LIC AAO Mains Previous Year Paper of Data Analysis & Interpretation - 2019

Directions (1-5): Table given below shows data of five institutes regarding number of girls students, percentage of boys and number of students (boys + girls) under one mentor. Study the data given below carefully and answer the following questions.

Institutes	Number of Students under one mentor	Number of girls	Percentage of Boys
A	8	80	60%
B	15	144	68%
C	16	176	45%
D	24	108	70%
E	25	90	64%

Q1. Number of mentors in institute D is what percent more/less then number of mentors in institute A?
(a) 20%
(b) 160%
(c) 80%
(d) 60%
(e) 40%

Q2. If in institute E, girls students increase by 60% and boys students increases by 35% while number of students under one mentor increases by 20% then how many more mentors are required in institute E?
(a) No more mentors required
(b) 1
(c) 2
(d) 3
(e) 4

Q3. Total number of students in institute B and C together is how much more than total number of students in institute D and E together?
(a) 130
(b) 140
(c) 150
(d) 160
(e) 170

Q4. Out of total mentors in institute C, 65% are females, then find the number of male mentors in institute C.
(a) 5
(b) 7
(c) 9
(d) 11
(e) 13

Q5. Total number of students in another institute F is 15% more than that of in institute D, while number of students under one mentor is 20% more than that of in institute B. Find number of mentors required in institute F.
(a) 17
(b) 19
(c) 21
(d) 23
(e) 25
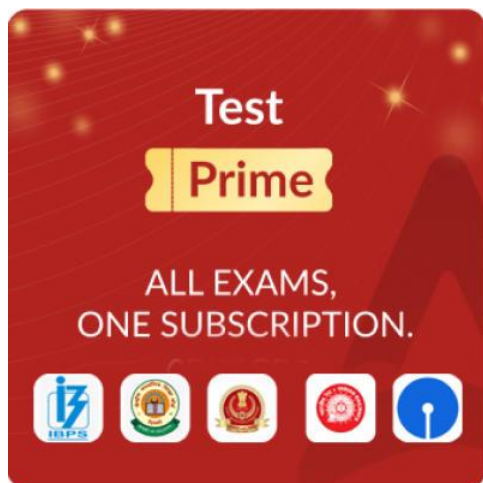
Directions (66-70): The following questions are accompanied by two statements i.e. statement (I) and statement (II). You have to determine which statements(s) is/are sufficient/ necessary to answer the questions.

(a) Neither statement (I) nor statement (II) by itself is sufficient to answer the question.

(b) Statement (II) alone is sufficient to answer the question but statement (I) alone is not sufficient to answer the question.

(c) Either statement (I) or statement (II) by itself is sufficient to answer the question.

(d) Both the statements taken together are necessary to answer the questions, but neither of the statements alone is sufficient to answer the question.

(e) Statement (I) alone is sufficient to answer the question but statement (II) alone is not sufficient to answer the questions

Q6. A has eight pens and ten pencils and cost price of each pencil is more than that of pen. Find the total cost price of eight pens and 10 pencils.

Statement (I). A sell all pens at 25% profit and all pencils at 20% loss and ratio of selling price of pens to pencils is 5:8 respectively.

Statement (II). The sum of cost price of each pen and each pencil is 24 more than difference of theirs cost prices.

Q7. There are five students (P, Q, R, S and T) in a group. Find the age of the youngest member in the group.

Statement (I). The age of P after four years will be 22 years and sum of age of Q and S five years ago were 27 years.

Statement (II). The average of present age of Q, R and T is 28.5 years and average of present age of P, S and R is 24.5 years.

Q8. Boat X and boat Y in same river take 72 min and 64 min to to cover D km distance in downstream. Find the difference between distances covered by them in downstream for an hour.

Statement (I). The value of D is 48 km.

Statement (II). Speed of boat X in downstream is $\frac{5}{8}$ *times* the speed of boat Y in upstream.

Q9. A bag has two grey balls, some pink balls and some silver balls. Find the total balls in the bag.

Statement (I). Probability of drawing a silver ball from the bag is 1/2.

Statement (II). Probability of drawing a pink ball from the bag is 2/5.

Q10. The population of a city A in 2021 is increase by 40% from its previous year and total population of the city A in 2020 is 2500. Find the sum of male population in 2021 and female population in 2020.

Statement (I). Males of city A in 2021 is 40% increase from the previous year.

Statement (II). Females of city A in 2021 is 25% decrease from the previous year.

Directions (71–75): The following table shows the total no. students and percentage of students present on a particular day out of them for two schools A and B in different classes.

Classes	School A	Student present (in %)	School B	Student present (in %)
VI	450	32%	___	44%
VII	260	45%	250	24%
VIII	___	38%	___	60%
IX	560	___	792	25%
X	220	35%	350	___

Q11. If total number of students in class VIII in both the school together are 1625 and total students present in both the classes together are 766, then find difference between number of students in class VIII in both the schools.

(a) 250
(b) 275
(c) 225
(d) 300
(e) None of these

Q12. The number of students present in class VI in school A are approximately what percent of number of students present in class IX in school B.
(a) 65%
(b) 70%
(c) 75%
(d) 73%
(e) 80%

Q13. If number of students present in class VI in school B are 2 less than double of the number of students presents in same class in school A, then find the total number of students in class VI in school B.
(a) 625
(b) 650
(c) 600
(d) 700
(e) None of these

Q14. If total number of students present in class XI in school B are $14\frac{2}{7}\%$ less than number of students present in class X in the same school and total students in class XI in school B is 400, then find the percent of students in class XI in school B are present on that day.
(a) 25.5%
(b) 26.5%
(c) 27.5%
(d) data inadequate
(e) None of these

Q15. Find the total number of students present in class VII in both the schools together.
(a) 157
(b) 187
(c) 167
(d) 177
(e) None of these

Direction (76-77): A started a business by investing Rs. X. After 6 months B joins him with investment of Rs.1500 while C joins business after 8 months with Rs. Y. At the end of the year, the respective ratio of profit share of A, B and C is 8:3:4.

Q16. If A had doubled his investment after six months and B reduced his investment by half after two months. Find the new ratio of profit share.
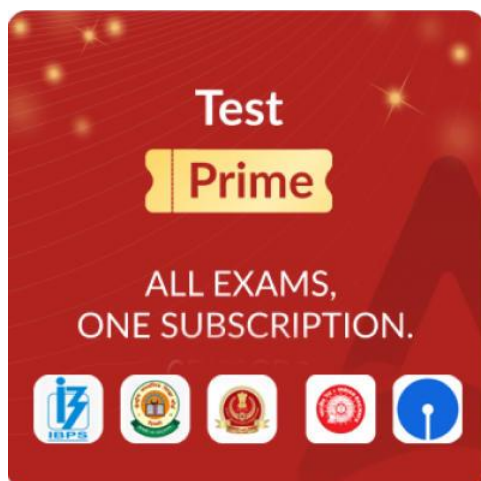(a) 6:1:2
(b) 6:1:4
(c) 6:1:3
(d) 6:1:5
(e) 6:1:1

Q17. Find Y is what percent more or less than X.
(a) 50%
(b) 65%
(c) 70%
(d) 40%
(e) 60%

Direction (78–79): The area of rectangular based tank, of which longer side is 150% more than smaller side is 1440 m² and the tank contains 10800 m³ water.

Q18. Total surface area of tank, if tank is opened from upper side.
(a) 2700 m²
(b) 2400 m²
(c) 3600 m²
(d) 4900 m²
(e) 2100 m²

Q19. If radius of a conical tank is $\frac{7}{8}th$ of smaller side of rectangular based tank and height is two times of height of rectangular based tank, then find capacity of water contained by conical tank?
(a) 6730 m³
(b) 6530 m³
(c) 6930 m³
(d) 6960 m³
(e) 6990 m³

Q20. A bag contains 'A' grey pens, 11 pink pens & 'B' golden pens. If one pen taken out from bag, then probability of picking a grey pen is $\frac{1}{5}$, while probability of picking a golden pen is $\frac{1}{4}$. If two pens taken out from the bag, then find the probability that both picked pens are pink?
(a) $\frac{7}{38}$
(b) $\frac{15}{38}$
(c) $\frac{9}{38}$
(d) $\frac{11}{38}$
(e) $\frac{17}{38}$

Directions (81-85): Read the following information carefully and answer the questions given below. Information about total number of employees (Males and Females) work in three (X, Y and Z) different companies.

Males and females in Y are in the ratio of 8:5 respectively. Females in X is 20 more than males in Y. Total employees in Z is 200 and males in Z is average number of males in Y and females in X. Total males in all the companies together is 335 and females in Z is 60 less than that of males.

Q21. Find the difference between total number of males in X & Y together and total number of employees in Z.
(a) 2
(b) 10
(c) 7
(d) 5
(e) 12

Q22. Find the ratio of total number of males in Z to total number of females in X.
(a) 11:14
(b) 17:15
(c) 19:11
(d) 18:11
(e) 13:14

Q23. If 25% of total number of females in X and 20% total number of males in Y are left the company and joined Z, then find the new total number of employees in company Z.
(a) 262
(b) 248
(c) 241
(d) 259
(e) 264

Q24. Total number of females in Z work in two different departments i.e. Sales and HR are in the ratio of 9:5 respectively. Find total number of females work in sales department in Z is what percent total number of males in Y.
(a) 37.5%
(b) 25%
(c) 32.5%
(d) 16.66%
(e) 33.33%

Q25. Find the total number of females in all the companies together.
(a) 290
(b) 285
(c) 275
(d) 265
(e) 280

Q26. Train A having length of 250 meters can cross train B having length 350 meters in 50 secs when running in same direction. If ratio of speed of train A to B is 7:4 respectively, then find the time taken by train A to cross a bridge whose length is 60% of the length of train B.
(a) $\frac{112}{7}$ sec
(b) $\frac{110}{7}$ sec
(c) $\frac{118}{7}$ sec
(d) $\frac{111}{7}$ sec
(e) $\frac{115}{7}$ sec

Q27. P invested equal amount of Rs. X in two different schemes A & B. The rate of interest for both schemes is same 15% but scheme A offers simple interest and scheme B offers compound interest. If difference between interests received from scheme A & B is Rs.56.25 after 2 years, then find the value of '45%of X'.
(a) 1525
(b) 975
(c) 525
(d) 1125
(e) 1225

Q28. Pipe P and pipe Q alone can fill the tank in 28 min and 20 min respectively. Efficiency of pipe R is X% more than the average efficiency of pipe P and pipe Q. If pipe R and pipe P can fill the tank in 7 min, then find the value of X.
(a) 50
(b) 150
(c) 100
(d) 125
(e) 75

Q29. A shopkeeper marked an article Y% above its cost price and allowed discount of 20% on it. If shopkeeper earned a profit of 8% on selling the table and marked price of the article is Rs. $(16Y-20)$, then find the selling price of the article.
(a) Rs.432
(b) Rs.560
(c) Rs.405
(d) Rs.519
(e) Rs.610

Q30. X men can do a piece of work in Y days and Y women can do the same work in X days. If 18 men and 17 women can do the work in $1\frac{4}{7}\ days$, then find the time taken by 5 men and 6 women to complete the whole work.
(a) 5 days
(b) 2 days
(c) 8 days
(d) 12 days
(e) 15 days

Solutions

S1. Ans.(e)
Sol. Total number of students in institute A
$= \frac{80}{40} \times 100 = 200$
Total number of students in institute D
$= \frac{108}{30} \times 100 = 360$
Number of mentors in institute A $= \frac{200}{8} = 25$
Number of mentors in institute D $= \frac{360}{24} = 15$
Required % $= \frac{25-15}{25} \times 100$
$= \frac{10}{25} \times 100 = 40\%$

S2. Ans.(c)
Sol. Number of girls after increment
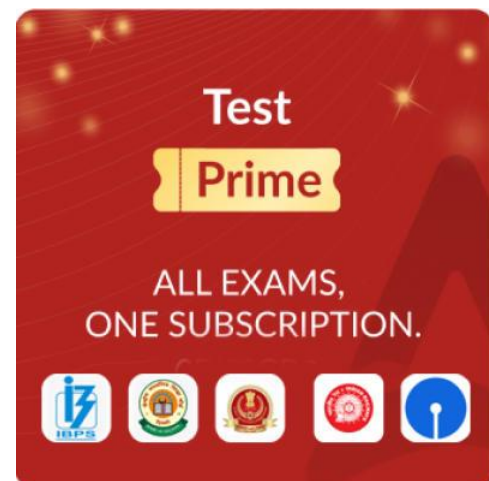$= 90 \times 1.6 = 144$
Number of boys after increment
$= \frac{90}{36} \times 64 \times \frac{135}{100} = 216$
Number of students under one mentor after increment $= 25 \times 1.2 = 30$

Total number of mentors required after increment
$= \frac{144+216}{30} = \frac{360}{30} = 12$
Total number of mentors before increment
$= \frac{90+\frac{90}{36}\times 64}{25} = \frac{90+160}{25} = \frac{250}{25} = 10$
Number of mentors more required = 12 – 10 = 2

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S3. Ans.(d)
Sol. Total number of students in institute B & C together

$= \frac{144}{32} \times 100 + \frac{176}{55} \times 100 = 450 + 320$

$= 770$

Total number of students in institute D & E together

$= \frac{108}{30} \times 100 + \frac{90}{36} \times 100$

$= 360 + 250$

$= 610$

Required difference = 770 – 610 = 160

S4. Ans.(b)
Sol. Total number of students in institute C

$= \frac{176}{55} \times 100 = 320$

Number of mentors in institute C $= \frac{320}{16} = 20$

Male mentors in institute C $= 20 \times \frac{35}{100} = 7$

S5. Ans.(d)
Sol. Total number of students in institute F

$= \frac{108}{30} \times 100 \times \frac{115}{100} = 414$

Total number of students under one mentor in institute F = 15 × 1.2 = 18

Number of mentors required in institute F

$= \frac{414}{18} = 23$

S6. Ans.(d)
Sol. Let cost price of each pen and each pencil be Rs. 'a' and Rs. 'b' respectively.

Statement (I). $\frac{8\left(125 \times \frac{a}{100}\right)}{10\left(\frac{80}{100} \times b\right)} = \frac{5}{8}$

$\frac{a}{b} = \frac{1}{2}$

Statement (II). $(b + a) - (b - a) = 24$

$a = 12$

From (I) and (II)

Cost price of each pencil $= \frac{12}{1} \times 2 = Rs.\ 24$

We have cost price of each pen and pencil, we can find the total amount

So, both the statements taken together are necessary to answer.

S7. Ans.(a)
Sol. Let the present age of P, Q, R, S & T be p, q, r, s & t respectively.

Statement (I). Present age of P = 22 – 4 = 18 years

Present age of Q & S = 27 + 10 = 37 years

Statement (I) alone is not sufficient to answer.

Statement (II). Present age of Q, R and T

$= 28.5 \times 3 = 85.5\ years$

Present age of P, S and R = $24.5 \times 3 = 73.5\ years$

Statement (II) alone is not sufficient to answer.

So, neither statement **(I)** nor statement **(II)** by itself is sufficient to answer

S8. Ans.(e)
Sol. Statement (I). Let speed of stream, speed of boat X and speed of boat Y be S, X and Y km/h respectively.

Downstream speed of boat X

$\frac{48}{\text{downstream speed of boat X}} = \frac{72}{60}$

X + S = 40

X = 40 – S

And

Downstream speed of boat Y

$\frac{48}{\text{downstream speed of boat Y}} = \frac{64}{60}$

Y + S = 45 ..(I)

Y = 45 – S

Req. difference = $(45 - S + S) - (40 - S + S)$

$= 5\ km$

Statement (I) alone is sufficient to answer.

Statement (II). $(X + S) = \frac{5}{8} \times (Y - S)$

Statement (II) alone is also sufficient to answer.

So, Statement **(I)** alone is sufficient to answer the question but statement **(II)** alone is not sufficient to answer the questions

S9. Ans.(d)
Sol. Let number of pink balls and silver balls in the bag be x and y respectively.

Statement (I). $\frac{y}{x+y+2} = \frac{1}{2}$

$y = x + 2$

Statement (II). $\frac{x}{x+y+2} = \frac{2}{5}$

$3x = 2y + 4$

From (I) & (II)
We easily find out number of pink and silver balls in the bag.
So, both the statements taken together are necessary to answer

S10. Ans.(c)
Sol. Total population in 2020 = 2500
Total population in 2021 = $2500 \times \frac{140}{100} = 3500$
Statement (I). Let males in 2020 be = 5x
Males in 2021 = 7x
Statement (II). Let females in 2020 be = 4y
Females in 2021 = 3y
From statement (I) and statement (I)
$5x + 4y = 2500 \ldots (a)$
$7x + 3y = 3500 \ldots (b)$
From (a) and (b) we find the value of x and y
So, either statement (I) or statement (II) by itself is sufficient to answer.

S11. Ans.(b)
Sol. ATQ, $x \times 0.38 + (1625 - x) \times 0.60 = 766$
x = 950
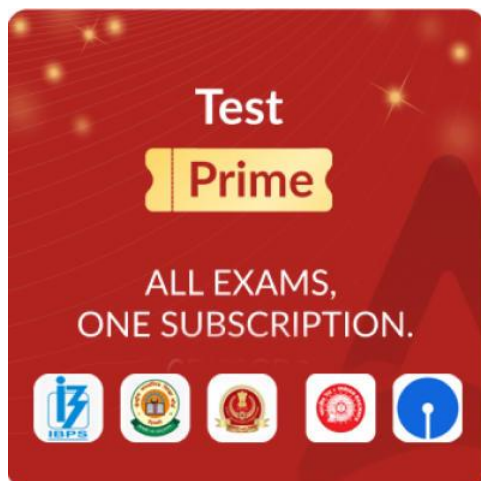1625 − x = 675
Required difference = 950 − 675 = 275

S12. Ans.(d)
Sol. Required percentage $= \frac{144}{198} \times 100 \approx 73\%$

S13. Ans.(b)
Sol. Number of students present in class VI in school B = $2 \times \left[450 \times \frac{32}{100}\right] - 2 = 286$
The total number of students in class VI in school B $= 286 \times \frac{100}{44} = 650$

S14. Ans.(d)
Sol. Since data is not sufficient to calculate the required value.

S15. Ans.(d)
Sol. $ATQ, 260 \times \frac{45}{100} + 250 \times \frac{24}{100} = 177$

Solutions (16-17): Ratio of profit share of A, B and C =
$X \times 12 : 6 \times 1500 : Y \times 4 = 8 : 3 : 4$
Profit share of B = $6 \times 1500 = 3x$
3000 = x
Profit share of A = $X \times 12 = 8 \times 3000$
$X = Rs\ 2000$
Profit share of C = $Y \times 4 = 4 \times 3000$
$Y = Rs\ 3000$

S16. Ans.(a)
Sol. ATQ
Ratio of profit share of A, B and C =
$= 2000 \times 6 + 4000 \times 6 : 1500 \times 2 + 750 \times 4 : 3000 \times 4$
=36000:6000:12000
=6:1:2

S17. Ans.(a)
Sol. From the above solution
X= Rs.2000
Y= Rs.3000
Required percentage$= \frac{3000-2000}{2000} \times 100 = 50\%$

Solutions (18–19): Let smaller side of rectangular based tank = x m
So, longer side of rectangular based tank = $x + x \times 1.5 = 2.5x\ m$
ATQ −
$2.5x \times x = 1440$
x^2 = 576
x =24 m
Let height of rectangular based tank = h
Given, $l \times b \times h = 10800$
$60 \times 24 \times h = 10800$
h = 7.5 m

S18. Ans.(a)
Sol. Total surface area of tank = $(lb + 2bh + 2lh)$
$= (60 \times 24 + 2 \times 24 \times 7.5 + 2 \times 60 \times 7.5)$
$= 2700 \text{ m}^2$

S19. Ans.(c)
Sol. Radius of conical tank $= 24 \times \frac{7}{8} = 21 \, m$
Height of conical tank $= 7.5 \times 2 = 15 \, m$
Capacity of water contained by conical tank
$= \frac{1}{3} \pi r^2 h$
$= \frac{1}{3} \times \frac{22}{7} \times 21 \times 21 \times 15$
$= 6930 \text{ m}^3$

S20. Ans.(d)
Sol. ATQ.
Probability of grey pen $= \frac{A}{11+A+B} = \frac{1}{5}$
$5A = 11 + A + B$
$4A - B = 11 \ldots(I)$
And
Probability of golden pen $= \frac{B}{11+A+B} = \frac{1}{4}$
$4B = 11 + A + B$
$3B - A = 11 \ldots(ii)$
From (i) and (ii) we get
B = 5 and A = 4
Req. probability $= \frac{11c_2}{20c_2} = \frac{11}{38}$

Solutions (81-85): Let males and females in Y is 8a
& 5a respectively
Females in X = 8a+20
Males in Z $= \frac{8a+8a+20}{2} = 8a + 10$
Females in Z $= 8a + 10 - 60 = 8a - 50$
ATQ.
$8a - 50 + 8a + 10 = 200$
$16a = 240$
$a = 15$
Males in X $= 335 - (8 \times 15 + 8 \times 15 + 10)$
$= 335 - (120 + 130) = 85$

Companies	Males	Females
X	85	140
Y	120	75
Z	130	70

S21. Ans.(d)
Sol. Required difference $= (85 + 120) - (130 + 70) = 5$

S22. Ans.(e)
Sol. Required ratio = 130 : 140 = 13:14

S23. Ans.(d)
Sol. Total number of new employees in Z = 130 +
$120 \times \frac{20}{100} + 70 + 140 \times \frac{25}{100}$
$= 130 + 24 + 70 + 35 = 259$

S24. Ans.(a)
Sol. Total number of females work in sales
department in Z $= 70 \times \frac{9}{14} = 45$
Required percentage $= \frac{45}{120} \times 100 = 37.5\%$

S25. Ans.(b)
Sol. Required sum = 140 + 75 + 70 = 285

S26. Ans.(e)
Sol. Let speed of train A and train B be 7x m/sec and
4x m/sec respectively
ATQ,
$(7x - 4x) = \frac{250+350}{50}$
$x = 4$
Length of the bridge $= \frac{60}{100} \times 350 = 210 \text{meters}$
Required time $= \frac{250+210}{28} = \frac{115}{7} sec$

S27. Ans.(d)
Sol. Composite compound interest for two years =
$\left(15 + 15 + \frac{15 \times 15}{100}\right) = 32.25\%$
ATQ,
$\frac{32.25}{100} \times X - \frac{X \times 15 \times 2}{100} = 56.25$
$2.25X = 5625$
X = 2500
Required value $= 2500 \times \frac{45}{100} = 1125$

S28. Ans.(b)

Sol. Let the total capacity of the tank (L.C.M. of 28 &20) be 140 liters.

Efficiency of pipe P = $\frac{140}{28}$ = 5 liters/min

Efficiency of pipe Q= $\frac{140}{20}$ = 7 liters /min

Let efficiency of pipe R= E liters /min

ATQ,

$\frac{140}{E+5} = 7$

$140 = 7E + 35$

$\frac{105}{7} = E$

E= 15

Required value = $\frac{15 - \frac{(7+5)}{2}}{\frac{7+5}{2}} \times 100 = 150\%$

S29. Ans.(a)

Sol. Let cost price of the article be Rs.100x

And, selling price of the article

= $100x \times \frac{108}{100}$ =Rs.108x

Marked price of the article

= $\frac{108x}{80} \times 100 = Rs. 135x$

ATQ,

Y = $\frac{135x - 100x}{100x} \times 100 = 35\%$

Marked price of the article

= $16 \times 35 - 20 = Rs. 540$

Selling price = $\frac{540}{135} \times 108 = Rs. 432$

S30. Ans.(a)

Sol. Let efficiency of a man and a woman be 'm' unit/day and 'w' unit/ day respectively.

ATQ,

$X \times Y \times m = Y \times X \times w$

$\frac{m}{w} = \frac{1}{1}$

So,

$m:w = 1a:1a$

Total work

= $(18 \times 1a + 17 \times 1a) \times \frac{11}{7} = 55a \, units$

Req. days = $\frac{55a}{5 \times 1a + 6 \times 1a} = \frac{55}{11} = 5 \, days$