

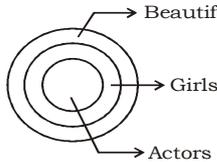
Now the dog is facing the North direction.

25. (C) Clearly, from 1 to 100, there are ten numbers with 3 as the unit's digit (3, 13, 23, 33, 43, 53, 63, 73, 83, 93).

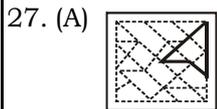
Ten numbers with 3 as the ten's digit (30, 31, 32, 33, 34, 35, 36, 37, 38, 39).

So, required number = 10 + 10 = 20.

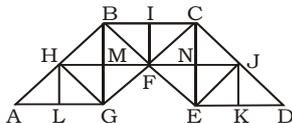
26. (D) Beautiful 1. ✓ 2. ✓



Both (1) and (2) follows



28. (C) The figure may be marked as shown.



The simplest triangles are AHL, LHG, GHM, HMB, GMF, BMF, BIF, CIF, FNC, CNJ, FNE, NEJ, EKJ and JKD i.e. 14 in number.

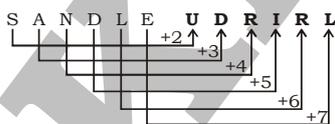
Triangles composed of two components are AGH, BHG, HBF, BFG, HFG, BCF, CJF, CJE, JEF, CFE and JED i.e. 11 in number.

Triangles composed of four components are ABG, CBG, BCE and CED i.e. 4 in number.

Total number of triangles in the given figure = 14 + 11 + 4 = 29.



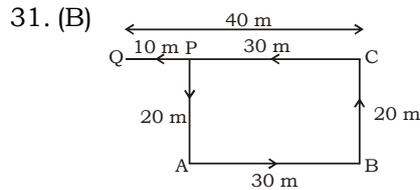
Similarly,



30. (B) Captain is also one of the member of a group.

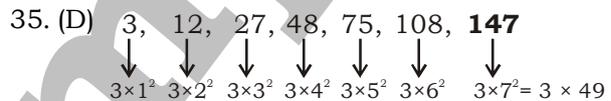
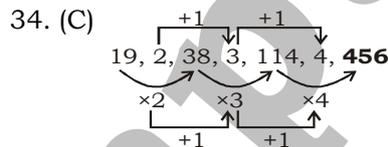
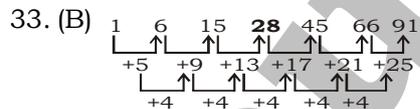
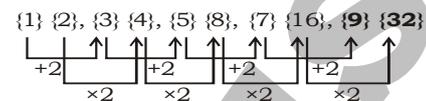
So, we can say that in 16 persons one captain is also included.

$$\therefore \text{The number of captains} = \frac{1200}{16} = 75$$



Distance from the P to Q is 10 metres and direction of Q with reference to P is West.

32. (D) Below mentioned are the two series which we can observe here :-



36. (A) From 1st and IVth dice, after moving in a clockwise direction we have,

Yellow Blue Orange

↓ ↓ ↓
Yellow Rose Red

Here, violet colour is missing as it is opposite to yellow.

37. (B) Let Sunita's present age = x years

Then Reena present age = 2x years

Three years ago

$$(2x - 3) = 3(x - 3)$$

$$2x - 3 = 3x - 9$$

$$\Rightarrow x = 6$$

Reena's age = 2x = 2 × 6 = 12 years.

38. (D) Use the formula $\frac{M_1 D_1 H_1}{W_1} = \frac{M_2 D_2 H_2}{W_2}$.

Where M = Number of cats.

D = Number of days.

W = Number of mice. (Here 'eating mice' is a work)

Now, Let 4 cats would kill 4 mice in x days.

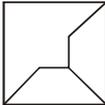
$$\frac{100 \times 100}{100} = \frac{4 \times x}{4} \Rightarrow x = 100 \text{ days.}$$

So, 4 cats would kill 4 mice in 100 days.

39. (C) (6 + 5) - (7 + 4) = 0

$$\text{and } (7 + 6) - (8 + 4) = 1$$

$$\text{Therefore } (11 + 2) - (2 + 0) = 11.$$

40. (B) $(15 + 12)/9 = 3$
and $(44 + 28)/9 = 8$
Therefore, $(64 + 53)/9 = 13$.
41. (C) $(30 - 24) \times 8 = 48$
and $(23 - 12) \times 8 = 88$
Therefore, $(92 - 86) \times 8 = 48$
42. (A) Wheat and Paddy are different from each other but Wheat is a Rabi-Crop.
43. (D)
44. (C) 
45. (C) 46. (D) 47. (D) 48. (B)
49. (A) 50. (C)
51. (D) Ujjain (Avanti, Avantikapuri), an ancient city of Malwa region is in central India on the eastern bank of the Kshipra River. Today it is the part of the state of Madhya Pradesh. Avanti with its capital at Ujjaini is mentioned in Buddhist literature as one of the four great powers along with Vatsa, Kosala and Magadha.
52. (D) Myanmar Government has appointed an independent commission to investigate alleged human rights abuses against the ethnic Rohingya minority. The 4-member panel includes, former Japanese ambassador to the United Nations and former UN Undersecretary-General for Humanitarian Affairs, Kenzo Oshima, former Philippine Vice Foreign Minister, Rosario Manalo, former chief of Myanmar's Constitutional Court, Mya Thein and Aung Tun Thet, an economist and former UN official.
53. (B) Nandgaon is a city and a municipal council in Nashik district in the Indian state of Maharashtra. There are two important dams in Nandgaon taluka. One is Girana Dam under major project and another is Nagya-sakya under medium project.
54. (B) The preamble to the Constitution of India is a brief introductory statement that sets out the guiding purpose and principles of the document. As originally enacted the preamble described the state as a "sovereign democratic republic". In 1976 the Forty second Amendment changed this to read "sovereign socialist secular democratic republic".
55. (D) Jim Corbett National Park is the oldest national park in India. The park has been named after the hunter and conservationist Jim Corbett who played a key role in its establishment. It was established in 1936 as Hailey National Park which is situated in Nainital district of Uttarakhand. The park acts as a protected area for the endangered Bengal tiger of India, the secure survival of which is the main objective of Project Tiger, an Indian wildlife protection initiative.
56. (A) The Ajanta Caves is in Aurangabad district of Maharashtra. The caves include paintings and sculptures considered to be masterpieces of Buddhist religious art (which depict the Jatak tales). The Ajanta cave paintings depict the life of Gautam Buddha.
57. (D) Steel Authority of India Limited is one of the largest state-owned steel-making company based in New Delhi (India) and it is one of the top steel makers in World. Major plants owned by SAIL are located at Bhilai, Bokaro, Durgapur, Rourkela, Burnpur (near Asansol) and Salem.
58. (B) The money bill originates only in the Lok Sabha. No money bill can be introduced in the Lok Sabha without the prior approval of the president.
59. (C) English education was officially introduced in India in 1935 by Governor-General William Bentinck. The English Education Act was a legislative Act of the Council of India in 1835 giving effect to a decision in 1835 by William Bentinck.
60. (C) 'Part III - Fundamental Rights' is a charter of rights contained in the Constitution of India. It guarantees civil liberties such that all Indians can lead their lives in peace and harmony as citizens of India. These include individual rights which is common to most liberal democracies such as equality before law, freedom of speech, expression and peaceful assembly, freedom to practice one's own religion, and the rights by means of writs such as habeas corpus.
62. (D) Disposable income is total personal income minus personal current taxes. In national accounts definitions, personal income minus direct taxes equals disposable personal income.
64. (A) The modern Indian Forest Service was created on 1st July 1966 under the All India Services Act 1951 for protection, conservation and regeneration of forest resources. It is one of the three All India Services of the Government of India.
65. (A) Awards won by Indian films in the 3rd BRICS Film Festival, Durban, South Africa.
Best Actress: Bhanita Das, Village Rockstars
Best Film: Newton by Amit Masurkar
Special Jury Award: Village Rockstars by Rima Das
67. (B) Ibn Batuta (also known as Shams-ud-din) was a Berber Muslim Moroccan explorer. He was known for his extensive travelling.

- 73.(D) Shripad Yesso Naik has laid the foundation stone of the 2nd Phase of Construction of North East Institute of Ayurveda & Homeopathy (NEIAH) at Shillong, Meghalaya.
- 74.(C) Rajasthan will soon have its first 'cow sanctuary', a shelter for 10,000 bovines spread over an area of more than 220 hectares in Bikaner district. "This will be the first cow sanctuary in Rajasthan and will be situated in Bikaner's Napasar.
- 77.(B) Oil-to-telecom conglomerate Reliance Industries Ltd (RIL) has surpassed India's biggest software services firm Tata Consultancy Services Ltd (TCS) to become the country's most valued firm in terms of Market Capitalization—a first since April.
- RIL has a market cap of ₹ 7.46 trillion.
 - TCS was valued at ₹ 7.39 trillion.
78. (B) The 'NOSHAD' attribute in HTML specifies that a horizontal line should render in one solid color (on shaded), instead of a shaded color. So, it displays the line in red.
- 79.(C) United States elevates India's status to ease export controls for hightechnology product sales.
80. (B) The Minimum Wages Act, 1948 was enacted to safeguard the interests of workers, mostly in the unorganised sector for the fixation of minimum wages in certain specified employments. It binds the employers to pay their workers the minimum wages fixed under the Act from time to time. Under the Act, both the Central Government and the State Governments are the appropriate Governments to fix, revise, review and enforce the payment of minimum wages to workers in respect of 'scheduled employments' under their respective jurisdictions.
81. (C) Changes in weather involve air movements, formation of clouds, and precipitation. Energy is needed to make all these things happen. The energy comes from the sun. Heat energy enters and moves through the atmosphere in three different ways. One of the way through which heat energy is transferred is radiation. Hot bodies (The sun) radiate their energy mainly in the form of short waves. These short waves are seen as visible light. Cooler bodies such as Earth radiate their energy as longer waves.
82. (C) A continent sized hole has been formed over Antarctica as a result of damage to the ozone layer. Most of the ozone is formed in the stratosphere over the equator and spreads by winds around the globe. Icy particles in polar stratospheric clouds catalyse the release of chlorine (from CFC) which destroys ozone. The formation of Ozone hole is maximum because in winter there is exceptionally cold.
83. (B) Eugen Steinach discovered the sex hormones in 1922. He conducted experiments in the transplantation of a male guinea pig's testes into a female and the castration of the male. Now the testes secretion is known as testosterone resulted in the female guinea pig developing male sexual behaviour such as mounting the partner. This led Steinach to theorize that the gland's secretions were responsible for sexuality.
84. (C) The most prevalent bulk material for solar cells is crystalline silicon (abbreviated in a group as c-Si). It is also known as "solar grade silicon".
85. (B) All true crabs have 10 legs that are arranged in pairs. The front most is modified into pincers and other four pairs are used for locomotion. For some swimming crabs, the hindmost pair of legs is flattened to form paddles.
86. (C) A hydrogen balloon floats up because weight of balloon is less than the weight of air displaced by it. When an object is less dense than a fluid, then the object will float as the buoyant force exerted on the object by the fluid is greater than the force of gravity on the object.
89. (C) Robert Koch was a German physician. He became famous for isolating Bacillus anthracis (1877), the Tuberculosis bacillus (1882) and Vibrio cholerae (1883) and his development of Koch's postulates. He was awarded the Nobel Prize in Physiology or Medicine in 1905 for his findings in tuberculosis. He is considered one of the founders of microbiology.
93. (D) Open circulatory system is the one in which blood does not circulate only inside blood vessels, but it also falls in cavities that irrigate tissues. The internal organs are suspended in a network of blood-filled sinuses or open spaces which collectively form the haemocoel.
97. (C) Polytetrafluoroethylene (PTFE) is a synthetic fluoropolymer of tetrafluoroethylene that finds numerous applications. The best known brand name of PTFE is Teflon. PTFE is used as a non-stick coating for pans and other cookware as it is hydrophobic and possesses fairly high heat resistance.
99. (C) It is because the night side of Earth will radiate infra-red radiation (heat) back into the space. When there is cloud cover, the clouds act like a blanket and trap the heat just like a blanket traps heat close to our body.

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101. (A) Sales tax = $\frac{120}{5} = ₹ 24$
 Remaining amount = $(120 - 24) = ₹ 96$
 Profit = $96 \times \frac{1}{3} = ₹ 32$
 Cost price = $(96 - 32) = ₹ 64$

102. (A) $12.5\% = \frac{1}{8}$, $8\% = \frac{2}{25}$

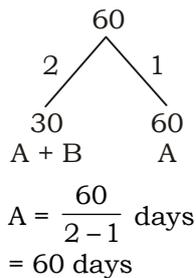
	Old	New
Wages →	8	9
Hours →	25	23
Weekly wages →	200	207

↖ +7 ↗

Percentage change in the weekly wages
 $= \frac{7}{200} \times 100 = \text{increases by } 3.5\%$

103. (B) One way walking + one way riding time = 37 minutes ... (i)
 & Two ways walking time = 55 minutes
 \therefore One way walking time = $\frac{55}{2} = 27.5$ min.
 \therefore From (i), One way riding time = $37 - 27.5 = 9.5$ minutes
 \therefore Two ways riding time = $9.5 \times 2 = 19$ minutes

104. (B) A does $\frac{1}{3}$ work in 20 days
 So, A does the whole work in 20×3 days



105. (B) $66\frac{2}{3}\% = \frac{2}{3}$

Present	Beginning of 3rd year
3	5
3	5
9	25
↓ × 3750	↓ × 3750
33750	93750

106. (C) Let the original fraction be $\frac{a}{b}$

$$\frac{a^2 \times \frac{5}{4}}{b^2 \times \frac{4}{5}} = \frac{5}{8} \times \frac{a}{b}$$

$$\left(\frac{a}{b}\right)^2 \times \frac{25}{16} = \frac{5}{8} \times \left(\frac{a}{b}\right)$$

$$\left(\frac{a}{b}\right) = \frac{2}{5}$$

$$a \times b = 2 \times 5 = 10$$

107. (D) Let the opponent got x votes then winner got $x + 200$ votes.
 ATQ,

$$80\% - 120 = x + 200 + x$$

$$80\% = x + 200 + x + 120$$

\downarrow 41% \downarrow 39%
 \swarrow 2% \searrow

2% of total votes = $200 - 120 = 80$
 Total votes = 4,000
 Votes for the losing candidate

$$= \frac{39}{100} \times 4000 - 120 = 1440$$

Total votes cast = $\frac{4}{5} \times 4,000 = 3,200$

Required % = $\frac{1440}{3200} \times 100 = 45\%$

108. (A) Let the number of water taps = x
 \therefore the number of outlet taps = $(12 - x)$
 According to the question :-

$$\Rightarrow \frac{x}{6} - \frac{(12 - x)}{12} = \frac{1}{4}$$

$$\Rightarrow \frac{2x - 12 + x}{12} = \frac{1}{4}$$

$$\Rightarrow 3x - 12 = 3$$

$$\Rightarrow 3x = 15$$

$$\Rightarrow x = 5$$

Number of water taps = 5

109. (B) H.C.F of numbers = 13

\therefore Numbers = $13x$ and y

\therefore L.C.M = $13xy = 455$

$$\Rightarrow xy = 35 = 5 \times 7$$

\therefore required number = $13 \times 7 = 91$

110. (B) Equation

$$= [(7^{-1} - 8^{-1})^{-1} - (3^{-1} - 4^{-1})^{-1}]$$

$$= \left[\left(\frac{1}{7} - \frac{1}{8} \right)^{-1} - \left(\frac{1}{3} - \frac{1}{4} \right)^{-1} \right]$$

$$= \left[\left(\frac{8-7}{56} \right)^{-1} - \left(\frac{4-3}{12} \right)^{-1} \right]$$

$$= \left[\left(\frac{1}{56} \right)^{-1} - \left(\frac{1}{12} \right)^{-1} \right]$$

$$= 56 - 12$$

$$= 44$$

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$$10t = \frac{t}{2} \left[2 \times 8 + (t-1) \frac{1}{2} \right]$$

$$20 = 16 + \frac{t-1}{2}$$

$$t-1 = 8 \Rightarrow t = 9 \text{ hours}$$

Distance travelled by 1st car in

$$9 \text{ hours} = 9 \times 10 = 90 \text{ kms.}$$

120. (B) Cost price (Pen + Register) = ₹ 371

$$12\% = \frac{3}{25}$$

Let the cost of Register = 25 units

∴ The cost of Pen = (25 + 3) = 28 units

ATQ,

$$(25 + 28) \text{ units} = ₹ 371$$

$$1 \text{ unit} = \frac{371}{53}$$

$$28 \text{ units} = \frac{371}{53} \times 28 = ₹ 196$$

121. (A) Ram → 20 ——— 3

Ram + Shyam → 15 ——— 4

Efficiency Ratio of Ram & Shyam

$$3 : 1 \rightarrow 4$$

$$\downarrow \times 100$$

$$400$$

Share of each → ₹ 300, ₹ 100

122. (B) Let the salary of Nitya = 100

Vivek	:	Nitya	:	A + B
50		100		150
+↓50%		-↓25%		+↓50
75		125		200

Percentage increase in combined salaries

$$= \frac{50}{150} \times 100 = 33.33\%$$

123. (A) Let the distance be x km.

$$\frac{x}{6-1.2} + \frac{x}{6+1.2} = 1$$

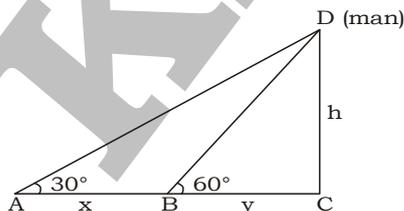
$$\Rightarrow x \left(\frac{7.2+4.8}{4.8 \times 7.2} \right) = 1$$

$$\Rightarrow x = \frac{4.8 \times 7.2}{12.0} \text{ km}$$

$$= 4.8 \times .6 \text{ km}$$

$$= 2.88 \text{ km}$$

124. (C)



$$\tan 60^\circ = \frac{h}{y}$$

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

$$\text{and } \tan 30^\circ = \frac{h}{x+y}$$

$$\Rightarrow \frac{1}{\sqrt{3}} = \frac{y\sqrt{3}}{x+y} \quad [\text{using (i)}]$$

$$\therefore 3y = x + y$$

$$\Rightarrow 2y = x \Rightarrow y = \frac{x}{2}$$

∴ Time taken to cover a distance from A to B = 20 minutes

∴ time taken to cover a unit distance

$$= \frac{20}{x} \text{ minute}$$

$$\therefore \text{For distance 'y' time taken} = \frac{20}{x} \times y$$

$$= \frac{20}{x} \times \frac{x}{2} = 10 \text{ minutes}$$

125. (B) Let the length of each of the equal side of the ground be x metre

Base of the play ground = 24 m

$$\therefore \text{Area of ground} = \frac{15}{25} \times 100 = 60 \text{ m}^2$$

But the ground has isosceles shape

$$\therefore \text{Area of ground} = \frac{a}{4} \sqrt{4x^2 - a^2}$$

[where a = base, x = each of the equal sides]

$$\therefore \frac{24}{4} \sqrt{4x^2 - (24)^2} = 60$$

$$\Rightarrow 4x - (24)^2 = (10)^2$$

$$\Rightarrow 4x^2 - 576 = 100$$

$$\Rightarrow 4x^2 - 676$$

$$\Rightarrow x^2 = \frac{676}{4} = 169$$

$$\Rightarrow x = 13$$

∴ Length of each of the equal side

$$x = 13 \text{ m}$$

126. (C) $(a^2 - b^2) \sin \theta + 2ab \cos \theta = a^2 + b^2$

$$\text{or } \left(\frac{a^2 - b^2}{a^2 + b^2} \right) \sin \theta + \left(\frac{2ab}{a^2 + b^2} \right) \cdot \cos \theta = 1$$

On comparing it by

$$\sin^2 \theta + \cos^2 \theta = 1$$

$$\text{we get } \sin \theta = \frac{a^2 - b^2}{a^2 + b^2} \quad \&$$

$$\cos \theta = \frac{2ab}{a^2 + b^2}$$

$$\therefore \tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{a^2 - b^2}{2ab} = \frac{1}{2ab} (a^2 - b^2)$$

127. (A) $x + \frac{1}{4x} = \frac{3}{2}$

multiplying by 2 both the sides.

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

⇒ cubing both the sides

$$8x^3 + \frac{1}{8x^3} + 3 \times 2x \times \frac{1}{2x} \left(2x + \frac{1}{2x}\right) = 27$$

$$\Rightarrow 8x^3 + \frac{1}{8x^3} = 27 - 3 \times 3$$

$$\Rightarrow 8x^3 + \frac{1}{8x^3} = 18$$

128. (A) Let the original no. be x

ATQ,

$$7.2 \times x - 0.72 \times x = 2592$$

$$\Rightarrow x(7.2 - 0.72) = 2592$$

$$\Rightarrow x \times 6.48 = 2592$$

$$\Rightarrow x = \frac{2592}{6.48}$$

$$\therefore x = \frac{2592 \times 100}{648} = 400$$

129. (D) Let the rate of interest = $R\%$ /annum

$$\text{Formula, } A = P \left(1 + \frac{R}{100}\right)^T$$

$$2420 = P \left(1 + \frac{R}{100}\right)^2 \quad \dots(i)$$

$$2662 = P \left(1 + \frac{R}{100}\right)^3 \quad \dots(ii)$$

equation (ii) divided by (i)

$$1 + \frac{R}{100} = \frac{2662}{2420}$$

$$\Rightarrow \frac{R}{100} = \frac{2662}{2420} - 1$$

$$\Rightarrow \frac{R}{100} = \frac{2662 - 2420}{2420} = \frac{242}{2420} = \frac{1}{10}$$

$$\Rightarrow R = \frac{1}{10} \times 100 = 10\%$$

130. (B) Area of $\Delta = \sqrt{s(s-a)(s-b)(s-c)}$

$$s = \frac{13+14+15}{2} = 21$$

$$\therefore \text{Area of } \Delta = \sqrt{21 \times 8 \times 7 \times 6} = 84$$

$$r = \frac{\Delta}{S} = \frac{84}{21} = 4$$

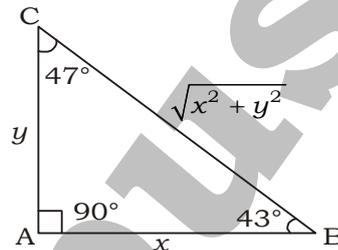
Therefore, $(\Delta, r) = (84, 4)$

131. (B) Given $a = -5$, $b = -6$ and $c = 10$

$$\therefore a + b + c = (-5) + (-6) + 10 = -1$$

$$\begin{aligned} &= \frac{a^3 + b^3 + c^3 - 3abc}{ab + bc + ca + a^2 - b^2 - c^2} \\ &= \frac{(a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)}{-(a^2 + b^2 + c^2 - ab - bc - ca)} \\ &= \frac{-1}{-1} = 1 \end{aligned}$$

132. (B) $\cos 43^\circ = \frac{x}{\sqrt{x^2 + y^2}}$



$$\tan 47^\circ = \frac{x}{y}$$

133. (D) Squaring both the sides:

$$\left(\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}}\right)^2 = \left(\frac{10}{3}\right)^2$$

$$\Rightarrow \left(\frac{x+y}{\sqrt{xy}}\right)^2 = \left(\frac{10}{3}\right)^2$$

$$\Rightarrow (x+y)^2 = \frac{100}{9} xy$$

So, $xy = 9$ because $x + y = 10$ given.

134. (C) $\sin^2 1^\circ + \sin^2 3^\circ + \dots + \sin^2 85^\circ + \dots + \sin^2 89^\circ = \sin^2 1^\circ + \dots + \cos^2 1^\circ$ ($\sin^2 89^\circ = \cos^2 1^\circ$)
[$\therefore \sin(90^\circ - \theta) = \cos \theta$]

It is a series of AP

$$89 = 1 + (n-1) \times 2 \therefore n = 45$$

$$\begin{aligned} &\sin^2 45^\circ \\ &\swarrow \quad \searrow \\ &22 \text{ terms} \quad 22 \text{ terms} \\ &= 22 + \sin^2 45^\circ = 22 \frac{1}{2} \end{aligned}$$

135. (A) $\angle ROQ = \angle POS$ (vertically opposite angles)

$$\therefore a = 4b$$

$$75^\circ + b + a = 180^\circ$$

$$\Rightarrow b + 4b = 180^\circ - 75^\circ = 105^\circ$$

$$\Rightarrow b = 21^\circ$$

$$\therefore a = 4b$$

$$= 4 \times 21$$

$$= 84^\circ$$

$$a + 2c = 180^\circ$$

$$\Rightarrow 2c = 180^\circ - 84^\circ$$

$$= 96^\circ$$

$$\Rightarrow c = 48^\circ$$

$$\therefore a = 84^\circ, b = 21^\circ, c = 48^\circ$$

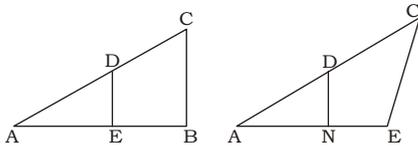
136. (A) $x = 22 + 8\sqrt{6}$

$$\begin{aligned} &\downarrow \\ &2ab \\ &2 \times 4 \times \sqrt{6} \\ x &= (4 + \sqrt{6})^2 \Rightarrow \sqrt{x} = 4 + \sqrt{6} \end{aligned}$$

137. (B) $\sec\theta = a + \frac{1}{4a}$, $\cos\theta = \frac{4a}{4a^2 + 1}$

$$\begin{aligned} \tan\theta + \sec\theta &= \frac{4a^2 - 1}{4a} + \frac{4a^2 + 1}{4a} \\ &= \frac{4a^2 - 1 + 4a^2 + 1}{4a} = 2a \end{aligned}$$

138. (D)



In $\triangle ABC$,
 $\therefore DE \parallel BC$

$$\therefore \frac{AD}{DC} = \frac{AE}{EB} = \frac{4}{5} = 4 : 5 \quad \dots(i)$$

in $\triangle AEC$
 $EC \parallel ND$

$$\therefore \frac{AN}{NE} = \frac{AD}{DC} = \frac{4}{5} = 4 : 5 \quad \dots(ii)$$

Let $AE = 40$
 $\therefore EB = 50$ and

$$\therefore EN = 40 \times \frac{5}{9} = \frac{200}{9}$$

$$EN : EB = \frac{200}{9} : 50 = 4 : 9$$

139. (A) $x\left(3 - \frac{2}{x}\right) = \frac{3}{x}$

$$3x - 2 = \frac{3}{x}$$

$$3\left(x - \frac{1}{x}\right) = 2$$

$$\left(x - \frac{1}{x}\right) = \frac{2}{3}$$

squaring both sides,

$$x^2 + \frac{1}{x^2} - 2 \times x \times \frac{1}{x} = \frac{4}{9}$$

$$x^2 + \frac{1}{x^2} = \frac{4}{9} + 2 = \frac{22}{9}$$

140. (C) Volume of right prism
= Area of the base \times height
 $\Rightarrow 10380 = 173 \times h$

$$\Rightarrow h = \frac{10380}{173} = 60 \text{ cm}$$

Now, Area of triangle = $\frac{\sqrt{3}}{4} \times (\text{Side})^2$

$$\Rightarrow 173 = \frac{\sqrt{3}}{4} \times (\text{Side})^2$$

$$\therefore \text{Side} = \sqrt{\frac{173 \times 4}{\sqrt{3}}} = \sqrt{\frac{173 \times 4}{1.73}} = 20 \text{ cm}$$

$$\therefore \text{Perimeter} = 3 \times 20 = 60 \text{ cm}$$

$$\begin{aligned} \therefore \text{Area of the lateral surface} \\ &= \text{Perimeter base} \times \text{height} \\ &= 60 \times 60 = 3600 \text{ sq. cm.} \end{aligned}$$

141. (B) Let outer radii = R_1 and inner radii = R_2
 $\therefore 2\pi R_1 h - 2\pi R_2 h = 44$
[Where, h = height of pipe]

$$\Rightarrow 2 \times \frac{22}{7} \times 14[R_1 - R_2] = 44$$

$$\Rightarrow R_1 - R_2 = \frac{1}{2} = 0.5 \quad \dots(i)$$

$$\text{and } \pi(R_1^2 - R_2^2) \times h = 99 \quad (\text{Given})$$

$$\Rightarrow \frac{22}{7} (R_1 + R_2) (R_1 - R_2) \times 14 = 99$$

$$\Rightarrow 4 \times 0.5(R_1 + R_2) = 9$$

$$R_1 + R_2 = 4.5 \quad \dots(ii)$$

On adding (i) and (ii)

$$2R_1 = 5$$

$$\Rightarrow R_1 = 2.5 \text{ cm}$$

142. (B) Distance covered in one revolution = $2\pi R$

$$= \left(2 \times \frac{22}{7} \times 50\right) \text{ m} = \frac{2200}{7} \text{ m}$$

\therefore Distance covered in 21 revolution

$$= \left(\frac{2200}{7} \times 21\right) \text{ m} = 6600 \text{ m}$$

$$\text{Speed of the man} = \left(12 \times \frac{5}{18}\right) \text{ m/sec}$$

$$= \frac{10}{3} \text{ m/sec}$$

$$\therefore \text{time} = \left(6600 \times \frac{3}{10}\right) \text{ second} = \left(\frac{1980}{60}\right) \text{ min.}$$

$$= 33 \text{ minutes}$$

143. (D) In $\triangle ABC$ and $\triangle ADE$,

$$\angle BAC = \angle DAE$$

$$= 180^\circ - (75^\circ + 65^\circ) = 40^\circ$$

$$\angle AED = 75^\circ = \angle ABC$$

$$\therefore \triangle AED \sim \triangle ABC$$

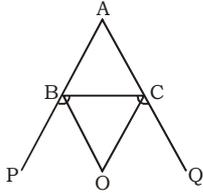
$$\therefore \frac{DE}{BC} = \frac{AE}{AB} = \frac{AD}{AC} \Rightarrow \frac{2}{3} = \frac{12}{AB}$$

$$\Rightarrow AB = 18 \text{ cm}$$

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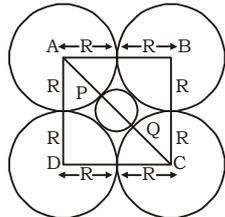
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144. (A)



$$\angle BOC = 90 - \frac{\angle A}{2} = 90^\circ - \frac{1}{2} \angle A$$

145. (C)



Let radius of inner circle = r
 A, B, C, D are the centres of the four outer circles
 \therefore ABCD is a square of side $2R$
 $\therefore AC = \sqrt{2}$ (side) = $\sqrt{2} (2R) = 2\sqrt{2} R$
 $\therefore PQ = AC - AP - CQ = 2\sqrt{2}R - R - R$
 $= 2R(\sqrt{2} - 1)$
 $\Rightarrow 2r = 2R(\sqrt{2} - 1)$
 $\Rightarrow r = (\sqrt{2} - 1)R$

146. (B) Required number of girls

$$= 1200 \times \frac{14}{100} = 168$$

$$= 168$$

147. (A)

148. (B) Required ratio

$$= \frac{1800 \times \frac{35}{100} - 1200 \times \frac{30}{100}}{1200 \times \frac{30}{100}}$$

$$= \frac{630 - 360}{360} = \frac{270}{360}$$

$$= 3 : 4$$

149. (D) Required percent = $\frac{168 - 48}{48} \times 100$

$$= \frac{120}{48} \times 100 = 250\%$$

150. (D) Required difference

$$= 1200 \times \frac{30}{100} - \left(1800 \times \frac{13}{100} - 1200 \times \frac{13}{100} \right)$$

$$= 360 - (234 - 156)$$

$$= 360 - 78$$

$$= 282$$

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MEANINGS IN ALPHABETICAL ORDER

Word	Meaning in English	Meaning in Hindi
Account	A record or narrative description of past events	वर्णन / ब्यौरा
Alternate	(of two things) happening or following one after the other regularly	दूसरा
Alternative	Serving or used in place of another/substitute	वैकल्पिक
Demonstrate	Give an exhibition of to an interested audience	प्रदर्शन करना
Discourse	Extended verbal expression in speech or writing	उपदेश, प्रवचन
Equanimity	Calm emotions when dealing with problems or pressure	आत्मसंवरण, मनोभाव संतुलन
Explicit	Precisely and clearly expressed or readily observable	सुस्पष्ट
Exterminate	Destroy completely, as if down to the roots	पूर्णतया नष्ट करना
Histrionic	Too emotional or dramatic	अतिभावुक, नाटकीय
House in order	Behaviour before you try to criticize somebody else	करने से पहले अपने काम को संगठित करना या अपने व्यवहार में सुधार करना
Implicit	Implied though not directly expressed; inherent in the nature of something	अप्रत्यक्ष
In pursuit of something	The act of following or chasing for something	पीछा करना
Indebted	Owing gratitude or recognition to another	ऋणी, कृतज्ञ
Obnoxious	Causing disapproval or protest	घृणित, आपत्तिजनक
Obscure	Not clearly understood or expressed	अस्पष्ट, समझने में कठिन
Pedantic	Narrowly, stodgily, and often ostentatiously learned	आडम्बरपूर्ण
Preoccupation	An idea that preoccupies the mind and holds the attention	अन्यमनस्कता, तन्मयता
Puritan	Someone who adheres to strict religious principles and strict moral rules	अतिधर्मनिष्ठ, नैतिकतावादी
Put your (own)	To organize your own business or improve your own	किसी और की आलोचना
Rise to something	To show that you are able to deal with an unexpected situation, problem, etc.	खुद को योग्य साबित करना
Sanctum	A holy or sacred place	पवित्र स्थान
Seclusion	The state of being away from other people : a secluded state or condition	पृथकता, विरक्तता
Skirmish	A minor short-term fight	मुठभेड़
Stalwart	A person who is loyal to his allegiance	निष्ठावान समर्थक

CPO MOCK TEST - 26 (ANSWER KEY)

- | | | | | | | | |
|---------|---------|---------|----------|----------|----------|----------|----------|
| 1. (C) | 26. (D) | 51. (D) | 76. (B) | 101. (A) | 126. (C) | 151. (A) | 176. (B) |
| 2. (D) | 27. (A) | 52. (D) | 77. (B) | 102. (A) | 127. (A) | 152. (D) | 177. (C) |
| 3. (B) | 28. (C) | 53. (B) | 78. (B) | 103. (B) | 128. (A) | 153. (B) | 178. (B) |
| 4. (D) | 29. (A) | 54. (B) | 79. (C) | 104. (B) | 129. (D) | 154. (D) | 179. (C) |
| 5. (B) | 30. (B) | 55. (D) | 80. (B) | 105. (B) | 130. (B) | 155. (B) | 180. (D) |
| 6. (A) | 31. (B) | 56. (A) | 81. (C) | 106. (C) | 131. (B) | 156. (C) | 181. (B) |
| 7. (D) | 32. (D) | 57. (D) | 82. (C) | 107. (D) | 132. (B) | 157. (B) | 182. (A) |
| 8. (D) | 33. (B) | 58. (B) | 83. (B) | 108. (A) | 133. (D) | 158. (D) | 183. (C) |
| 9. (A) | 34. (C) | 59. (C) | 84. (C) | 109. (B) | 134. (C) | 159. (A) | 184. (B) |
| 10. (D) | 35. (D) | 60. (C) | 85. (B) | 110. (B) | 135. (A) | 160. (A) | 185. (B) |
| 11. (C) | 36. (A) | 61. (C) | 86. (C) | 111. (D) | 136. (A) | 161. (D) | 186. (C) |
| 12. (A) | 37. (B) | 62. (D) | 87. (C) | 112. (A) | 137. (B) | 162. (B) | 187. (C) |
| 13. (B) | 38. (D) | 63. (D) | 88. (C) | 113. (C) | 138. (D) | 163. (B) | 188. (D) |
| 14. (D) | 39. (C) | 64. (A) | 89. (C) | 114. (B) | 139. (A) | 164. (C) | 189. (A) |
| 15. (D) | 40. (B) | 65. (A) | 90. (C) | 115. (B) | 140. (C) | 165. (D) | 190. (B) |
| 16. (A) | 41. (C) | 66. (A) | 91. (B) | 116. (C) | 141. (B) | 166. (B) | 191. (C) |
| 17. (C) | 42. (A) | 67. (B) | 92. (D) | 117. (B) | 142. (B) | 167. (B) | 192. (D) |
| 18. (D) | 43. (D) | 68. (C) | 93. (D) | 118. (B) | 143. (D) | 168. (D) | 193. (C) |
| 19. (B) | 44. (C) | 69. (B) | 94. (C) | 119. (A) | 144. (A) | 169. (D) | 194. (B) |
| 20. (D) | 45. (C) | 70. (A) | 95. (D) | 120. (B) | 145. (C) | 170. (A) | 195. (C) |
| 21. (B) | 46. (D) | 71. (B) | 96. (D) | 121. (A) | 146. (B) | 171. (D) | 196. (D) |
| 22. (A) | 47. (D) | 72. (A) | 97. (C) | 122. (B) | 147. (A) | 172. (D) | 197. (B) |
| 23. (D) | 48. (B) | 73. (D) | 98. (B) | 123. (A) | 148. (B) | 173. (C) | 198. (C) |
| 24. (B) | 49. (A) | 74. (C) | 99. (C) | 124. (C) | 149. (D) | 174. (A) | 199. (A) |
| 25. (C) | 50. (C) | 75. (C) | 100. (A) | 125. (B) | 150. (D) | 175. (B) | 200. (A) |

151. (A) Replace 'little' by 'a little'. 'Little' means 'hardly any' whereas 'a little' means 'at least some'.
152. (D) No error.
153. (B) Replace 'neither of us' by 'none of us'. 'Neither' is used for two persons whereas 'None' is used for more than two.
154. (D) No error.
155. (B) Since 'a' is used before fractions, thus, add 'a' before 'half'.

