

## SECTION - E : QUANTITATIVE TECHNIQUES

**Directions (Q.109-Q.114):** Study the following information carefully to answer the questions that follow.

In a school, there are 900 students who have visited five different cities viz. Kolkata, Jaipur, Agra, Chennai, and Bangalore. Sixty percent of the total students are girls. One-third of the total number of boys visited Agra. Thirty percent of the total number of boys visited Chennai. The number of boys who visited Bangalore is one-fourth of the number of boys who visited Chennai. 40 percent of the remaining boys visited Jaipur. The total number of students who visited Kolkata is 210. Thirty percent of the total number of girls visited Bangalore. Seventy-five girls visited Chennai. The number of girls who visited Agra is one-third of the number of girls who visited Kolkata. Remaining girls visited Jaipur.

109. What is the respective ratio between the number of girls who visited Kolkata and the number of boys who visited Chennai?  
(a) 47 : 34                      (b) 23 : 16                      (c) 49 : 36                      (d) 50 : 23
110. What is the average number of boys who visited Kolkata, Agra, and Bangalore together?  
(a) 82                              (b) 70                              (c) 86                              (d) 76
111. What is two-thirds of the total number of girls who visited Chennai and Bangalore together?  
(a) 158                              (b) 148                              (c) 154                              (d) 142
112. The number of boys who visited Jaipur is approximately what percent of the number of boys who visited Agra?  
(a) 40                              (b) 30                              (c) 40                              (d) 35
113. What is the total number of students who visited Agra?  
(a) 181                              (b) 153                              (c) 163                              (d) 169
114. What is the average total number of students who visited Kolkata, Bangalore, and Chennai?  
(a) 181                              (b) 183                              (c) 189                              (d) 194

**Directions (Q.115-Q.120):** Study the following information carefully and answer the questions given below.  
The investment details of three companies, X, Y, and Z, in partnership for the period 2017-2020 are as follows. Company Y's investment in 2017 was Rs. 60,000, which is equal to the investment of Company Z in 2019. The total investment in 2020 amounts to Rs. 1,80,000, and the investments of companies X, Y, and Z are in the ratio 5:6:4 respectively. The investment of Company X in 2017, 2018, and 2019 is Rs. 80,000, Rs. 1,20,000, and Rs. 1,10,000 respectively. The investment of Company Z in 2017 and 2018 remains constant at Rs. 70,000. Moreover, the investment of Company Y in 2019 is Rs. 70,000 more than the investment made in 2018, which was Rs. 90,000.

115. If the total profit in the year 2019 is Rs. 6600, then find the share of profit earned by Company Y in the year 2019?  
(a) Rs. 5100                      (b) Rs. 7200                      (c) Rs. 4500                      (d) Rs. 3200
116. Find the average investment of Company Y per year over these four years.  
(a) 95500                              (b) 94000                              (c) 91500                              (d) 89000



117. What is the difference (in rupees) between the total investments made by Company Y in 2017 and 2018?  
(a) 30000 (b) 26000 (c) 45000 (d) 16000
118. If the total investment made by Company Z in 2017 and 2021 combined was Rs. 1,30,000, what was the investment made by Company Z in 2021?  
(a) 30000 (b) 26000 (c) 60000 (d) 16000
119. If the total investment made by Company X in 2017, 2018, and 2021 is Rs. 3,20,000, what is the average annual investment made by Company X during the period 2017 -2021?  
(a) 84000 (b) 90000 (c) 98000 (d) 104000
120. What percentage of the total investment was contributed by Company Z in 2018?  
(a) 36% (b) 24% (c) 28% (d) 25%

while partially true in highlighting personal traits, does not fully capture the essence of the passage which emphasizes the impact of one's starting point. Option (d) is incorrect as the passage clearly discusses the influence of starting points on success, not their irrelevance. This question requires careful analysis of the passage's nuances and avoids straightforward or overly simplistic interpretations, thereby challenging the reader's critical thinking skills.

106. (b) The correct answer is (b). The passage emphasizes that it is not always individuals of aristocratic birth or wealthy parentage who win the world's laurels. Instead, it often is those from less privileged backgrounds who "hew their way in the world" and achieve success, highlighting the role of hard work and resilience. Option (a) is incorrect because the passage actually suggests the opposite, not favoring aristocrats. Option (c) is misleading; while it suggests equality in access to success, the passage particularly highlights the achievements of those from humbler origins. Option (d) is incorrect as the passage clearly portrays humbler origins as a potential advantage, not a hindrance. This question requires discerning the subtle implications in the passage and avoids simplistic interpretations, engaging the reader in deeper critical thinking.
107. (c) The correct answer is (c). The passage highlights the importance of personal traits in achieving success, especially for those who may not have material advantages. It emphasizes that qualities like industriousness, kindness, and resilience are key to rising to honor and filling an important place in life. Option (a) is incorrect as the passage places more emphasis on personal traits than on educational qualifications alone. Option (b) is misleading because the passage suggests that personal traits are important irrespective of financial support. Option (d) is incorrect as it directly contradicts the passage's message, which clearly states the significant impact of these traits on success. This question requires a nuanced understanding of the passage's emphasis on personal qualities over external factors, requiring the reader to engage in critical analysis and avoid the subtleties of the other options.
108. (b) The correct answer is (b). (a) is a subtle trap, as the passage does mention wealthy parentage but ultimately argues that it's not the key to success. (b) is correct because the passage emphasizes qualities like persistence, reverence, and industriousness over birth circumstances, highlighting the success of individuals from humble origins. (c) is misleading; while educational institutions are mentioned as supportive, they are not depicted as the most significant factor in success. (d), focusing on overcoming ridicule and maintaining kindness, is a partial truth but not the central theme of success discussed in the passage.

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Hint (109-114):

$$\text{Number of girls} = 900 \times \frac{60}{100} = 540,$$

$$\text{Number of boys} = 900 \times \frac{40}{100} = 360$$

$$\text{Boys who visited Agra} = 360 \times \frac{1}{3} = 120$$

$$\text{Boys who visited Chennai} = 360 \times \frac{30}{100} = 108$$

$$\text{Boys who visited Bangalore} = 108 \times \frac{1}{4} = 27$$

$$\text{Remaining boys} = 360 - (120 + 108 + 27) = 105$$

$$\text{Boys who visited Jaipur} = 105 \times 0.4 = 42$$

$$\text{Boys who visited Kolkata} = 105 - 42 = 63$$

$$\text{Girls who visited Kolkata} = 210 - 63 = 147$$

$$\text{Girls who visited Bangalore} = 540 \times 0.3 = 162$$

$$\text{Girls who visited Chennai} = 75$$

$$\text{Girls who visited Agra} = 147 \times \frac{1}{3} = 49$$

$$\text{Girls who visited Jaipur} = 540 - (147 + 162 + 75 + 49) = 107$$

Now, tabulating all the calculated data as given below:

Location	Number of Girls visited	Number of Boys visited	Total
Kolkata	147	63	210
Bangalore	162	27	189
Chennai	75	108	183
Agra	49	120	169
Jaipur	107	42	149

109. (c) Is the correct answer.

110. (b) Is the correct answer.

111. (a) Is the correct answer.

$$\text{Required number} = \frac{2}{3} \times (75 + 162) = 158$$

112. (d) Is the correct answer.

$$\text{Required percent} = \frac{42}{120} \times 100 = 35\%$$

113. (d) Is the correct answer.

114. (d) Is the correct answer.

$$\text{Average} = \frac{210 + 189 + 183}{3} = 194$$

Hint (115-120):

Now, tabulating all the provided data as given below:

Company	X	Y	Z
Year			
2017	80000	60000	70000
2018	120000	90000	70000
2019	110000	160000	60000
2020	60000	72000	48000

115. (d) Ratio of profit = 11 : 16 : 6

$$\text{Share of company Y} = (16/33) \times 6600 = \text{Rs.} 3200$$

$$\text{Ratio of profit} = 28 : 21 : 21$$

$$\text{Share of company Y} = (21/70) \times 21000 = \text{Rs.} 6300$$

Solution:

$$116. (a) \text{ Average} = \frac{60,000 + 90,000 + 1,60,000 + 72,000}{4} = 95500$$

$$117. (a) \text{ Required Difference: } 90000 - 60000 = 30000$$

$$118. (c) \text{ Required Answer: } 1,30,000 - 70,000 = 60,000$$

119. (c) Total investment made by Company X in 2017, 2018, and 2021: Rs. 3,20,000  
Total investment made by Company X in 2017 and 2018: Rs 80,000 + Rs 1,20,000 = Rs. 2,00,000  
Total investment made by Company X in 2021: Rs. 3,20,000 – 2,00,000 = 1,20,000

Average annual investment made by Company X during the period 2017 -2021 =  
 $(80,000 + 1,20,000 + 1,10,000 + 60,000 + 1,20,000)/5$   
 $= 490000/5 = 98000$

120. (d) Required Percentage:  $\frac{70000}{12000+90000+70000} \times 100 =$   
 $\frac{70000}{280000} \times 100 = 25\%$

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