



Centres at: ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ NARELA

ARITHMETIC

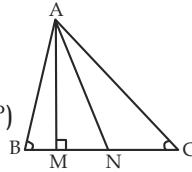
51.(C) Given

$$\angle B = 65^\circ$$

$$\angle C = 33^\circ$$

$$\text{So, } \angle A = 180^\circ - (65^\circ + 33^\circ)$$

$$\angle A = 82^\circ$$



Given that AN is the bisector of $\angle A$

$$\text{So, } \angle BAN = \angle NAC = \frac{82^\circ}{2} = 41^\circ$$

Now in $\triangle MAC$

$$\angle M = 90^\circ, \angle C = 33^\circ \text{ and } \angle NAC = 41^\circ$$

$$\text{So, } \angle MAN = 180^\circ - (90^\circ + 33^\circ + 41^\circ)$$

$$180^\circ - 164^\circ = 16^\circ$$

52. (A) $AP \times PB = CP \times PD$

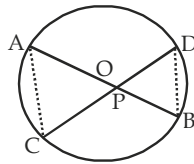
$$\text{Let } AP = x$$

$$x \times (16 - x) = 6 \times 8$$

$$\Rightarrow x^2 - 16x + 48 = 0$$

$$(x - 12)(x - 4) = 0$$

$$x = 12 \text{ or } x = 4$$



53. (B) According to the question:

$$\text{Combined average} = \frac{32 \times 60 + 40 \times 33}{72}$$

$$= \frac{3240}{72}$$

$$\text{Combined avg} = 45$$

54. (B) Given that:

$$r : h = 5 : 12$$

$$\text{Let } r = 5x \text{ \& } h = 12x$$

$$\text{Volume of the cone} = 314 \text{ cm}^3$$

$$\text{Slant height} = \sqrt{(5x)^2 + (12x)^2}$$

$$= 13x$$

$$\text{Now, } \frac{1}{3} \times \pi \times (5x)^2 \times 12x = 314$$

$$\Rightarrow 100x^3 \times 3.14 = 314$$

$$\Rightarrow x^3 = 1 \Rightarrow x = 1$$

$$\text{So, Slant height} = 13x$$

$$= 13 \times 1 = 13 \text{ cm.}$$

55. (B) According to the question volume of the cone and cylinder will be same.

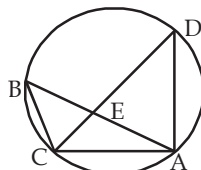
$$\Rightarrow \frac{1}{3} \pi r^2 h_1 = \pi r^2 h_2$$

$$h_2 = 7 \text{ cm}$$

$$h_1 = 3h_2 = 3 \times 7 = 21 \text{ cm.}$$

56. (A) $\triangle CBE \sim \triangle ABE$

$$[\because \angle CBE = \angle ADE]$$



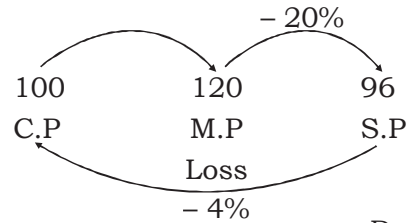
$$\Rightarrow \angle CEB = \angle AED \text{ (opposite)}$$

$$\Rightarrow \frac{\text{area}(\triangle CBE)}{\text{area}(\triangle ADE)} = \left(\frac{CB}{AD}\right)^2 = \left(\frac{12}{24}\right)^2 = \frac{1}{4}$$

$$\Rightarrow \frac{\text{area}(\triangle CBE)}{\text{area}(\triangle ADE)} = \frac{1}{4}$$

57.(B) According to the question:

Let the cost price = 100



58. (A) From $\triangle OAB$

and $\triangle OCD$

$$\angle DOC = \angle BOA$$

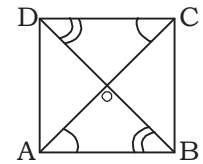
(opposite)

$$\angle OCD = \angle OAB \text{ (alternate)}$$

$$\& \angle ODC = \angle OBA \text{ (alternate)}$$

So, $\triangle OAB$ and $\triangle OCD$ are similar.

$$\therefore \frac{OC}{OA} = \frac{OD}{OB} = \frac{DC}{AB}$$



59. (C) $3^{x+y} = 81$

$$3^{x+y} = 3^4$$

$$\Rightarrow x + y = 4 \quad \dots(1)$$

$$\& 81^{x-y} = 3$$

$$3^{4(x-y)} = 3^1$$

$$4^{(x-y)} = 1 \quad \dots(2)$$

Multiplying by 4 in (1) then adding (2)

$$4x + 4y = 16$$

$$\frac{4x - 4y = 1}{8x = 17} \Rightarrow x = \frac{17}{8}$$

60.(B) In $\triangle BCG$

$$BG + GC > BC$$

$$\Rightarrow \frac{2}{3}BE + \frac{2}{3}FC > BC$$

$$\Rightarrow BE + CF > \frac{3}{2} BC \quad \dots(i)$$

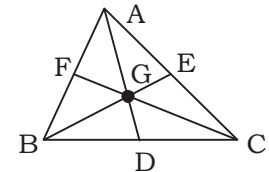
$$\& CF + AD > \frac{3}{2} CA \quad \dots(ii)$$

$$\& AD + BE > \frac{3}{2} AB \quad \dots(iii)$$

adding (i) + (ii) + (iii)

$$2(AD + BE + CF) > \frac{3}{2} (AB + BC + CA)$$

$$(AD + BE + CF) > \frac{3}{4} (AB + CB + CA)$$





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61.(D) Surface areas of the three adjacent faces of a cuboid are

$$\begin{aligned} p, q, r &\Rightarrow p = lb, q = bh, r = lh \\ \Rightarrow lb \times bh \times lh &= pqr \\ \Rightarrow l^2 \times b^2 \times h^2 &= pqr \\ (lbh)^2 &= pqr \\ lbh &= \sqrt{pqr} \end{aligned}$$

62.(A) According to the question:

Let the wire = perimeter of square
 $= 4\sqrt{121} = 4 \times 11 = 44 \text{ cm}$
 So, Circumference of circle = 44 cm
 $2\pi r = 44 \Rightarrow r = \frac{44 \times 7}{2 \times 22} = 7 \text{ cm}$

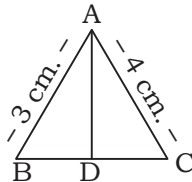
Area of circle = $\pi r^2 = \frac{22}{7} \times 7 \times 7 = 154 \text{ cm}^2$

63. (C) AD is the bisector

$\triangle ABD$ and $\triangle ADC$ are similar.

So, $\frac{AB}{BD} = \frac{AC}{DC}$

$\frac{BD}{DC} = \frac{AB}{AC} = \frac{3}{4} = 3 : 4$



64. (D) Length of diagonal = $a\sqrt{2}$

where a = a side

$a\sqrt{2} = 15\sqrt{2} \Rightarrow a = 15$

Area $\Rightarrow (15)^2 = 225 \text{ cm}^2$

65. (D) According to the question:

$650 = P \left(1 + \frac{R}{100} \right) \dots (i)$

$676 = P \left(1 + \frac{R}{100} \right)^2 \dots (ii)$

Dividing (ii) by (i)

$\frac{676}{650} = 1 + \frac{R}{100} \Rightarrow \frac{R}{100} = \frac{26}{650} \Rightarrow R = 4\%$

Putting the value of R in (i)

So, $P \left(1 + \frac{4}{100} \right) = 650$

$P = \frac{650 \times 100}{104} = 625$

66. (B) According to the question:

Difference = Principal $\left(\frac{\text{Rate}}{100} \right)^2$

$D = 1000 \left(\frac{5}{100} \right)^2$

$= \frac{1000 \times 25}{100 \times 100} = ₹ 2.50$

67.(C) $\frac{\sin x}{1 + \cos x} + \frac{\sin x}{1 - \cos x} = 4$

$\Rightarrow \frac{\sin x - \sin x \cdot \cos x + \sin x + \sin x \cdot \cos x}{1 - \cos^2 x} = 4$

$\Rightarrow \frac{2\sin x}{\sin^2 x} = 4 \quad (1 - \cos^2 x = \sin^2 x)$

$\Rightarrow \sin x = \frac{1}{2}$

$= x = 30^\circ$

68.(*) $a = \sin(\pi/4) = \sin 45^\circ = \frac{1}{\sqrt{2}}$

$b = \cos(\pi/4) = \cos 45^\circ = \frac{1}{\sqrt{2}}$

$c = \operatorname{cosec}(\pi/4) = \operatorname{cosec} 45^\circ = \sqrt{2}$

So, $a^3 + b^3 + c^3 = \left(\frac{1}{\sqrt{2}} \right)^3 + \left(\frac{1}{\sqrt{2}} \right)^3 + (\sqrt{2})^3$

$= \frac{1}{2\sqrt{2}} + \frac{1}{2\sqrt{2}} + 2\sqrt{2}$

$= \frac{1}{\sqrt{2}} + 2\sqrt{2}$

$= \frac{1+4}{\sqrt{2}} = \frac{5}{\sqrt{2}} = \frac{5\sqrt{2}}{2}$

69.(C) Given $4\sin^2 x - 3 = 0$

$\sin^2 x = \frac{3}{4} \Rightarrow \sin x = \pm \frac{\sqrt{3}}{2}$

$\sin x = +\frac{\sqrt{3}}{2} \Rightarrow \sin 60^\circ = \sin 120^\circ$

$\sin x = -\frac{\sqrt{3}}{2} \Rightarrow \sin 240^\circ = \sin 300^\circ$

70. (B) $(\sin \theta + \cos \theta)^3 + (\sin \theta - \cos \theta)^3$

$\Rightarrow \sin^3 \theta + \cos^3 \theta + 3 \sin \theta \cos \theta (\sin \theta + \cos \theta)$

$+ \sin^3 \theta - \cos^3 \theta - 3 \sin \theta \cos \theta (\sin \theta - \cos \theta)$

$\Rightarrow 2 \sin^3 \theta + 6 \sin \theta \cos^2 \theta$

$\Rightarrow 2 \sin \theta (\sin^2 \theta + 3 \cos^2 \theta)$

$\Rightarrow 2 \sin \theta (\sin^2 \theta + \cos^2 \theta + 2 \cos^2 \theta)$

$\Rightarrow 2 \sin \theta (1 + 2 \cos^2 \theta)$

$\Rightarrow 2 \sin \theta (1 + \cos 2\theta + 1)$

$\Rightarrow 2 \sin \theta (2 + \cos 2\theta) (\cos 2\theta = 2 \cos^2 \theta - 1)$

71. (C) Given $A = \frac{\pi}{6} = 30^\circ$



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$$B = \frac{\pi}{3} = 60^\circ$$

(I) $\sin A + \sin B = \sin 30^\circ + \sin 60^\circ$

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

and $\cos A + \cos B = \cos 30^\circ + \cos 60^\circ$

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

(II) $\tan A + \tan B = \tan 30^\circ + \tan 60^\circ$

$$= \frac{1}{\sqrt{3}} + \sqrt{3}$$

& $\cot A + \cot B = \cot 30^\circ + \cot 60^\circ$

$$= \sqrt{3} + \frac{1}{\sqrt{3}}$$

So, both true.

72. (A) According to the question:

$$\cos^2 \frac{\pi}{4} - \cos^4 \frac{\pi}{6} + \sin^4 \frac{\pi}{6} + \sin^4 \frac{\pi}{3}$$

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

$$\Rightarrow \frac{1}{2} + \frac{1}{16} \Rightarrow \frac{9}{16}$$

73. (B) According to the question

Let x workers joined then:

$$30 \times 6 = (30 + x) \times 4$$

$$180 = 120 + 4x$$

$$4x = 60 \Rightarrow x = 15$$

74. (B) Cost price for dealer

$$= 25000 \times \frac{80}{100} \times \frac{95}{100} + 1000$$

$$\Rightarrow 19000 + 1000 = 20,000$$

$$\text{S.P} = 25,000$$

$$\text{Gain percentage} = \frac{5,000}{20,000} \times 100 = 25\%$$

75. (C) Let the cost price = 100

and marked price = x

Now according to the question:

$$x \times \frac{90}{100} = 110$$

$$\Rightarrow x = \frac{1100}{9} = 122\frac{2}{9}$$

So, % above the cost price = $22\frac{2}{9}\%$

76. (D) $a(x - a^2) - b(x - b^2) = 0$

$$\Rightarrow ax - a^3 - bx + b^3 = 0$$

$$\Rightarrow x(a - b) = a^3 - b^3$$

$$\Rightarrow x = \frac{a^3 - b^3}{a - b}$$

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

$$x = a^2 + b^2 + ab$$

77. (A) Let

$$\frac{p}{(b - c)(b + c - 2a)} = \frac{q}{(c - a)(c + a - 2b)}$$

$$= \frac{r}{(a - b)(a + b - 2c)} = k$$

then, $p = k(b - c)(b + c - 2a)$

$$q = k(c - a)(c + a - 2b)$$

$$r = k(a - b)(a + b - 2c)$$

$$p + q + r = k[b^2 - c^2 + c^2 - a^2 + a^2 - b^2]$$

$$- 2(a(b - c) + b(c - a) + c(a - b))$$

$$= k(0 - 0) = 0$$

$$p + q + r = 0$$

78. (C) According to the question:

$$= \frac{1}{\frac{1}{24} + \frac{7}{24}} \Rightarrow \frac{24}{8} = 3 \text{ min}$$

79. (A) $A = 36$ $\xrightarrow{\quad\quad\quad}$ 6

$B = 54$ $\xrightarrow{\quad\quad\quad}$ 9×24 $\xrightarrow{\quad\quad}$ 4

$C = 72$ $\xrightarrow{\quad\quad\quad}$ 3

Let the work is completed in T days.

Now, according to the question:

$$6(T - 8) + 4(T - 12) + 3T = 9 \times 24$$

$$13T = 216 + 48 + 48$$

$$13T = 312$$

$$T = 24$$

80. (A) $p^{2x}(p^2 + 1) = p(p^{3x} + p^x)$

$$\Rightarrow p^{2x}(p^2 + 1) = p^x \cdot p(p^{2x} + 1)$$

$$\Rightarrow p^x(p^2 + 1) = p(p^{2x} + 1)$$

$$\Rightarrow p^{x+2} + p^x = p^{2x+1} + p = 0$$

$$\Rightarrow p^{2x+1} + p - p^{x+2} - p^x = 0$$

for the value of ± 1 this equation satisfies.

81. (A) Let the larger number = x

$$x - 30 = \frac{x}{4}$$

$$\frac{3x}{4} = 30$$

$$x = 40$$

82. (D) Winner got = 65%

Rest vote = 35%

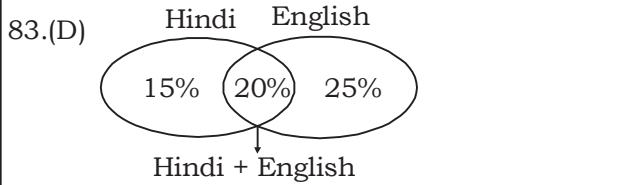
So, 30% Total vote = 2748

1% Total vote = 91.6

Total vote = $91.6 \times 100 = 9160$



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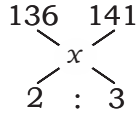


Total passed = 100% - (15 + 20 + 25) = 40%

84.(D) A : B = 3 : 4
 B : C = 8 : 9
 A : B : C = 6 : 8 : 9

85.(B) a : b = b : c
 b² = ac
 So, b⁴ = a² c²
 ∴ a⁴ : b⁴ = a⁴ : a² c²
 = a² : c²

86.(C) According to the question:



So, $\frac{141-x}{x-136} = \frac{2}{3}$
 $\Rightarrow 423 - 3x = 2x - 272$
 $\Rightarrow 695 = 5x$
 $\Rightarrow x = 139$

87.(A) According to the question:

No. of officers = $\frac{4800}{3} = 1600$
 Employees = 3200
 \Rightarrow No. of officers reduced by half
 $= \frac{1600}{2} = 800$
 So, $= \frac{800}{3200} \times 100 = 25\%$

88.(A) Let the third number = 100

| | | |
|-----|-----|-----|
| I | II | III |
| 135 | 150 | 100 |

So, $\frac{135}{150} \times 100 = 90\%$

89.(B) According to the question:

$\frac{55}{\frac{1}{1} + \frac{1}{2} + \frac{1}{3}} = \frac{55}{\frac{6+3+2}{6}}$
 $= \frac{55 \times 6}{11} = 30$ days

90.(B) By formula:

$\frac{M_1 D_1}{W_1} = \frac{M_2 D_2}{W_2}$
 $\Rightarrow \frac{m \times p}{w_1} = \frac{(m+r) \times D_2}{w_2}$

But, $w_1 = w_2$

$\Rightarrow D_2 = \frac{mp}{m+r}$

91. (D) According to the question:

MP = 18000
 $18000 \times \frac{80}{100} = C.P \times \frac{96}{100}$
 $C.P = \frac{18000 \times 80}{96} = 15000$

92. (D) Let x should be added:

So, $(4+x) : (10+x) :: (12+x) : (24+x)$
 $\Rightarrow \frac{4+x}{10+x} = \frac{12+x}{24+x}$
 $\Rightarrow 96 + 28x + x^2 = 120 + 22x + x^2$
 $\Rightarrow x = 4$

93. (A) $\Rightarrow \frac{30000 \times 125}{5000 \times 100} = 7.50$

94. (D) $\Rightarrow 1500 = 5\%$
 $18\% = \frac{1500}{5} \times 18 = 5400$

95. (B)

96. (A)

97. (C)

98. (B) Ratio:

curved surface area = $2\pi rh$
 Total = $2\pi r^2 + 2\pi rh$
 So, $\frac{2\pi r(r+h)}{2\pi rh} = \frac{r+h}{h}$
 $= \frac{3.5+7.5}{7.5}$
 $= \frac{11}{7.5} = \frac{110}{75}$

$\frac{\text{Total}}{\text{Curved}} = \frac{22}{15}$

99. (B) The cylinder obtained from the rectangular sheet of 22 cm × 15 cm.

So, $2\pi R = 22$
 $R = 7/2 = 3.5$ cm.
 Volume = $\pi \times (3.5)^2 \times 15 = 577.50$ cm³

100. (A) According to the question:

$\frac{\frac{1}{3} \pi (r+100\%r)^2 (h+100\%h)}{\frac{1}{3} \pi r^2 h} \times 100$

$\Rightarrow \frac{4r^2 \times 2h}{r^2 h} \times 100 = 800\%$
 Increased by = 800% - 100% = 700%



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SSC MOCK TEST - 33
ANSWER

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

151. (C) 'beside' in place of 'besides' will be used here.

152. (B) 'as' is not used after the verb 'appoint'.

153. (B) 'how to' in place of 'to' will be used'

154. (C) 'my' in place of 'me' will be used here.

155. (A) Double comparative is not used in the sentence. 'Preferable' is such a word that is used in comparative degree. So, use of more is superfluous here.

159. * Demophobia (means fear of crowds)

or Agoraphobia (means fear of open spaces and crowds)

or Ochlophobia (abnormal fear of crowds)

Regarding any corrections in this solution or test paper pls sms test

no. and question no. on 8860330003