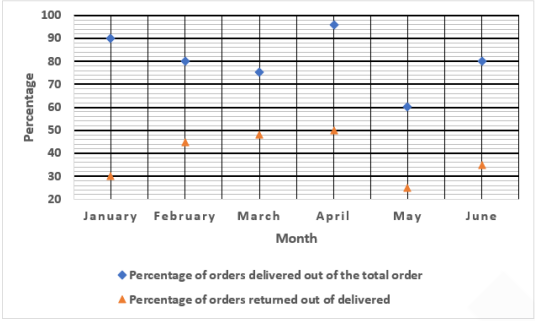
gradeup

IBPS PO Mains 2019 Previous Year Questions (Quant)

Prep Smart. Score Better. Go gradeup

www.gradeup.co

Direction (1 – 5) : Study the following graph and table to answer the given questions:
An e-commerce company sells products online. First of all, customers order the products, then some of them cancel their orders. Remaining orders are delivered by the company, after which some of the customer return their products.
In the graph given below the percentage of delivered products from ordered products and percentage of product returned from delivered products for the given months.



In the table below, the number of products delivered is given.

Month	No. of orders delivered
January	27000
February	24000
March	22500
April	21600
May	24000
June	32000

1. What is the ratio of number of sum total of the number of orders canceled in the months of January and March to that of March and June?
A. 2 : 3
B. 3 : 4
C. 4 : 5
D. 3 : 5
E. 5 : 8

2. What is the average number of total orders for the given 6 months?
A. 24000
B. 27500
C. 31500
D. 30750
E. 31750

3. What is the difference of the number of orders canceled and number of orders returned in the month of May?
A. 12500
B. 16240
C. 11280
D. 10240
E. 11760

4. Number of orders canceled in April is what percent less than the number of orders canceled in February?
A. 75%
B. 62.5%
C. 85%
D. 68%
E. 76%

5. What is the sum of the number of the orders finally accepted by customers in February and April?
A. 25000
B. 24000
C. 25600
D. 24500
E. 22500

Direction (6 – 10) : Study the following information to answer the given questions:
Three battery operated robot toys A, B and C do hand movement and leg movement. Battery capacities of the toys A, B and C are 1500 mAh, 1600 mAh and 1800 mAh respectively. Present battery percentage of the toys A, B and C are 80%, 70% and 75% respectively. Four hand movements and three leg movements of a toy consume 1 mAh unit of battery. Six hand movements and seven leg movements of a toy consume 2 mAh unit of battery.

6. If toy A started at 9 AM and the battery of the toy discharged at 11 AM and during this period, total number of hand movements done by toy A is 1200 more than the number of leg movements, then on average how many leg movements done by toy A in 1 minute
A. 15
B. 20
C. 25

D. 30
E. None of these

7. If sum of the twice of number of hand movements and number of leg movements done by toy B until the battery runs out is x, then which of the following can be the value of x
I. 9000
II. 12600
III. 9800
A. Only I
B. Only II
C. Only III
D. Only I and III
E. None of three

8. Toy C does 1500 hand movements and y leg movements and toy B does y hand movements and 2000 leg movements. After this the remaining battery (in mAh) is same in both the toys, then what percent of the battery is remaining in the toy B?
A. 40%
B. 21.5%
C. 35%
D. 15%
E. None of these

9. Toy B can rotate too and 3 rotations requires as much battery as much required in 1 hand movement and 7 leg movements. Ratio of the number of hand movements, number of leg movements and number of rotations done by toy B till battery lasts is 2 : 1 : 1, then sum of the number of hand movements and number of rotations done by toy B is
A. 1400
B. 2800
C. 5600
D. 3500
E. None of these

10. The battery capacity of toy D is equal to the average of the current remaining battery capacities of Toys A and B and the current battery percentage of toy D is 75%. If toy D moves an equal number of hands and feet until the battery runs out, then how many times does toy D move hands?
A. 2175
B. 1160
C. 870
D. 2900
E. None of these

Direction (11 – 15) : Study the following table and information given below and answer the given questions.
In the below table, total number of applications received for five positions – A, B, C, D and E is given.

Position	Total no. of applications received
A	1040
B	880
C	600
D	–
E	420

In the below table, total number of duplicate applicants and average number of duplicate applications received for five positions – A, B, C, D and E is given.

Position	Duplicate applicants	Average number of duplicate applications received from duplicate applicants
A	63	4
B	–	6
C	28	–
D	48	–
E	–	–

Note :
(i) A duplicate applicant is an applicant, who has submitted additional (duplicate) application after submitting their original application.
(ii) All application forms (original + duplicate) received from duplicate applicant were rejected and remaining all application were accepted.
(iii) None of the applicants applied for more than one post.

11. For position A, the respective ratio between the number of accepted applications and the number of rejected applications of male is 5 : 3 . If the respective ratio between the number of accepted applications and the number of rejected applications of female is 5 : 1, then what is the number of rejected applications of men?
A. 210
B. 285
C. 240
D. 270

E. 255

12. For position E, the number of accepted applications of male, the number of accepted applications of female and total number of rejected applications (male + female) are X, X + Y and X + 2Y respectively, then which of the following is true? (Consider the average number of duplicate applications received from duplicate applicant is a non-zero integer and atleast one male and one female are duplicate applicants).
I. Number of accepted applications of male can be 139
II. Number of accepted applications of male can be 141
III. Number of accepted applications of males can be 131
A. Only I is correct
B. Only II is correct
C. Only III is correct
D. Only I and III is correct
E. None of I, II and III is correct

13. If the average number of accepted applications for positions A and B is 659, then what is the number of duplicate applicants for position B?
A. 41
B. 45
C. 39
D. 37
E. 43

14. For position C, the number of accepted applications of males is between 150 and 200 and that of females is between 130 and 180. Which of the following can be a possible value(s) of the average number of duplicate applications submitted by duplicate applicants for position C?
A. 12
B. 5
C. 9
D. 13
E. 6

15. For position D, the respective ratio between total number of accepted and total number of rejected applications is 4 : 1, then which of the following can be true?
I. Total number of applications (original + duplicate) received can be 240
II. Number of applications (all original + one from duplicate) can be 768
III. Least number of applications were received for position D is a possibility.
A. Only II is correct
B. Only III is correct
C. Only II and III is correct
D. Only I and III is correct
E. None of I, II and III is correct

Direction (16 – 18) : Study the following information given below and answer the given questions.
3X women can do a work in Y days. 1.5X men can do the work in Y days. X boys can do the work in 3Y days. 8 men, 8 women and 8 boys together can do the work in 22.5 days. 9 men can do the work in (Y + 20) days.

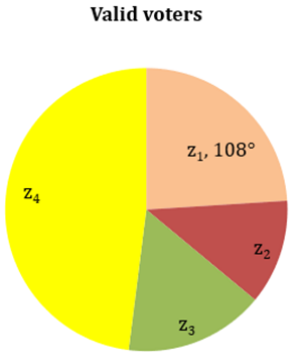
16. 6. Find the value of Y.
A. 15
B. 16
C. 18
D. 20
E. None of these

17. Find the value of X.
A. 10
B. 8
C. 9
D. 15
E. None of these

18. In how many days, 6 men and 15 boys can complete the one-fourth less work?
A. 15
B. 18
C. 20
D. 24
E. None of these

Direction (19 – 23) : Study the following information and pie-chart to answer the given questions.
Data of voters of a town is given below. The town is divided in 4 zones - z_1, z_2, z_3 and z_4 and each of these zones had

certain number of registered (valid + invalid) voters.
In the pie-chart distribution of valid voters is given.



It is also known that-
a) The ratio between values of degrees of z_2 and z_4 in the pie chart is 3 : 7
b) Number of valid values in z_3 is one-third more than the difference between the number of valid voters in z_1 and that in z_2.
c) Difference between number of valid voters in z_3 and z_4 is 480. (Number of valid voters in Z_4 is more than that in z_3)
d) 20% of the total registered voters in the town were invalid.

19. What is the central angle corresponding to number of valid voters of zone z_3 the given pie-chart?
A. 54°
B. 72°
C. 90°
D. 108°
E. None of these

20. Number of valid voters in zone z_3 is approximate what percent less than number of valid voters in zone z_4?
A. 45%
B. 40%
C. 37.5%
D. 42.5%
E. 35%

21. If number of invalid voters in zone z_1 is 120, then the total number of registered voters in the zone z_1 is
A. 840
B. 900
C. 960
D. 1080
E. None of these

22. Number of invalid voters in the zone z_2 is 200 and ratio of number of registered voters in the zone z_3 and zone z_4 is 3 : 5, then the total registered voters in zone z_4 is what percent of the total registered voters in the town? (You may use the information given in above questions.)
A. 25%
B. 30%
C. 35%
D. 40%
E. None of these

23. What is the ratio of sum of valid voters in zones z_1 and z_3 and that in zones z_2 and z_4?
A. 2 : 3
B. 3 : 2
C. 9 : 8
D. 8 : 9
E. None of these

Direction (24 – 26) : Study the following graph and answer the given questions.
There are 3 classes A, B and C in a school. Data of number of girls and number of boys are given in the table.
Some of the data of the table are missing. You have to find the data, wherever required on the basis of the information given below.

Class	A	B	C
Boys	40	–	–
Girls	–	40	30

It is also given that-
a) Probability of selecting a boy from all the students of the school is $\frac{3}{5}$.
b) Probability of selecting a boy from class B is equal to the probability of selecting a boy from class C
c) Probability of selecting a girl from class A from all the girls of the school is $\frac{5}{12}$.

24. What is the probability of selecting 2 boys such that none of the boys study in class C?
A. $\frac{119}{299}$

B. $\frac{2}{5}$
C. $\frac{238}{1495}$
D. $\frac{238}{299}$
E. None of these

25. If 20% of girls from class A and 10% of boys from class B scored more than 90% in the exam, then what is the difference of the number of girls from class A, who scored less than 90% in the exam and the number of boys from class B, who scored less than 90% in the exam?
A. 24
B. 32
C. 36
D. 48
E. None of these

26. What is the ratio of probability of selecting 1 boy from class C from all boys and selecting 1 girl from all students of class A?
A. 3 : 2
B. 2 : 3
C. 5 : 3
D. 3 : 5
E. None of these

In the following question, 2 series 1st and 2nd is given. 1st series is a wrong number series and 2nd series is a blank series. Pattern of the 2nd series is same as the 1st series and 2nd series will start with the wrong term of the 1st series.
27. 1st series: 1, 3, 6, 21, 88, 445, 2676
2nd series: –, –, –, –, –, –, –
Find the 4th term of 2nd series.
A. 30
B. 33
C. 27
D. 25
E. 36

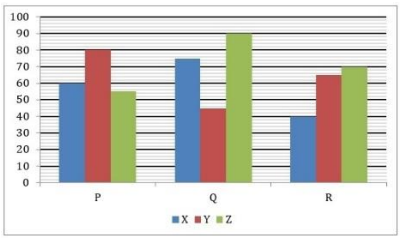
Direction (28 – 30) : Study the following information and answer the given questions.
There are some students (female + male) in classes A and B. In class A, number of female students is 30% of the total number of student. In class B, number of female students is same as male students. Number of male students in class B is 3 times the number of female students in class A

28. Number of male students in class A is how much percent of the total number of student in classes A and B together?
A. 20%
B. 25%
C. 30%
D. Cannot be determined
E. None of these

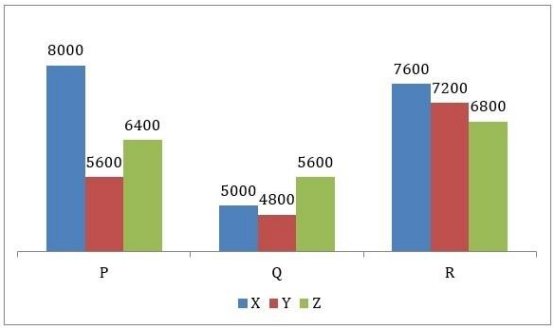
29. Number of male students in classes A and B together is approximate how much percent of female students in class B?
A. 177%
B. 150%
C. 137%
D. Cannot be determined
E. None of these

30. Number male students in a class C is 36 more than that in class B and number female students in a class C is 72 more than that in class A. If number of female students in a class C is 50% of the number male students in a class C, then what is the ratio of total number of students in class A and that in class C?
A. 2 : 3
B. 5 : 9
C. 3 : 5
D. 4 : 9
E. None of these

Direction (31 – 35) : Study the following bar graphs and answer the given.
In the bar graphs, percentage of the target sales achieved for three products X, Y and Z by three companies P, Q and R is given.



In the bar graphs, target sales of three products X, Y and Z by three companies P, Q and R is given.



31. Find the sum of the average achieved sales of all three products together by company Q and company R.
A. 8860
B. 7950
C. 7810
D. 9290
E. None of these

32. Find the difference between the total achieved sales of Products Y by all three Companies & total target sales of Products Z by the same companies.
A. 6890
B. 7480
C. 7260
D. 8240
E. None of these

33. Find the ratio of achieved sales of products X & Z together by Company Q to the Unachieved sales of products Y & Z together by company R.
A. 293 : 152
B. 331 : 213
C. 419 : 382
D. 251 : 129
E. None of these

34. Achieved sales of product Z by company R is how much % less/more than Achieved sales of products Y by Company P?
A. 6.80% more
B. 7.75% less
C. 6.25% more
D. 8.60% less
E. None of these

35. Company Q marked the price of per unit Product X, Y & Z in the ratio 3 : 4 : 2. For product Y, how much percent more/less revenue received than for product X by the company?
A. 18.6% less
B. 27.4 % more
C. 23.2 % less
D. 14.8 % More
E. None of these

###ANSWERS###

1. Ans. A.
Required ratio = (3000 + 7000) : (7000 + 8000) = 2 : 3.
Total number of orders = Number of orders delivered × 100 / Percentage of orders delivered out of the total orders
Number of order cancel = Total number of ordered – Number of orders delivered
Total number of orders returned = Number of orders delivered × 100 / Percentage of orders returned

Month	Total No. of order	No. of order delivered	No. of order canceled	No. of order returned	No. of order finally accepted
January	30000	27000	3000	8100	18900
February	30000	24000	6000	10800	13200
March	28000	21000	7000	10080	10920
April	22500	21600	900	10800	10800
May	40000	24000	16000	5760	18240
June	40000	32000	8000	11200	20800

2. Ans. E.
Required average = (30000 + 30000 + 28000 + 22500 + 40000 + 40000) / 6
= 31750.
Total number of orders = Number of orders delivered × 100 / Percentage of orders delivered out of the total orders
Number of order cancel = Total number of ordered – Number of orders delivered
Total number of orders returned = Number of orders delivered × 100 / Percentage of orders returned

Month	Total No. of order	No. of order delivered	No. of order canceled	No. of order returned	No. of order finally accepted
January	30000	27000	3000	8100	18900
February	30000	24000	6000	10800	13200
March	28000	21000	7000	10080	10920
April	22500	21600	900	10800	10800
May	40000	24000	16000	5760	18240
June	40000	32000	8000	11200	20800

3. Ans. D.
Required difference = 16000 – 5760 = 10240.
Total number of orders = Number of orders delivered × 100 / Percentage of orders delivered out of the total orders
Number of order cancel = Total number of ordered – Number of orders delivered
Total number of orders returned = Number of orders delivered × 100 / Percentage of orders returned

Month	Total No. of order	No. of order delivered	No. of order canceled	No. of order returned	No. of order finally accepted
January	30000	27000	3000	8100	18900
February	30000	24000	6000	10800	13200
March	28000	21000	7000	10080	10920
April	22500	21600	900	10800	10800
May	40000	24000	16000	5760	18240
June	40000	32000	8000	11200	20800

4. Ans. C.
Required percent = (6000 – 900) / 6000 × 100 = 85%.
Total number of orders = Number of orders delivered × 100 / Percentage of orders delivered out of the total orders
Number of order cancel = Total number of ordered – Number of orders delivered
Total number of orders returned = Number of orders delivered × 100 / Percentage of orders returned

Month	Total No. of order	No. of order delivered	No. of order canceled	No. of order returned	No. of order finally accepted
January	30000	27000	3000	8100	18900
February	30000	24000	6000	10800	13200
March	28000	21000	7000	10080	10920
April	22500	21600	900	10800	10800
May	40000	24000	16000	5760	18240
June	40000	32000	8000	11200	20800

5. Ans. B.
Required sum = 13200 + 10800 = 24000.
Total number of orders = Number of orders delivered × 100 / Percentage of orders delivered out of the total orders
Number of order cancel = Total number of ordered – Number of orders delivered
Total number of orders returned = Number of orders delivered × 100 / Percentage of orders returned

Month	Total No. of order	No. of order delivered	No. of order canceled	No. of order returned	No. of order finally accepted
January	30000	27000	3000	8100	18900
February	30000	24000	6000	10800	13200
March	28000	21000	7000	10080	10920
April	22500	21600	900	10800	10800
May	40000	24000	16000	5760	18240
June	40000	32000	8000	11200	20800

6. Ans. B.
Let the number of leg movements = x, then
(x + 1200) × 0.1 + x × 0.2 = 1200
⇒ 0.3x + 120 = 1200
⇒ 0.3x = 1080
⇒ x = 3600
Hence, on average how many leg movements done by toy A in 1 minute = Total number of leg movements/240 (in 9 AM to 11 AM = 2 hours = 240 minutes) = 3600/240 = 15.

Toy	A	B	C
Capacity (mAh)	1500	1600	1800
Present capacity (mAh)	1200	1120	135

Let the battery consume by 1 hand movement be h mAh and 1 leg movement be l mAh, then
4h + 3l = 1 … (i)
6h + 7l = 2 … (ii)
On solving equations (i) and (ii), we get
h = 0.1 and l = 0.2
7. Ans. C.
Let the number of hand movements = a and number of leg movements = b
a × 0.1 + b × 0.2 = 1120
⇒ a + 2b = 11200 … (i)
Given,
2a + b = x … (ii)
On adding equations (i) and (ii), we get
$a + b = \frac{(11200 + x)}{3}$
For (a + b) to be integer, (11200 + x) must be divisible by 3
I. When x = 9000, then (11200 + x) = 11200 + 9000 = 20200, which is not divisible by 3
II. When x = 12600, then (11200 + x) = 11200 + 12600 = 23800, which is not divisible by 3
III. When x = 9800, then (11200 + x) = 11200 + 9800 = 21000, which is divisible by 3
Hence, only statement III is true.

Toy	A	B	C
Capacity (mAh)	1500	1600	1800
Present capacity (mAh)	1200	1120	135

Let the battery consume by 1 hand movement be h mAh and 1 leg movement be l mAh, then
4h + 3l = 1 … (i)
6h + 7l = 2 … (ii)
On solving equations (i) and (ii), we get
h = 0.1 and l = 0.2
8. Ans. D.
Let the remaining battery capacity of each of the batteries B and C = x mAh, then
1500 × 0.1 + y × 0.2 = (1350 – x)
⇒ 150 + 0.2y = 1350 – x
⇒ 0.2y = 1200 – x
⇒ y = 6000 – 5x
Also given
y × 0.1 + 2000 × 0.2 = (1120 – x)
⇒ (6000 – 5x) × 0.1 + 400 = (1120 – x)
⇒ 600 – 0.5x + 400 = 1120 – x
⇒ 0.5x = 1120 – (600 + 400) = 120
⇒ x = 240
Hence, the required percentage = $\frac{240}{1600}$ × 100 = 15%.

Toy	A	B	C
Capacity (mAh)	1500	1600	1800
Present capacity (mAh)	1200	1120	135

Let the battery consume by 1 hand movement be h mAh and 1 leg movement be l mAh, then
4h + 3l = 1 … (i)
6h + 7l = 2 … (ii)
On solving equations (i) and (ii), we get
h = 0.1 and l = 0.2
9. Ans. E.
Let the number of rotations done by toy B = x and battery consume by 1 rotation = r mAh, then
3r = h + 7l = 0.1 + 7 × 0.2 = 0.1 + 1.4 = 1.5
⇒ $r = \frac{1.5}{3} = 0.5$
According to question
2x × 0.1 + x × 0.1 + x × 0.5 = 1120
⇒ 0.2x + 0.1x + 0.5x = 1120
⇒ 0.8x = 1120
⇒ x = 1400

Hence, the required sum = 2x + x = 3x = 4200.

Toy	A	B	C
Capacity (mAh)	1500	1600	1800
Present capacity (mAh)	1200	1120	135

Let the battery consume by 1 hand movement be h mAh and 1 leg movement be l mAh, then
4h + 3l = 1 … (i)
6h + 7l = 2 … (ii)
On solving equations (i) and (ii), we get
h = 0.1 and l = 0.2
10. Ans. D.
Battery capacity of toy D = $\frac{1200 + 1120}{2}$ = 1160 mAh
Let the number of hand movements done by toy D = x, then
x × 0.1 + x × 0.2 = 75% of 1160
⇒ 0.3x = 870
⇒ x = 2900
Hence, the number of hand movements done by toy D = x = 2900.

Toy	A	B	C
Capacity (mAh)	1500	1600	1800
Present capacity (mAh)	1200	1120	135

Let the battery consume by 1 hand movement be h mAh and 1 leg movement be l mAh, then
4h + 3l = 1 … (i)
6h + 7l = 2 … (ii)
On solving equations (i) and (ii), we get
h = 0.1 and l = 0.2
11. Ans. E.
Number of duplicate male applicants = x and number of duplicate female applicants = y, then
Number of rejected applications of male applicants = (4 + 1)x = 5x
Number of accepted applications of male applicants = $\frac{5}{3}$ × 5x = $\frac{25x}{3}$
Number of rejected applications of female applicants = (4 + 1)y = 5y
Number of accepted applications of female applicants = $\frac{5}{1}$ × 5y = 25y
According to question,
x + y = 63 … (i)
And
$\frac{25x}{3}$ + 25y = 1040 − 63 × 5 = 725
⇒ x + 3y = 87 … (ii)
On solving, we get
x = 51
Hence, answer = 5x = 51 × 5 = 255.
12. Ans. A.
For position E, average number of applications received from a duplicate applicant = D, then
X + (X + Y) + (X + 2Y) = 420
⇒ X + Y = 140
If statement I is true, then X = 139
⇒ Y = 140 − X = 140 − 139 = 1
Number of rejected applications of (male + female) applicants = X + 2Y = 139 + 2 = 141 = 47 × 3
So, this case is possible.
(No. of duplicate applicants = 47 and average no. of duplicate application per duplicate applicant = 3 − 1 = 2)
If statement II is true, then X = 141
⇒ Y = 140 − X = 140 − 141 = −1
Number of rejected applications of (male + female) applicants = X + 2Y = 139 − 2 = 137 = 137 × 1 (Prime number)
So, this case is not possible, because there should be atleast 2 duplicate applicants, then no. of duplicate applicants = 137 and average no. of duplicate application per duplicate applicant = 1 (which is not possible)
If statement III is true, then X = 131
⇒ Y = 140 − X = 140 − 131 = 9
Number of rejected applications of (male + female) applicants = X + 2Y = 131 + 2 × 9 = 149 = 149 × 1 (Prime number)
So, this case is not possible, because there should be atleast 2 duplicate applicants, then no. of duplicate applicants = 149 and average no. of duplicate application per duplicate applicant = 1 (which is not possible)
Hence, only statement I is correct.
13. Ans. A.
Total number of applications for positions A and B = 1040 + 880 = 1920
Total number of accepted applications for positions A and B = 659 × 2 = 1318
Total number of rejected applications for positions A and B = 1920 − 1318 = 602
Let the number of duplicate applicants for position B = x, then

According to question
63 × (4 + 1) + x × (6 + 1) = 602
⇒ 315 + 7x = 602
⇒ 7x = 602 – 315 = 287
⇒ x = $\frac{287}{7}$ = 41.
Hence, answer = x = 41.
14. Ans. C.
Let the average number of duplicate applications submitted by duplicate applicants for position C = x, then
Total number of duplicate applications for position C = 28 × (x + 1)
Total number of accepted application for position C is between 150 + 130 = 280 and 200 + 180 = 380
So, (600 – 380) < 28 × (x + 1) < (600 – 280)
⇒ 220 < 28 × (x + 1) < 320
⇒ $\frac{220}{28}$ < (x + 1) < $\frac{320}{28}$
⇒ $\frac{55}{7}$ –1 < (x + 1) < $\frac{80}{7}$ –1
⇒ $\frac{48}{7}$ < x < $\frac{73}{7}$
⇒ (6 + $\frac{6}{7}$) < x < (10 + $\frac{3}{7}$)
⇒ 7 Â x Â 10
Hence, the possible value of x = 10.
15. Ans. C.
Let a duplicate applicant has sent an average x application, then
Total rejected applications = 48x
Total accepted application = 5 × 48x = 240x
Total applications received = 48x + 240x = 288x
Total number of applications (original + duplicate) received can be only multiple of 288, so it cannot be 240
Therefore, statement I is correct
Number of applications (all original + one from duplicate) can be (240x + 48) i.e. 288, 528, 768 and so on.
So, statement II is correct.
Total applications received = 48x + 240x = 288x i.e. 288, 576, 864 and so on.
So, least number of applications received for position D can be 288, which is the least among the total number of applications received for all 5 positions.
Therefore, statement III is correct.

16. Ans. D.
Hence, Y = 20
Let the efficiencies of a man, a woman and a boy be m, w and b, then
Total work = 3XwY = 1.5XmY = 3XbY
⇒ 2w = m = 2b
Also given
Total work = 8(m + w + b) × 22.5 = 9m × (Y + 20)
⇒ 8(m + $\frac{m}{2}$ + $\frac{m}{2}$) × 22.5 = 9m × (Y + 20)
⇒ 8 × 2m × 22.5 = 9m × (Y + 20)
⇒ 40 = (Y + 20)
⇒ Y = 20
17. Ans. B.
Total work = 1.5XmY = 9m × (Y + 20)
⇒ XY = 4(Y + 20)
⇒ 20X = 160
⇒ X = 8
Hence, the value of X = 8.
Let the efficiencies of a man, a woman and a boy be m, w and b, then
Total work = 3XwY = 1.5XmY = 3XbY
⇒ 2w = m = 2b
Also given
Total work = 8(m + w + b) × 22.5 = 9m × (Y + 20)
⇒ 8(m + $\frac{m}{2}$ + $\frac{m}{2}$) × 22.5 = 9m × (Y + 20)
⇒ 8 × 2m × 22.5 = 9m × (Y + 20)
⇒ 40 = (Y + 20)
⇒ Y = 20
18. Ans. C.
Let required number of days = T
Total work = 8(m + w + b) × 22.5 = 180(2b + b + b) = 720b
According to question
720b × (1 – $\frac{1}{4}$) = (6m + 15b) × T
⇒ 540b = 27b × T
⇒ T = 20
Hence, the answer = T = 20.
Let the efficiencies of a man, a woman and a boy be m, w and b, then
Total work = 3XwY = 1.5XmY = 3XbY
⇒ 2w = m = 2b
Also given
Total work = 8(m + w + b) × 22.5 = 9m × (Y + 20)
⇒ 8(m + $\frac{m}{2}$ + $\frac{m}{2}$) × 22.5 = 9m × (Y + 20)
⇒ 8 × 2m × 22.5 = 9m × (Y + 20)

⇒ 40 = (Y + 20)
⇒ Y = 20
19. Ans. B.
Required central angle = (144 – 4x)° = (144 – 72)° = 72°
Let z_2 = 3x° and z_4 = 7x°
Also given that $z_3 = \frac{4}{3} \times (108 - 3x)° = (144 - 4x)°$
$z_1 + z_2 + z_3 + z_4 = 360°$
⇒ 108° + 3x° + (144 – 4x)° + 7x° = 360°
⇒ 252° + 6x° = 360°
⇒ x = 18
20. Ans. D.
Required percentage $= \frac{7x° - (144 - 4x)°}{7x°} \times 100 = \frac{126° - 72°}{126°} \times 100 = 42.85\%$ Â 42.5%.
Let z_2 = 3x° and z_4 = 7x°
Also given that $z_3 = \frac{4}{3} \times (108 - 3x)° = (144 - 4x)°$
$z_1 + z_2 + z_3 + z_4 = 360°$
⇒ 108° + 3x° + (144 – 4x)° + 7x° = 360°
⇒ 252° + 6x° = 360°
⇒ x = 18
21. Ans. D.
Given 7x° – (144 – 4x)° = 480 voters
⇒ 11x° – 144° = 480 voters
⇒ 198° – 144° = 480 voters
⇒ 9° = 80 voters
Number of invalid voters in zone z_1 = 108° = 960 voters
Hence, the total number of registered voters in the zone z_1 = 960 + 120 = 1080.
Let z_2 = 3x° and z_4 = 7x°
Also given that $z_3 = \frac{4}{3} \times (108 - 3x)° = (144 - 4x)°$
$z_1 + z_2 + z_3 + z_4 = 360°$
⇒ 108° + 3x° + (144 – 4x)° + 7x° = 360°
⇒ 252° + 6x° = 360°
⇒ x = 18
22. Ans. C.
Total number of valid voters in the town $= \frac{80}{9°} \times 360° = 3200$
Total number of invalid voters in the town $= \frac{3200}{80} \times 20 = 800$
Number of invalid voters zone z_1 = 120°
Let number of registered voters in zone z_3 and z_4 be 3a and 5a, then
Total number of invalid voters in zones z_1, z_2, z_3 and z_4 = Total number of invalid voters in the town
120 + 200 + (3a – 8 × 80) +(5a – 14 × 80) = 800
⇒ 8a – 1440 = 800
⇒ a = 280
Hence, required percentage $= \frac{5a}{3200 + 800} \times 100 = \frac{1400}{4000} \times 100 = 35\%$.
Let z_2 = 3x° and z_4 = 7x°
Also given that $z_3 = \frac{4}{3} \times (108 - 3x)° = (144 - 4x)°$
$z_1 + z_2 + z_3 + z_4 = 360°$
⇒ 108° + 3x° + (144 – 4x)° + 7x° = 360°
⇒ 252° + 6x° = 360°
⇒ x = 18
23. Ans. E.
Required ratio = [108 + (144 – 4x)]° : [3x + 7x]° = (252 – 72) : 180 = 180 : 180 = 1 : 1.
Let z_2 = 3x° and z_4 = 7x°
Also given that $z_3 = \frac{4}{3} \times (108 - 3x)° = (144 - 4x)°$
$z_1 + z_2 + z_3 + z_4 = 360°$
⇒ 108° + 3x° + (144 – 4x)° + 7x° = 360°
⇒ 252° + 6x° = 360°
⇒ x = 18
24. Ans. C.
Required probability $= \frac{C_2^{(40+80)}}{C_2^{300}} = \frac{120 \times 119}{300 \times 299} = \frac{238}{1495}$.
Let the number of girls in class A = x, number of boys in class B = b and number of boys in class C = c, then
It is given that,
The probability of selecting a girl from class A from all the girls of the school = $\frac{5}{12}$
$\Rightarrow \frac{x}{(x + 40 + 30)} = \frac{5}{12}$
⇒ x = 50

Probability of selecting a boy from all the students of the school = $\frac{3}{5}$

$\frac{40+b+c}{(40+b+c+50+40+30)} = \frac{3}{5}$

$\Rightarrow \frac{40+b+c}{(50+40+30)} = \frac{3}{2}$

$\Rightarrow$ b = 180 – 40 – c = 140 – c

Probability of selecting a boy from class B = Probability of selecting a boy from class C

$\frac{b}{(b+40)} = \frac{c}{(c+30)}$

$\Rightarrow$ bc + 30b = bc + 40c

$\Rightarrow$ 30b = 40c

$\Rightarrow$ 3b = 4c

$\Rightarrow$ 3(140 – c) = 4c

$\Rightarrow$ c = 60 and b = 140 – c = 140 – 60 = 80

Class	A	B	C
Boys	40	80	60
Girls	50	40	30

25. Ans. B.

Required difference = 90% of 80 – 80% of 50 = 72 – 40 = 32.

Let the number of girls in class A = x, number of boys in class B = b and number of boys in class C = c, then

It is given that,

The probability of selecting a girl from class A from all the girls of the school = $\frac{5}{12}$

$\Rightarrow \frac{x}{(x+40+30)} = \frac{5}{12}$

$\Rightarrow$ x = 50

Probability of selecting a boy from all the students of the school = $\frac{3}{5}$

$\frac{40+b+c}{(40+b+c+50+40+30)} = \frac{3}{5}$

$\Rightarrow \frac{40+b+c}{(50+40+30)} = \frac{3}{2}$

$\Rightarrow$ b = 180 – 40 – c = 140 – c

Probability of selecting a boy from class B = Probability of selecting a boy from class C

$\frac{b}{(b+40)} = \frac{c}{(c+30)}$

$\Rightarrow$ bc + 30b = bc + 40c

$\Rightarrow$ 30b = 40c

$\Rightarrow$ 3b = 4c

$\Rightarrow$ 3(140 – c) = 4c

$\Rightarrow$ c = 60 and b = 140 – c = 140 – 60 = 80

Class	A	B	C
Boys	40	80	60
Girls	50	40	30

26. Ans. D.

Required ratio = $\frac{60}{(40+80+60)}$: $\frac{50}{(40+50)} = \frac{1}{3} : \frac{5}{9}$ = 3 : 5.

Let the number of girls in class A = x, number of boys in class B = b and number of boys in class C = c, then

It is given that,

The probability of selecting a girl from class A from all the girls of the school = $\frac{5}{12}$

$\Rightarrow \frac{x}{(x+40+30)} = \frac{5}{12}$

$\Rightarrow$ x = 50

Probability of selecting a boy from all the students of the school = $\frac{3}{5}$

$\frac{40+b+c}{(40+b+c+50+40+30)} = \frac{3}{5}$

$\Rightarrow \frac{40+b+c}{(50+40+30)} = \frac{3}{2}$

$\Rightarrow$ b = 180 – 40 – c = 140 – c

Probability of selecting a boy from class B = Probability of selecting a boy from class C

$\frac{b}{(b+40)} = \frac{c}{(c+30)}$

$\Rightarrow$ bc + 30b = bc + 40c

$\Rightarrow$ 30b = 40c

$\Rightarrow$ 3b = 4c

$\Rightarrow$ 3(140 – c) = 4c

$\Rightarrow$ c = 60 and b = 140 – c = 140 – 60 = 80

Class	A	B	C
Boys	40	80	60
Girls	50	40	30

27. Ans. C.

The pattern of the 1st series is

(1 + 1) × 1 = **2**
(2 + 1) × 2 = 6
(6 + 1) × 3 = 21
(21 + 1) × 4 = 88
(88 + 1) × 5 = 445
(445 + 1) × 6 = 2676
The pattern of the 2nd series is
(2 + 1) × 1 = 3
(3 + 1) × 2 = 8
(8 + 1) × 3 = 27
So, the 2nd series will be
2, 3, 8, 27
Hence, the 4th term of 2nd series = 27.
28. Ans. B.

Required percent = $\frac{7x}{(7x + 3x + 9x + 9x)}$ × 100 = 25%.
Let the number female students in class A = 3x, then
The number of male students in class A = $\frac{3x}{30}$ × (100 – 30) = 7x
The number of male students in class B = 3 × 3x = 9x
The number of female students in class B = The number of male students in class B = 9x

Class	A	B
Male students	7x	9x
Female students	3x	9x

29. Ans. A.

Required percent = $\frac{7x + 9x}{9x}$ × 100 Â 177%.
Let the number female students in class A = 3x, then
The number of male students in class A = $\frac{3x}{30}$ × (100 – 30) = 7x
The number of male students in class B = 3 × 3x = 9x
The number of female students in class B = The number of male students in class B = 9x

Class	A	B
Male students	7x	9x
Female students	3x	9x

30. Ans. A.
Number male students in a class C = 36 + 9x
Number female students in a class C = 72 + 3x
According to question

$72 + 3x = \frac{36 + 9x}{2} = 18 + 4.5x$
⇒ 1.5x = 54
⇒ x = 36
Hence, the required ratio = (7x + 3x) : (36 + 9x + 72 + 3x) = 10x : (12x + 36 × 3) = 10x : (12x + 3x) = 10x : 15x = 2 : 3.
Let the number female students in class A = 3x, then
The number of male students in class A = $\frac{3x}{30}$ × (100 – 30) = 7x
The number of male students in class B = 3 × 3x = 9x
The number of female students in class B = The number of male students in class B = 9x

Class	A	B
Male students	7x	9x
Female students	3x	9x

31. Ans. C.

PRODUCTS ⇨	x		y		z	
COMPANY ⇩	TARGET SALES	ACHIEVED SALES	TARGET SALES	ACHIEVED SALES	TARGET SALES	ACHIEVED SALES
P	8000	60% 4800	5600	80% 4480	6400	55% 3520
Q	5000	75% 3750	4800	45% 2160	5600	90% 5040
R	7600	40% 3040	7200	65% 4680	6800	70% 4760

the average achieved sales by company Q= (3750+2160+5040)/3 = 3650
the average achieved sales by company R=(3040+4680+4760)/3= 4160
required sum= 3650+4160= 7810
32. Ans. B.

PRODUCTS ⇨	x		y		z	
COMPANY ⇩	TARGET SALES	ACHIEVED SALES	TARGET SALES	ACHIEVED SALES	TARGET SALES	ACHIEVED SALES
P	8000	60% 4800	5600	80% 4480	6400	55% 3520
Q	5000	75% 3750	4800	45% 2160	5600	90% 5040
R	7600	40% 3040	7200	65% 4680	6800	70% 4760

Total achieved sales of Products Y by all three Companies,
= 4480+2160+4680
= 11320
total target sales of Products Z by all three Companies,
= 6400+5600+6800
=18800

Required difference= 18800-11320= 7480

33. Ans. A.

PRODUCTS ⇨	x		y		z	
COMPANY ⇩	TARGET SALES	ACHIEVED SALES	TARGET SALES	ACHIEVED SALES	TARGET SALES	ACHIEVED SALES
P	8000	60% 4800	5600	80% 4480	6400	55% 3520
Q	5000	75% 3750	4800	45% 2160	5600	90% 5040
R	7600	40% 3040	7200	65% 4680	6800	70% 4760

achieved sales of products X & Z together by Company Q,
= 3750+5040
= 8790
Unachieved sales of products Y & Z together by company R
= total target sales – Total achieved sales
=(7200+6800)-(4680+4760)
=4560
Required Ratio= 8790 :4560
= 293 : 152

34. Ans. C.

PRODUCTS ⇨	x		y		z	
COMPANY ⇩	TARGET SALES	ACHIEVED SALES	TARGET SALES	ACHIEVED SALES	TARGET SALES	ACHIEVED SALES
P	8000	60% 4800	5600	80% 4480	6400	55% 3520
Q	5000	75% 3750	4800	45% 2160	5600	90% 5040
R	7600	40% 3040	7200	65% 4680	6800	70% 4760

Achieved sales of product Z by company R= 4760

Achieved sales of products Y by Company P= 4480

Required %= $\frac{4760-4480}{4480}\times 100$ = 6.25% more

35. Ans. C.

PRODUCTS ⇨	x		y		z	
COMPANY ⇩	TARGET SALES	ACHIEVED SALES	TARGET SALES	ACHIEVED SALES	TARGET SALES	ACHIEVED SALES
P	8000	60% 4800	5600	80% 4480	6400	55% 3520
Q	5000	75% 3750	4800	45% 2160	5600	90% 5040
R	7600	40% 3040	7200	65% 4680	6800	70% 4760

Achieved sale of Product X by Company Q= 3750
Achieved sale of Product Y by Company Q= 2160
Achieved sale of Product Z by Company Q= 5040
Ratio of received revenue on Products X, Y, Z = 3750×3 : 2160×4 : 5040×2
= 1125 : 864 : 1008
Required %= $\frac{1125-864}{1125}\times 100$ = 23.2 % less

Classroom

Quant Special Course: SBI & IBPS PO 2020

Crack SBI PO & IBPS PO Exams

Why take this course?

- A Comprehensive Course with a 150-Day Study Plan Covering the Entire Syllabus of IBPS PO as well as SBI PO Exams
- All Topics Covered through Live Class, Quizzes & Weekly Doubt Resolution Sessions
- Increase your Speed and Accuracy with Sectional Tests & Mock Tests along with their Live Analysis
- Expert Faculty with Decades of Teaching Experience for Banking Exams and other Competitive Exams

Jatin

#PrepSmart #StaySafe

www.gradeup.co