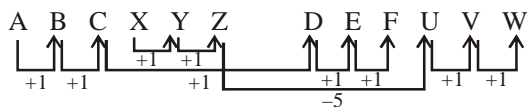


SSC CHSL GRAND TEST : 171207 - HINTS AND SOLUTIONS

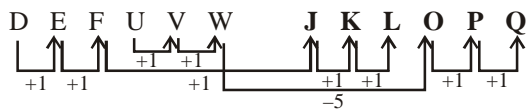
ANSWER KEY

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

1. (1) As,



Similarly,



2. (2) As,

$$5 \rightarrow 28$$

$$(5)^2 + 3$$

Similarly,

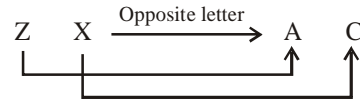
$$8 \rightarrow 67$$

$$(8)^2 + 3$$

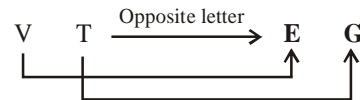
3. (1) As, Doctor works in Hospital. Similarly, Teacher works in School.

4. (3) As, every year International Literacy Day is celebrated on September 8. Similarly, every year International Women's Day is celebrated on March 8.

5. (3) As,

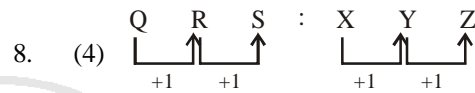


Similarly,

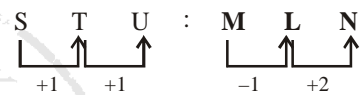


6. (4) Only 64 is a square number.

7. (4) Except Canada, all other are continent while Canada is one of the country in North America continent.



8. (4)



9. (1) $3+2+4+8=17$ [Odd number]

$$4+2+3+9=18$$
 [Even number]

$$1+2+4+7=14$$
 [Even number]

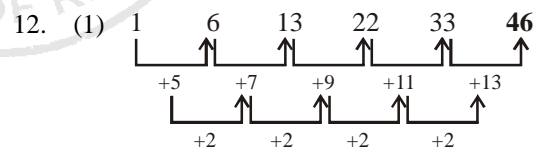
$$2+3+4+9=18$$
 [Even number]

10. (2) Words meaningful order are as follows :

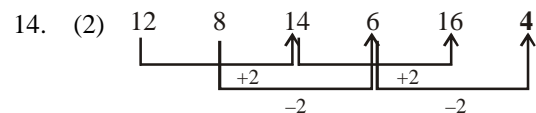
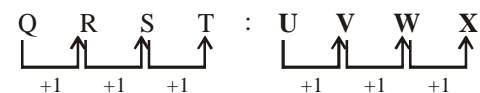
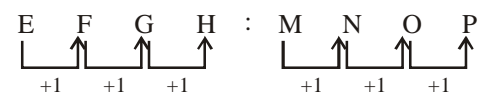
Hut \rightarrow House \rightarrow Bungalow \rightarrow Palace
(4) (1) (3) (2)

11. (4) From option (4),

m a m / m a m / m a m \Rightarrow ammm



13. (1) From option (1),

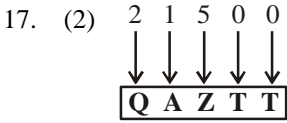


15. (3) According to the question, Varun is younger than Sandeep by 50 weeks and 300 days or 650 days.

$$\therefore \frac{650}{7} = 92 \text{ weeks} + 6 \text{ days}$$

\therefore Varun born day = Tuesday - 6 = Wednesday

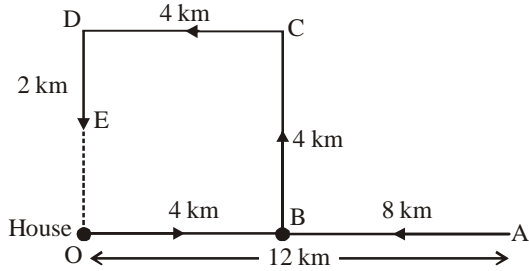
16. (4)



18. (4) As, $(1 + 2 + 4 + 3) \times 5 = 50$
and $(3 + 4 + 5 + 2) \times 5 = 70$

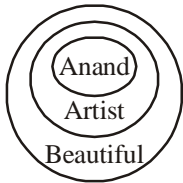
Similarly, $(7 + 4 + 9 + 3) \times 5 = 115$.

19. (2) Mr. Das's walking directions are as follows,



\ Required distance (OE) = OD - DE = 4 - 2 = 2 km

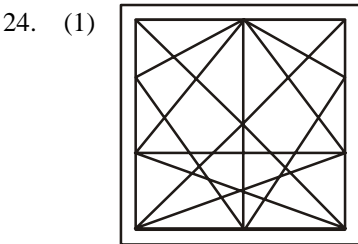
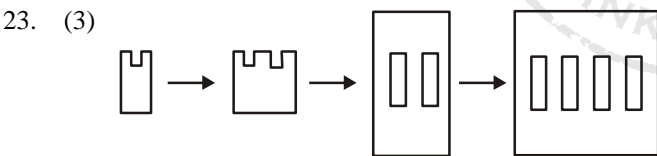
20. (4) According to the statements,



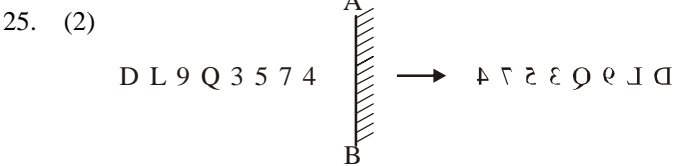
Hence, conclusion (4) is true.

21. (3) From the answer figure (3), question figure is formed.

22. (2) 1, 2 and 6 are in the triangle as definitely true.



Hence, answer figure (1) is embedded in the question figure.



51. (4) The difference between circumference and diameter of a circle = 150

$$\Rightarrow 2\pi r - 2r = 150 \Rightarrow 2r(\pi - 1) = 150$$

$$\Rightarrow 2r \left(\frac{22}{7} - 1 \right) = 150 \Rightarrow 2r \left(\frac{15}{7} \right) = 150$$

$$\therefore r = \frac{150 \times 7}{15 \times 2} = 35 \text{ m}$$

52. (4) Let the radius of a sphere be r. Volume of a sphere =

$$\frac{4}{3} \pi r^3$$

If the radius is doubled. Then,

$$\text{Volume of sphere} = \frac{4}{3} \pi (2r)^3 = \frac{4}{3} \pi r^3 \times 8$$

$$\text{Increase in volume} = \frac{4}{3} \pi r^3 \times 8 - \frac{4}{3} \pi r^3 = \frac{4}{3} \pi r^3 (8 - 1)$$

$$= 7 \times \frac{4}{3} \pi r^3$$

\therefore Percentage of increase in volume

$$= \left(\frac{7 \times \frac{4}{3} \pi r^3}{\frac{4}{3} \pi r^3} \times 100 \right) = 700\%$$

53. (2) Let MP = Rs. 100

$$SP = \left(100 - \frac{1}{4} \times 100 \right) = \text{Rs. } 75$$

$$CP = 75 \times \frac{100}{(100 - 15)} = \frac{75 \times 100}{85} = \text{Rs. } \frac{1500}{17}$$

$$\therefore \text{Ratio} = \frac{1500}{17 \times 75} = \frac{20}{17} = 20 : 17$$

54. (3) Let the age of P = x yr.

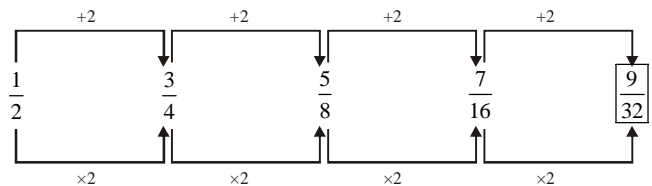
Age of Q = y yr and age of R = z yr

$$\text{Now, } \frac{x + y + z}{3} = z + 5$$

$$\Rightarrow x + y - 2z = 15 \Rightarrow x + y = 39$$

On solving, we get z = 12 yr

55. (2)



Hence, the next number of the sequence = $\frac{9}{32}$

56. (1) One man's 1 day work = $\frac{1}{88}$

One woman's 1 day work = $\frac{1}{176}$

One boy's 1 day work = $\frac{1}{264}$

(One man + One woman + One boy)'s 1 day work

$$= \frac{1}{88} + \frac{1}{176} + \frac{1}{264} = \frac{6+3+2}{528} = \frac{11}{528}$$

So, one man, one woman and one boy can do a work

$$= \frac{528}{11} = 48 \text{ days}$$

57. (4) Let the sides of a triangle be $5x$ m, $6x$ m and $7x$ m

Perimeter of a triangle = 54

$$\Rightarrow 5x + 6x + 7x = 54$$

$$\Rightarrow 18x = 54 \Rightarrow x = 3$$

\therefore Sides of a triangle are 15 m, 18 m and 21 m

\therefore Area of a triangle

$$= \frac{\sqrt{27(27-15)(27-18)(27-21)}}{4}$$

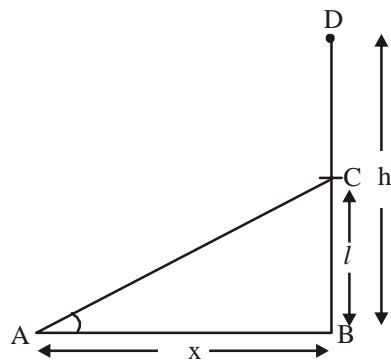
$$= \frac{\sqrt{27 \times 12 \times 9 \times 6}}{4} = \frac{\sqrt{17496}}{4} = 54\sqrt{6} \text{ m}^2$$

58. (1) External angle of a polygon

$$= \frac{1}{1+17} + 180^\circ = \frac{1}{18} \times 180^\circ = 10^\circ$$

$$\therefore \text{Number of sides of a polygon} = \frac{360^\circ}{10^\circ} = 36$$

59. (4) Let the height at which the tree is broken be $l = BC$



and $AC = h - l$

Using Pythagoras theorem,

$$(h-l)^2 = l^2 + x^2$$

$$\Rightarrow h^2 + l^2 - 2hl = l^2 + x^2$$

$$\Rightarrow 2hl = h^2 - x^2 \Rightarrow l = \frac{h^2 - x^2}{2h} \text{ m}$$

60. (4) SP of Deepa = Rs. 33000
For 1st stage i.e. Yogita to Shyamia,

$$\text{Change factor} = \frac{100+20}{100} = \frac{120}{100}$$

For 2nd stage i.e. Shyamia to Deepa

$$\text{Change factor} = \frac{100+10}{100} = \frac{110}{100}$$

$$\text{Net change factor} = \frac{120}{100} \times \frac{110}{100} = \frac{132}{100}$$

$$\therefore \text{CP for Yogita} = \frac{33000 \times 100}{132} = \text{Rs. } 25000$$

61. (2) Let the total number of valid votes be x .

Since, loser gets 38%, then

Winner gets = $100 - 38 = 62\%$

$$\therefore 62\% \text{ of } x - 38\% \text{ of } x = 7200$$

$$\Rightarrow \frac{62x}{100} - \frac{38x}{100} = 7200$$

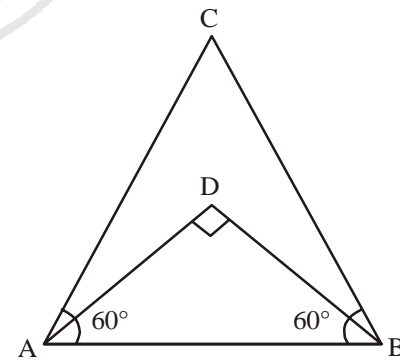
$$\Rightarrow \frac{24x}{100} = 7200 \Rightarrow x = \frac{7200 \times 100}{24} = 30000$$

62. (1) Distance covered by a car at $60 \text{ km/h} = \frac{60}{1} = 60 \text{ km}$

$$\therefore \text{Time taken to cover } 60 \text{ km at } 40 \text{ km/h} = \frac{60}{40} = \frac{3}{2} \text{ hr}$$

63. (3) Here, $\angle A = \angle B = 60^\circ$ and $AC = \sqrt{13}$

We know that,



sum of three angles of a triangle = 180°

$$\therefore \angle C = 180^\circ - (60^\circ + 60^\circ) = 60^\circ$$

$$\therefore AB = BC = AC = \sqrt{13} \text{ cm}$$

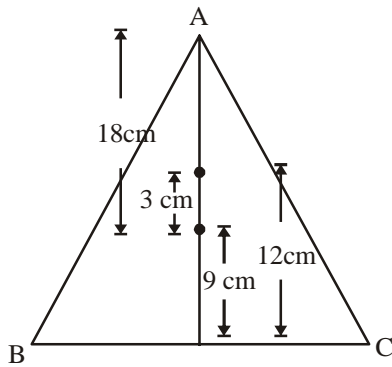
Since, AD and BD intersect at D with $\angle D = 90^\circ$

So, in $\triangle ADB$, $AB^2 = BD^2 + AD^2 \Rightarrow AD^2 = AB^2 - BD^2$

$$\Rightarrow AD^2 = (\sqrt{13})^2 - (2)^2 \Rightarrow AD^2 = 13 - 4$$

$$\Rightarrow AD^2 = 9 \Rightarrow AD = 3 \text{ cm}$$

64. (3)



$$AG = \frac{2}{3} \times 27 = 18 \text{ cm}$$

$$GD = 27 - 18 = 9 \text{ cm}, ND = 12 \text{ cm}$$

$$GN = ND - GD = 12 - 9 = 3 \text{ cm}$$

65. (1) Here, $\tan(A + B) = \sqrt{3} \Rightarrow \tan(A + B) = \tan 60^\circ$
 $\therefore A + B = 60^\circ$... (i)

$$\text{and } \tan(A - B) = \frac{1}{\sqrt{3}}$$

$$\Rightarrow \tan(A - B) = \tan 30^\circ$$

$$\therefore A - B = 30^\circ$$

On solving (i) and (ii), we get
 $\angle A = 45^\circ$... (ii)

66. (2) $\sin \theta = \frac{1}{2} \Rightarrow \sin \theta = \sin 30^\circ \Rightarrow \theta = 30^\circ = \frac{\pi}{6}$

$$\therefore \phi = \frac{\pi}{2} - \frac{\pi}{6} = \frac{3\pi - \pi}{6} = \frac{\pi}{3}$$

$$\therefore \sin \phi = \sin \frac{\pi}{3} = \frac{\sqrt{3}}{2}$$

67. (1) $t^2 - 4t + 1 = 0 \Rightarrow t - 4 + \frac{1}{t} = 0$

$$\Rightarrow t + \frac{1}{t} = 4 \quad \dots (i)$$

On squaring both sides,

$$t^2 + \frac{1}{t^2} + 2 = 16$$

$$\Rightarrow t^2 + \frac{1}{t^2} = 14 \quad \dots (ii)$$

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

$$= 4(14 - 1) = 4 \times 13 = 52$$

68. (2) Here, $\sqrt[3]{a} + \sqrt[3]{b} = \sqrt[3]{c}$

$$\Rightarrow a^{\frac{1}{3}} + b^{\frac{1}{3}} = c^{\frac{1}{3}} \quad \dots (i)$$

On cubing both sides,

$$(a^{\frac{1}{3}} + b^{\frac{1}{3}})^3 = (c^{\frac{1}{3}})^3$$

$$\Rightarrow a + b + 3a^{\frac{1}{3}} \cdot b^{\frac{1}{3}} (a^{\frac{1}{3}} + b^{\frac{1}{3}}) = 0$$

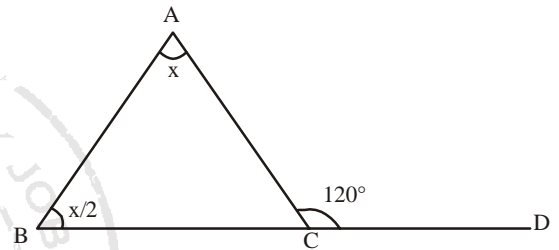
$$\Rightarrow a + b - c = -3a^{\frac{1}{3}} b^{\frac{1}{3}} c^{\frac{1}{3}} \quad (\text{from eq. i})$$

Again on cubing both sides,

$$(a + b - c)^3 = -27abc$$

$$\therefore (a + b - c)^3 + 27abc = 0$$

69. (4) Here, $\angle ACD = 120^\circ$ and



$$\angle ABC = \frac{1}{2} \angle CAB$$

Now, $\angle ACB + \angle ACD = 180^\circ$ (Linear pair)

$$\Rightarrow \angle ACB + 120^\circ = 180^\circ \Rightarrow \angle ACB = 60^\circ$$

Let $\angle CAB$ be x. Then, $\angle ABC = \frac{1}{2}x$

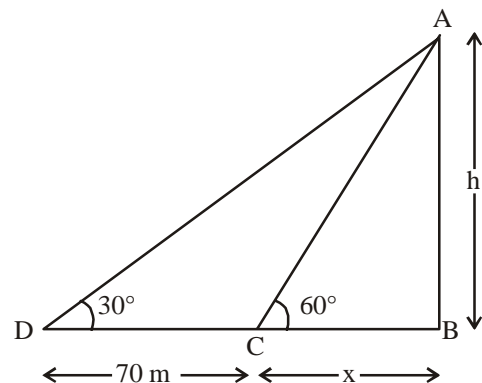
In $\triangle ABC$,

By angle sum property,

$$x + \frac{1}{2}x + 60^\circ = 180^\circ \Rightarrow \frac{3}{2}x = 120^\circ \Rightarrow x = \frac{120^\circ \times 2}{3} = 80^\circ$$

$$\therefore \angle ABC = \frac{80^\circ}{2} = 40^\circ$$

70. (2) Let the height of a tower AB be h m and BC = x m





In ΔABC ,

$$\tan 60^\circ = \frac{AB}{BC}$$

$$\Rightarrow \sqrt{3} = \frac{h}{x} \Rightarrow x = \frac{h}{\sqrt{3}} \quad \dots(i)$$

Now, in ΔABD

$$\tan 30^\circ = \frac{AB}{BD}$$

$$\Rightarrow \frac{1}{\sqrt{3}} = \frac{h}{x+70}$$

$$\Rightarrow h\sqrt{3} = x + 70$$

$$\Rightarrow h\sqrt{3} = \frac{h}{\sqrt{3}} + 70 \quad \text{(From eq. i)}$$

$$\Rightarrow 3h = h + 70\sqrt{3} \Rightarrow 2h = 70\sqrt{3} \Rightarrow h = 35\sqrt{3} \text{ m}$$

71. (2) Required ratio

$$= \frac{\text{Total expenditure on infrastructure and transport}}{\text{Total expenditure on taxes and interest}}$$

$$= \frac{20+12.5}{10+17.5} = \frac{32.5}{27.5} = \frac{13}{11} = 13:11$$

72. (4) Given, expenditure on advertisement = Rs. 2.10 crore
Per cent difference between expenditure on transport and taxes = $12.5 - 10 = 2.5\%$
 \therefore Amount on difference on expenditure on transport and taxes

$$= \frac{2.10 \times 2.5}{15} = \text{Rs. } 0.35 \text{ crore} = \text{Rs. } 35 \text{ lakh}$$

73. (1) Total expenditure = $20 + 12.5 + 15 + 10 + 5 + 20 + 17.5 = 100$

$$\therefore \text{Total amount} = 100 \times 2.10 = \text{Rs. } 210$$

Expenditure on research and development = 5
and total amount on research and development = $5 \times 2.10 = \text{Rs. } 10.50$

According to the question, $210 = N \times 10.50$

$$\therefore N = \frac{210}{10.50} = 20$$

74. (4) Here, interest on loan = Rs. 2.45 crore
Total amount of expenditure on advertisement, taxes and research and development

$$= \frac{(15+10+5) \times 2.45}{17.5} = \frac{30 \times 2.45}{17.5} = \text{Rs. } 4.2 \text{ crore}$$

75. (2) Expenditure on the interest on loan = 17.5%
Expenditure on transport = 12.5%
 \therefore Required percentage

$$= \left(\frac{17.5 - 12.5}{12.5} \times 100 \right) = \frac{500}{12.5} = 40\%$$

