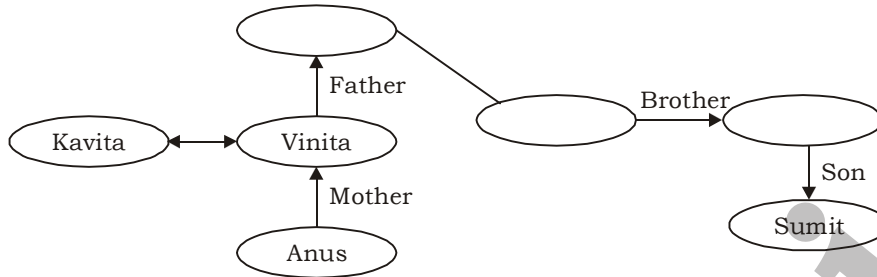


20 AUGUST (3 PM) (SOLUTION)

1. (2) 2 → Illegality → 5 . Illegible → 1. Illegitimate → 4. Illiterate → 3. Illuminate.

2. (3)



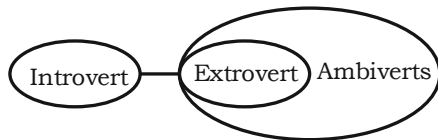
Hence, Vinita is related to father's sister of Sumit.

3. (2)

4. (4) b c e m d k k b cem d kk bc e m d kk

5. (4)

6. (2)



I. False II. False

III. True IV. False

Hence, only conclusion III follows.

7. (2)

8. (4) 5 * 468 * 18 * 70 * 180 * 4 * 5

After put the sign,

$$5 \times 468 \div 18 + 70 - 180 = 4 \times 5$$

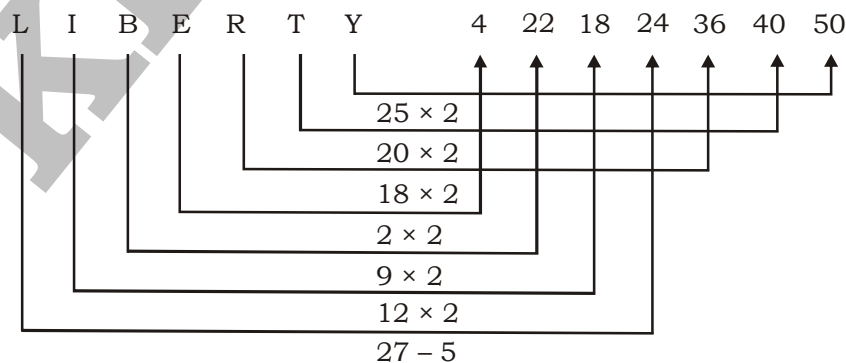
$$5 \times 26 + 70 - 180 = 20$$

$$130 + 70 - 180 = 20$$

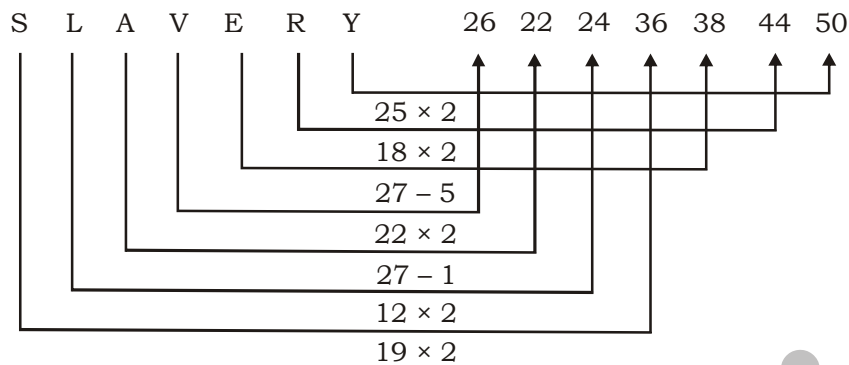
$$200 - 180 = 20$$

$$20 = 20$$

9. (2) As,



Similarly,



10. (2) $82 \times 3 + 10 = 236$

$68 \times 3 - 10 = 194 \neq 196$

$54 \times 3 - 10 = 152$

$36 \times 3 - 10 = 98$

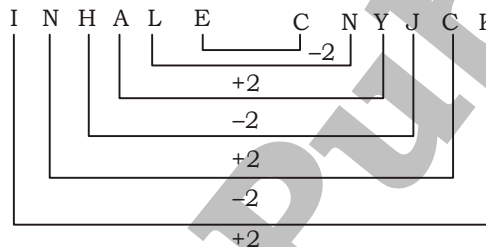
11. (2) Television plays with the help of Electricity, while Cars runs with the help of Petrol.

12. (1) As, $14 \times \left(\frac{14}{2} + 1\right) = 112$

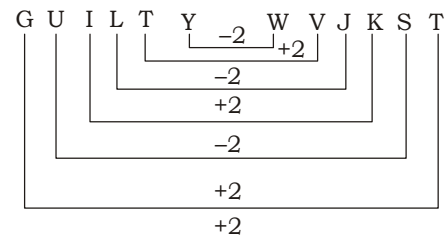
Similarly, $18 \times \left(\frac{18}{2} + 1\right) = 180$

13. (1)

14. (4) As,



Similarly,



15. (4)

16. (3)

17. (2) $13 \xrightarrow{\times 2} 26 \xrightarrow{\times 2} 52 \xrightarrow{\times 2} 104 \xrightarrow{\times 2} 208$

18. (1) (1) $J \xrightarrow{\times 2} L \xrightarrow{\times 4} P$ (2) $L \xrightarrow{+2} N \xrightarrow{+3} Q$

(3) $C \xrightarrow{+2} E \xrightarrow{+3} H$ (4) $S \xrightarrow{+2} U \xrightarrow{+3} X$

19. (3) As, $3^2 - 7 = 2$

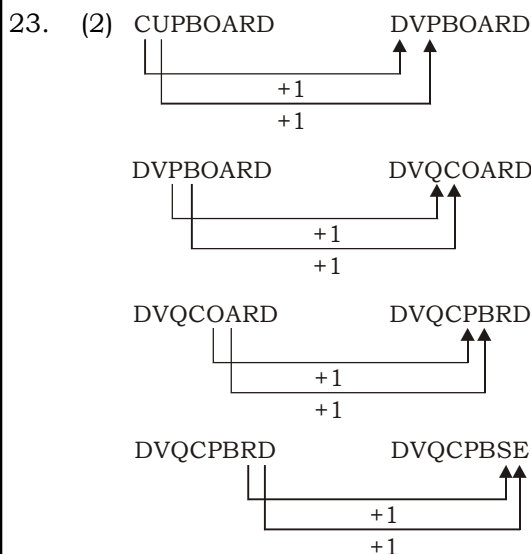
$2 \times 1.5 = 3$

Similarly, $5^2 - 7 = 18$

$18 \times 1.5 = 27$

20. (1) First and second are male and female.

21. (2) 22. (1)



24. (4) Except P into others and related to each other.

25. (3) $P + 88 = G$... (i)
 $S + K = ₹ 550$... (ii)
 $G + 25 = K$... (iii)

$S + K + G = ₹ 840$

$550 + G = 840$

$G = 840 - 550 = ₹ 290$

$\therefore \text{Priya has} = 290 - 88 = ₹ 202$

28. (2) Ostrich, Emu, Kiwi all are flightless birds.

29. (4) Akbar declared or issued Mahzarnama to take all the religious matters into his own hands. This made him supreme in the religious matters. He issued Mahzarnama to curb the dominance of Ulema. It was written by Faizi in 1579.

31. (3) The new symbol is an amalgamation of Devanagari 'Ra' and the Roman 'R' without the stem. The new symbol designed by D Udaya Kumar, a post-graduate of IIT Bombay was finally selected by the Union Cabinet on 15th July 2010.

33. (2) In January 2021, the prison department of Maharashtra announced jail Tourism at the Yerawada jail where Indian independence activists like M.K Gandhi, Bal Gangadhar Tilak, Vallabhbhai Patel Subhashchandra Bose, Sarojini Naidu, Jawaharlal Nehru were imprisoned.

34. (3) Prime Minister Narendra Modi on Saturday launched the country's first seaplane service between the Statue of Unity near Kevadiya in Gujarat's Narmada district and Sabarmati Riverfront in Ahmedabad.

35. (4) Dalkhai: Mainly dalkhai is named after a goddess "dalkhai Devi". Though Dusserah is the occasion of Sambalpuri folk dance Dalkhai, it's the most popular folk-dance of Odisha, its performance is very common on all other festivals such as Bhaijuntia, Phagun Puni, Nuakhai, etc.

36. (4) Potassium permanganate has a molar mass of 158.04 g/mol. This figure is obtained by adding the individual molar masses of four oxygen atoms, one manganese atom and one potassium atom, all available on the Periodic Table of the Elements (see the "Additional Resources" section).

38. (4) Explosive wicketkeeper Rishabh Pant, who was not picked for the first game, hit the winning runs as he completed a match-winning 89.

42. (2) Jaundice is a yellow color of the skin and eyes that results from excess bilirubin deposited in the skin, and dark urine results from excess bilirubin excreted by the kidneys.

43. (2) A law was sought to limit such frequent defections in India. In 1985, the Tenth Schedule of the 52nd amendment to the Constitution of India was passed by the Parliament of India to achieve this.

44. (1) The Battle of Khanwa was fought near the village of Khanwa, in Bharatpur District of Rajasthan, on March 16, 1527. It was fought between the forces of the first Mughal Emperor Babur and the Rajput forces led by Rana Sanga of Mewar, after the Battle of Panipat.
47. (2) After a general election and formation of a new government, a list of senior Lok Sabha members prepared by the Legislative Section is submitted to the Minister of Parliamentary Affairs, who selects a pro tem speaker.
48. (3) The rebellion began on 10 May 1857 in the form of a mutiny of sepoys of the Company's army in the garrison town of Meerut, 40 mi (64 km) northeast of Delhi.
49. (1) The lowest temperature at which a substance catches fire is called its ignition temperature.
50. (2) Former India goalkeeper Prasanta Dora passes away. Prasanta was one of the few to have represented the big three of Kolkata... Former India and Mohun Bagan goalkeeper Prasanta Dora has passed away at the age of 44.

51. (2) Given, $x + y + z = 3$

$$xy + yz + zx = -12$$

$$xyz = -16$$

we know that,

$$x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$$

$$= (x + y + z) \{(x + y + z)^2 - 3(xy + yz + zx)\}$$

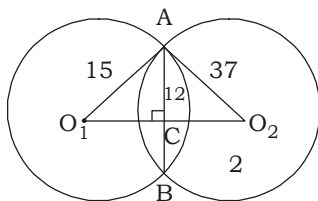
$$= x^3 + y^3 + z^3 - 3(-16) = 3\{(3)^2 - 3(x - 12)\}$$

$$= x^3 + y^3 + z^3 = 3(9 + 36) - 48$$

$$= x^3 + y^3 + z^3 = 135 - 48 = 87$$

$$= \sqrt{x^3 + y^3 + z^3 + 13} = \sqrt{87 + 13} = \sqrt{100} = 10$$

52. (4)



We know that perpendicular draw from the centre to chord it bisects the chord

$$AC = \frac{AB}{2} = \frac{24 \text{ cm}}{2} = 12 \text{ cm}$$

In ΔO_1AC

$$O_1A^2 = AC^2 + O_1C^2$$

$$15^2 = 12^2 + O_1C^2$$

$$O_1C = \sqrt{225 - 144} = \sqrt{81} = 9 \text{ cm}$$

In ΔO_2AC

$$O_2A^2 = O_2C^2 + AC^2$$

$$O_2C^2 = 37^2 - 12^2$$

$$O_2C = \sqrt{(37 + 12)(37 - 12)} = 7 \times 5 = 35 \text{ cm}$$

$$\text{Distance between centres } (O_1, O_2) = O_1C + O_2C = (9 + 35) \text{ cm} = 44 \text{ cm}$$

53. (3)

Principal	Amount
-----------	--------

$$1\text{st year} = 10 \text{ units} \times 11 = 110 \text{ units} \quad 11 \text{ units} \times 11 = 121 \text{ units}$$

$$2\text{nd year} = 102 \text{ units} \quad 121 \text{ units}$$

$$\text{Total principal} = (110 + 100) = 210 \text{ units}$$

$$121 \text{ units} = 6534$$

$$1 \text{ units} = \frac{6534}{121} = 54$$

$$\text{Total principal} = 54 \times 210 = 11,340$$

$$\text{Total Amount} = 6534 \times 2 = 13068$$

$$\text{Interest} = 13068 - 11340 = ₹ 1728$$

54. (3) $x - y = 4$
 $x^3 - y^3 = 316$
 $(x - y)(x^2 + y^2 + xy) = 316$
 $(x - y)\{(x - y)^2 + 2xy + xy\} = 316$

$$16 + 3xy = \frac{316}{4} = 79$$

$$3xy = 79 - 16 = 63$$

$$xy = 21$$

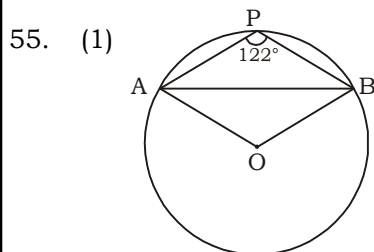
$$x^2 - y^2 = (x^2 + y^2)(x^2 - y^2)$$

$$= (x^2 + y^2)(x + y)(x - y)$$

$$= \{(x - y)^2 + 2xy\} \{\sqrt{(x - y)^2 + 4xy}\} \{x - y\}$$

$$= (16 + 2 \times 21) \times (\sqrt{16 + 84}) \times 4$$

$$= 58 \times 10 \times 4 = 2320$$



$$\angle AOB = 2(180^\circ - 122^\circ) = 2 \times 58^\circ = 116^\circ$$

In $\triangle AOB$

$OA = OB$

So, $\angle OAB = \angle OBA$

$$\angle OAB + \angle OBA + \angle AOB = 180^\circ \quad (\text{Sum of angles of } \triangle)$$

$$2\angle OAB = 180^\circ - 116^\circ = 64^\circ$$

$$\angle OAB = 32^\circ$$

56. (1) East, difference of male and female teachers = $2375 - 1650 = 725$
 North, difference of male and female teachers = $2651 - 1075 = 1576$

57. (4) Marked price = ₹ 5320
 first discount % = 15%

$$\text{second discount \%} = 15 \times \frac{20}{100} = 30\%$$

$$\text{Selling price} = \text{MP} \left(\frac{100 - d_1}{100} \right) \times \left(\frac{100 - d_2}{100} \right)$$

$$= ₹ 5320 \left(\frac{100 - 15}{100} \right) \left(\frac{100 - 3}{100} \right) = ₹ 4386.84 \approx ₹ 4386$$

58. (2) A number is divisible by 7, 11 and 13 that number must be divisible by 1001

A number is divisible by 1001 then the pattern of abcabcabc

823p24 is divisible by 1001

So, 823p24 must follow abcabc pattern

So, $p = 8$ and $q = 3$

$$p - q = 8 - 3 = 5$$

59. (2) Let the initial price of one gram gold coin be ₹ x .
 ATQ,

$$x \times \frac{100 - 10}{100} \times \frac{100 + 20}{100} \times \frac{100 + 8}{100} \times \frac{100 + 5}{100} = 5511.24$$

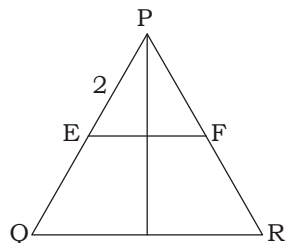
$$x \times 0.9 \times 1.2 \times 1.08 \times 1.05 = 5511.24$$

$$1.22472x = 5511.24$$

$$x = \frac{5511.24}{1.22472} = 4500$$

Initial price of one gram gold = ₹ 4500

60. (4)



$EF \parallel QR$

According to thale's theorem

$\Delta PEF \sim \Delta PQR$

$$\frac{\text{Area of } \Delta PEF}{\text{Area of } \Delta PQR} = \frac{PE^2}{PQ^2}$$

$$\frac{\text{Area of } \Delta PQR}{\text{Area of } \Delta PEF} = \left(\frac{PQ}{PE}\right)^2 = \left(\frac{2+3}{2}\right)^2 = 25 : 4$$

61. (3) $\sin^2 60^\circ \cos^2 45^\circ + 2 \tan^2 60^\circ - \operatorname{cosec}^2 30^\circ$

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

$$= \frac{3}{8} + 6 - 4 = \frac{3}{8} + 2 = \frac{19}{8}$$

62. (3) A can do in 2 days.

B can do five times in 15 days.

B can do in $\frac{15}{5}$ days = 3 days

$$\text{Both can do in} = \frac{a \times b}{a + b} = \frac{2 \times 3}{2 + 3} = \frac{6}{5} \text{ days}$$

We know that

$$M_1 D_1 H_1 = M_2 D_2 H_2$$

$$1 \times \frac{6}{5} \times 10 = 1 \times 1 + H_2$$

$$H_2 = 12 \text{ hours}$$

$$\text{Extra hours} = (12 - 10) \text{ hours} = 2 \text{ hours}$$

63. (1) $\frac{\tan 13^\circ \cdot \tan 36^\circ \cdot \tan 45^\circ \cdot \tan 54^\circ \cdot \tan 77^\circ}{2 \sec^2 60^\circ (\sin^2 60^\circ - 2 \cos 60^\circ + 2)}$

$$= \frac{\tan (90^\circ - 77^\circ) \cdot \tan (90^\circ - 54^\circ) \cdot \tan 45^\circ \cdot \tan 54^\circ \cdot \tan 77^\circ}{2 \sec^2 60^\circ (\sin^2 60^\circ - 2 \cos 60^\circ + 2)}$$

$$= \frac{\cot 77^\circ \cdot \cot 54^\circ \cdot \cot 45^\circ \cdot \tan 54^\circ \cdot \tan 77^\circ}{2 \times 2 \times 2 \left(\frac{3}{4} - 3 \times \frac{1}{2} + 2\right)}$$

$$(\because \tan (90 - \theta) = \cot \theta)$$

$$= \frac{(\cot 77^\circ \cdot \tan 54^\circ) (\cot 54^\circ \cdot \tan 54^\circ) \cdot 1}{\left(\frac{5}{4}\right)} = \frac{1}{10}$$

64. (1) Let the C.P of an article be x selling price at loss of 8% = $x - 8\%$ of $x = \frac{92x}{100}$

Selling price at profit of 4% = $x + 4\%$ of $x = \frac{104x}{100}$

ATQ,

$$\frac{104x}{100} - \frac{92x}{100} = 300$$

$$x = \frac{300 \times 100}{12} = ₹ 2500$$

65. (2) $(3x - 4)^3$
 $= (3x)^3 - (4)^3 - 3 \cdot 3x \cdot 4(3x - 7)$
 $= 27x^3 - 64 - 108x^2 + 144x$

Coefficient of x in expansion = 144

66. (2) $8 \div 4$ of $2 - 15$, 2 of $5 - 6$, $5 \times (-7 + 5)$ of 2
 $= 8 \div 8 - 15 \div 10 - 6 \div 5 \times (-2)$ of 2

$$= 1 - \frac{3}{2} - \frac{3}{2} - \frac{6}{5} \times -4$$

$$= 1 - \frac{3}{2} + \frac{24}{5}$$

$$= \frac{10 - 15 + 48}{10} = \frac{43}{10} = 4\frac{3}{10}$$

67. (3) Let the number of students be x .
 Total weight = $(55.5) \times x$ kg = 55.5 kg
 Average weight of 4 new students = 60 kg
 Total weight of 4 new students = $60 \times 4 = 20$ kg
 ATQ,
 $(55.5x + 240) = (x + 4)(55.5 + 0.360)$
 $55.5x + 240 = 55.86x + 55.86 \times 4$
 $0.36x = 240 - 223.44$
 $0.36x = 16.56$

$$x = \frac{16.56}{0.36} = 46$$

68. (1) Speed of boat in up stream = $\frac{30}{3} = 10$ km/hr

Speed of boat in down stream = $\frac{30}{1} = 30$ km/hr

Speed of boat in still water = $\frac{\text{up stream} + \text{down stream}}{2} = \frac{10 + 30}{2} = 20$ km/hr

Required time = $\frac{\text{Distance}}{\text{Speed}} = \frac{60}{20} = 3$ hours

69. (2) $\sec^4 \theta (1 - \sin^4 \theta) - 2 \tan^2 \theta$

$$\frac{1}{\cos^4 \theta} (1 - \sin^4 \theta) - 2 \tan^2 \theta$$

$$= \sec^4 \theta - \tan^4 \theta - 2 \tan^2 \theta$$

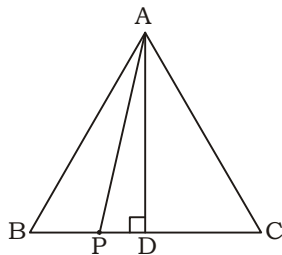
$$= (\sec^2 \theta + \tan^2 \theta) (\sec^2 \theta - \tan^2 \theta) - 2 \tan^2 \theta \quad [\because a^2 - b^2 = (a + b)(a - b)]$$

$$= (\sec^2 \theta + \tan^2 \theta) - 2 \tan^2 \theta$$

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

$$= \sec^2 \theta - \tan^2 \theta = 1$$

70. (4)



Draw $PD \perp BC$

We know that in one equilateral Δ perpendicular bisects the side.

$$BD = \frac{3\sqrt{7}}{2} = 1.5\sqrt{7} \text{ cm}$$

$$BP = \left(3\sqrt{7} \times \frac{1}{1+2} \right) = \sqrt{7} \text{ cm}$$

$$PD = BD - BP = (1.5\sqrt{7} - \sqrt{7}) \text{ cm} = 0.5\sqrt{7} \text{ cm} = \frac{\sqrt{7}}{2} \text{ cm}$$

We know that height of equilateral

$$\Delta = \frac{\sqrt{3}}{2} \times \text{side} = \frac{\sqrt{3}}{2} \times 3\sqrt{7} = \frac{3\sqrt{21}}{2}$$

In ΔAPD

$$AP^2 = AD^2 + PD^2$$

$$AP^2 = \left(\frac{3\sqrt{21}}{2} \right)^2 + \left(\frac{\sqrt{7}}{2} \right)^2$$

$$AP^2 = \frac{189}{4} + \frac{7}{4}$$

$$AP^2 = \sqrt{\frac{196}{4}} = \frac{14}{2} = 7 \text{ cm}$$

71. (2) In 2015, sales % = $\left(\frac{1000}{1250} \times 100 \right) \% = 80\%$

In 2016, sales % = $\left(\frac{1290}{1400} \times 100 \right) = 92.14\%$

In 2017, sales % = $\left(\frac{1100}{1450} \times 100 \right) = 75.86\%$

In 2018, sales % = $\left(\frac{1450}{1500} \times 100 \right) = 96.67\%$

In 2019, sales% = $\left(\frac{1390}{1600} \times 100 \right) = 86.875\%$

Hence in year 2015 and 2019 sales is 80% or more but less than 90% of the production.

72. (1) Total marks of B, C and F in math = $92 + 80 + 74 + 84 = 330$

$$\text{Average maks} = \frac{\text{Sum of observations}}{\text{Number of observations}} = \frac{330}{4} = 82.5$$

73. (1) Sides of Δ are 12 m, 35 m and 37 m
12, 35 and 37 are triplet

$$\text{So, the area of } \Delta = \frac{1}{2} \times \text{base} \times \text{height} = \left(\frac{1}{2} \times 12 \times 35 \right) \text{ m}^2 = 210 \text{ m}^2$$

Let the sides of rectangular field be $3x$ and $7x$

$$3x + 7x = 210$$

$$21x^2 = 210$$

$$x^2 = 10$$

$$x = \sqrt{10}$$

$$\therefore \text{Perimeter of the field} = 2(l + b)$$

$$= 2(3x + 7x) = 20x$$

$$= 20 \times \sqrt{10} \text{ m} = 20\sqrt{10} \text{ m}$$

74. (1) Total marks obtained by students in English, Science and Hindi = $72 + 65 + 60 = 197$
Total marks obtained by student A in English, Mathematics, Science and Hindi
= $70 + 90 + 65 + 64 = 289$

$$\therefore \text{Require\%} = \frac{197}{289} \times 100 = 68.16\%$$

75. (2) Let the numbers be $2x$ and $3x$ respectively.

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

$$24x - 60 = 15x + 30$$

$$9x = 90$$

$$x = 10$$

Number are 20 and 30

$$\therefore \text{Required ratio} = \frac{20 + 8}{30 + 8} = \frac{28}{38} = 14 : 19$$

MEANINGS IN ALPHABETICAL ORDER

Words	Meaning in English	Meaning in Hindi
Absorb	take in or soak up (energy or a liquid or other substance) by chemical or physical action	सोख लेना
Accuse	charge (someone) with an offense or crime	आरोप
Anarchist	a person who believes in or tries to bring about anarchy	अराजकतावादी
Arbitrator	an independent person or body officially appointed to settle a dispute	पंच
Atheist	a person who disbelieves or lacks belief in the existence of God or gods	नास्तिक
Breakthrough	a sudden, dramatic, and important discovery	दरार
Caravan	a group of people, especially traders or pilgrims, traveling together across a desert in Asia	कारवां
Cargo	goods carried on a ship, aircraft, or motor vehicle	माल
Cripple	cause severe and disabling damage to; deprive of the ability to function normally	अपंग
Desperate	feeling, showing, or involving a hopeless sense that a situation is so bad as to be impossible to deal with	बेकरार
Disastrous	causing great damage	विनाशकारी
Generous	(of a person) showing a readiness to give more of something, as money or time, than is strictly necessary or expected	उदार
Hazard	a danger or risk	जोखिम
Lavish	sumptuously rich, elaborate, or luxurious	लविश
Liaison	communication or cooperation which facilitates a close working relationship between people	मेल जोल
Moderate	average in amount, intensity, quality, or degree	उदारवादी
Perception	the ability to see, hear, or become aware of something through the senses	अनुभूति
Perspective	the art of drawing solid objects on a two-dimensional surface so as to give the right impression of their height, width, depth, and position in relation to each other when viewed from a particular point	परिप्रेक्ष्य
Sabotage	deliberately destroy, damage, or obstruct (something), especially for political	तोड़-फोड़
Spill	cause or allow (liquid) to flow over the edge of its container, especially unintentionally	शलाका
Unison	simultaneous performance of action	सामंजस्य
Vehemence	the display of strong feeling; passion	उत्साह

20 AUGUST (3 PM) (ANSWER KEY)

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

76. (3) The correct spelling of Dissapoint is Disappoint.
82. (3) The correct spelling of Ocassion is Occasion.
85. (3) ...'does not + V1' is the correct expression. A verb does not take 's/es' after the use of 'do/does'.
88. (3) Since the sentences talks about the past, 'If clause' should be in past tense.
95. (3) 'Childhood' is a point of time and thus takes 'since' before it.