} = 90 \times \frac{60}{100} = 54$$

$$\text{Total number of boys} = 90 - 54 = 36$$

$$\therefore \text{Required over age} = \frac{36 \times 63 + 54 \times 70}{90}$$

$$= \frac{2268 + 3780}{90} = 67.2$$

$$61. (3) \frac{2\sin^2 30^\circ \tan 60^\circ - 3\cos^2 60^\circ \sec^2 30^\circ}{4\cot^2 45^\circ - \sec^2 60^\circ + \sin^2 60^\circ + \cos^2 90^\circ}$$

$$= \frac{2 \times \left(\frac{1}{2}\right)^2 \times \sqrt{3} - 3 \times \left(\frac{1}{2}\right)^2 \cdot \left(\frac{2}{\sqrt{3}}\right)^2}{4 \times (1)^2 - (2)^2 + \left(\frac{\sqrt{3}}{2}\right)^2 + (0)^2} = \frac{2 \times \frac{1}{4} \times \sqrt{3} - 3 \times \frac{1}{4} \times \frac{4}{3}}{4 - 4 + \frac{3}{4}} = \frac{\frac{\sqrt{3}}{2} - 1}{\frac{3}{4}}$$

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

62. (1) Required ratio = $\left(\frac{300 + 275 + 250 + 200 + 125}{5}\right) : \left(\frac{250 + 225 + 325 + 27 + 150}{5}\right)$

$$= 230 : 245 = 46 : 49$$

63. (1) LCM of 3, 7, 11 is 231

ATQ,

Largest possible value of $247xy$ is 24799

When we divided 24799 by 231 we get 82 as a remainder.

$$\text{Number} = 24799 - 82 = 24717$$

Now $x = 1$ and $y = 7$

$$(2y - 8x) = (2 \times 7 - 8 \times 1) = 6$$

$\therefore$ Required value is 6

64. (1) $AB : AC = 5 : 2$

$$BC = 9 \text{ cm}$$

ATQ,

$$\frac{AB}{AC} = \frac{BE}{CE}$$

$$\frac{5}{2} = \frac{(9 + CE)}{CE}$$

$$5CE = 18 + 2CE$$

$$3CE = 18$$

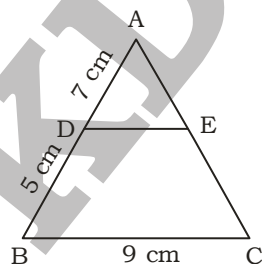
$$CE = 6 \text{ cm}$$

$\therefore$ The length of $CE = 6$

65. (1) $\frac{8 \sin 30^\circ \sin^2 60^\circ - 4 \sin 90^\circ - \sec^2 45^\circ}{\tan^2 45^\circ - \cot^2 30^\circ}$

$$= \frac{8 \times \frac{1}{2} \times \left(\frac{\sqrt{3}}{2}\right)^2 - 4 \times 1 - (\sqrt{2})^2}{(1)^2 - (\sqrt{3})^2} = \frac{4 \times \frac{3}{4} - 4 - 2}{1 - 3} = \frac{3}{2}$$

66. (2)



In $\triangle ABC$ and $\triangle ADE$,

$$\angle ABC = \angle ADE$$

$$\angle A = \angle A$$

$$\therefore \triangle ABC \sim \triangle ADE$$

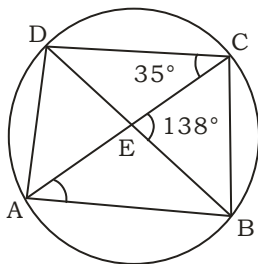
$$\frac{AB}{AD} = \frac{BC}{DE}$$

$$\frac{12}{7} = \frac{9}{DE}$$

$$DE = \frac{9 \times 7}{12} = \frac{21}{4} = 5.25 \text{ cm}$$

67. (3) Ratio of $x : y = (45 + 20) : (40 + 5) = 65 : 45 = 13 : 9$

68. (1)



$\angle BEC$ and $\angle CED$ are on the same straight line.

$$\angle BEC = 138^\circ$$

$$\angle CED = 180^\circ - 138^\circ = 42^\circ$$

In $\triangle CDE$,

$$\angle CED = 42^\circ \text{ and } \angle DCE = 35^\circ$$

$$\angle CDE = 180^\circ - (42^\circ + 35^\circ) = 103^\circ$$

$\angle BAC$ and $\angle BDC$ are on the same arc BC

We know that In cyclic quadrilateral angles on the same arc are always same.

Then measure of $\angle BAC = 103^\circ$

69. (1) Let the money be x .

ATQ,

$$\frac{x \times 2 \times 8}{100} + \frac{x \times 4 \times 10}{100} + \frac{x \times 3 \times 12}{100} = 18358.60$$

$$\frac{92x}{100} = 18358.60$$

$$x = \frac{18358.60 \times 100}{92} = 19955$$

70. (2) Required ratio $= 7500 \times \frac{60}{100} : 4000 \times \frac{66}{100} = 75 : 44$

71. (2) Let the two numbers be $5x$ and $8x$.

ATQ,

$$\frac{5x+5}{8x+5} = \frac{2}{3}$$

$$15x+15 = 16x+10$$

$$x = 5$$

$$\therefore \text{Required sum} = (8x + 5x) = 13 \times 5 = 65$$

72. (2) $3 \div 18 \text{ of } 3 \times 6 - 22 \times 6 \div 18 - 3 \div 2 + 10 - 3 \div 9 \text{ of } 3 \times 9$

$$= 3 \div 54 \times 6 - 22 \times \frac{6}{18} - \frac{3}{2} + 10 - 3 \div 27 \times 9$$

$$= \frac{3}{54} \times 6 - \frac{22}{3} - \frac{3}{2} + 10 - \frac{3}{27} \times 9$$

$$= \frac{1}{3} - \frac{22}{3} - \frac{3}{2} + 10 \div 1 = \frac{3}{6} = \frac{1}{2}$$

73. (4) Work = Persons $\times$ days $\times$ hours $\times$ 1/units of work

$$\frac{18 \times 8 \times 10}{3} = \frac{25 \times ? \times 6}{5}$$

$$480 = 30 \times ?$$

$$16 = ?$$

25 persons to complete 5 units of work working 6 hours is 16 days.

74. (4) Let the speed of train be x km/hr

As,

$$\frac{240}{(x-6) \times \frac{5}{18}} = 9$$

$$\frac{240 \times 18}{5x - 30} = 9$$

$$4320 = 45x - 270$$

$$45x = 4590$$

$$x = \frac{4590}{45} = 102 \text{ km/hr}$$

$$\therefore \text{Required time} = \frac{240 + 372}{102 \times \frac{5}{18}} = 21.6 \text{ seconds}$$

75. (4) Income = 100
Saving = 25
Expenditure = 75

$$\text{New Expenditure} = 75 \times \frac{120}{100} = 90$$

$$\text{New Income} = 100 \times \frac{129}{100} = 129$$

$$\text{New Saving} = 129 - 90 = 39$$

$$\therefore \text{Required\%} = \left(\frac{39 - 25}{25} \times 100 \right) \% = 56\%$$

MEANINGS IN ALPHABETICAL ORDER

Words	Meaning in English	Meaning in Hindi
Alottment	the amount of something allocated to a particular person	आवंटन
Anarchy	a state of disorder due to absence or nonrecognition of authority	अराजकता
Autonomy	the right or condition of self-government	स्वायत्तता
Contaminate	make (something) impure by exposure to or addition of a poisonous or polluting substance	दूषित
Decompose	(with reference to a dead body or other organic matter) make or become rotten; decay or cause to decay	घुलना
Gradual	taking place or progressing slowly or by degrees	क्रमिक
Grievance	a real or imagined wrong or other cause for complaint or protest, especially unfair treatment	शिकायत
Monarchy	a form of government with a monarch at the head	साम्राज्य
Optimism	hopefulness and confidence about the future or the successful outcome of something	आशावाद
Prompt	(of an event or fact) cause or bring about (an action or feeling)	तत्पर
Seize	take hold of suddenly and forcibly	पकड़ना
Tedious	too long, slow, or dull; tiresome or monotonous	कठिन

13 AUGUST (12 PM) (ANSWER KEY)

1. (3)	26. (2)	51. (1)	76. (1)
2. (3)	27. (4)	52. (3)	77. (4)
3. (4)	28. (3)	53. (1)	78. (2)
4. (4)	29. (2)	54. (4)	79. (1)
5. (4)	30. (3)	55. (2)	80. (2)
6. (1)	31. (2)	56. (2)	81. (2)
7. (2)	32. (3)	57. (4)	82. (3)
8. (1)	33. (2)	58. (1)	83. (3)
9. (1)	34. (4)	59. (4)	84. (1)
10. (2)	35. (2)	60. (4)	85. (2)
11. (3)	36. (3)	61. (3)	86. (3)
12. (3)	37. (3)	62. (1)	87. (4)
13. (2)	38. (2)	63. (1)	88. (1)
14. (3)	39. (1)	64. (1)	89. (2)
15. (4)	40. (4)	65. (1)	90. (4)
16. (3)	41. (3)	66. (2)	91. (4)
17. (2)	42. (4)	67. (3)	92. (2)
18. (3)	43. (1)	68. (1)	93. (1)
19. (4)	44. (2)	69. (1)	94. (4)
20. (1)	45. (1)	70. (2)	95. (2)
21. (2)	46. (2)	71. (2)	96. (2)
22. (1)	47. (3)	72. (2)	97. (4)
23. (1)	48. (4)	73. (4)	98. (4)
24. (4)	49. (2)	74. (4)	99. (3)
25. (2)	50. (4)	75. (4)	100. (2)

76. (1) Replace 'many by 'more'.
78. (2) The correct spelling of Alottment is Allotment.
79. (1) No error
83. (3) The correct spelling of Liesure is Leisure.
91. (4) Replace 'many' by 'any'.
95. (2) 'Among' is used when we talk about particular things viewed as a group.