DI Test 3 & 5

SET 1. Read the following information carefully and answer the questions based on it.
The table given below shows partial information about the number of boys and girls in five different schools – P, Q, R, S, and T. In each school, the number of boys is more than that of girls. Each school has two streams – Science and commerce.

School	Number of boys	Boys: Girls	(Boys – Girls)
P	(2Z + 30)	3: Y	40
Q	M	3:1	2(Z – 15)
R	(K^2 + M + 3K + 2)	5:1	160
S	45	L: N	10
T	10(K + 1)	5:3	U

Note: All variables given in the table are natural numbers, and ratios are in reduced form.
1. For school P, the number of boys in both streams are same, while 75% of the total girls are in the commerce stream. The number of students in the science stream of school T is 5/8 of the total students in school. Find the total number of students in the science stream of school P is how much % more or less than that of school T?
1.25% 2.20% 3.15% 4.12.5% 5.None of these
2. For school R, Y/3 of students are from Delhi, while (M - 15) % of total boys are from Delhi. Find the number of girls (not from Delhi) is what % of the total girls in school?
1.75% 2.80% 3.25% 4.20% 5.None of these
3. Total students in all schools together represented in a pie chart, then find the central angle (in degrees) corresponding to school S?
1.72^0 $2.64.8^0$ 3.54^0 4.36^0 5.None of these
4. For school Q, the number of boys in science stream is 52, find the difference between number of girls in science stream and boys in commerce stream, if the ratio of students in science and commerce stream is ($K – Y^2$): (3/40*u).
1.17 2.19 3.15 4.18 5.None of these
5. Find the total number of girls in all schools together?
1.255 2.275 3.295 4.235 5.None of these
SET 2. Read the following information carefully and answer the questions based on it.
Vessel P contains Z ml mixture (wine + Whisky), in which wine is K ml and whisky is 2Y ml. Vessel Q contains 5M ml mixture of wine and water in which water is thrice as that of wine. Vessel R, contains 8M ml mixture of whisky and water, in which whisky is 4Y ml. when 60% of mixture is removed from R, then the quantity of water in vessel R becomes 40 ml. When 40 ml from vessel P is poured into vessel Q, then the quantity of wine in vessel Q becomes 55 ml. K is six times as that of Y.
NOTE: We DON'T PROMOTE ALCOHOL. It is just a question.
6. Z is how much % more or less than that of the initial quantity of water in vessel R?
1.16.66% 2.20% 3.25% 4.12.5% 5.None of these
7. Find the ratio of water to that of whisky in the final mixture Q?
1.15:2 2.5:1 3.5:2 4.15:4 5.None of these
8. Find the difference between Whisky and wine after the removal of 40 ml from vessel P?
1.45 ml 2.60 ml 3.20 ml 4.40 ml 5.None of these
SET 3. Read the following information carefully and answer the questions based on it.
The table given below shows information about the number of students with different ranges of marks in two different sections (P and Q). The passing marks is more than 30, and the maximum marks for exam is 100. The marks of each student is in a positive integer.

Range of marks	Students in P	Students in Q
> 70	(M + 5)	80
≥ 61	80	(3Z – K)
≥ 51	(2N + 10)	140
≥ 41	(10K + 70)	(3N + 6K)
≥ 31	4(Z + 5)	(4Y – 15)

Note: a) The total number of students in school is 440, while students in section P to that of Q is in the ratio of 5:6 respectively.
b) The number of students who failed in section Q are 15, which is 25% less than that of section P
c) The number of students who has a score range of (51 to 60) in section P is 30 which is 20% more than that of section Q, while students who scored above 70 in section P is 10 less than students (61 – 70) in section Q.
9. Find the number of students in section P who had scored in the range of (41 – 50).
1.20 2.40 3.10 4.15 5.None of these
10. Find the difference between the number of students who had scored in the range of (61 – 70) in section P and section Q?
1.20 2.10 3.15 4.25 5.None of these
11. Find the value of N?
1.40 2.30 3.60 4.50 5.None of these
12. Find the total number of students in both sections together who had scored in the range of (31 – 40)?
1.125 2.105 3.95 4.85 5.None of these
13. Find the difference between 2(Z + M) and 4(Y + K)?
1.80 2.130 3.120 4.110 5.None of these
SET 4. Read the following information carefully and answer the questions based on it.
There are three schools P, Q, and R and each school has 90 students, and in each school number of boys is twice as that of girls. The data given below gives information about the students present and absent in three schools on Monday.

- Boys present in P to that of girls present in P is in the ratio of 8:3, while boys absent in Q are (Z + 10) and girls absent in Q are (45 – 7Y).
- Total students absent in school R is 30, which is 2/3rd of total students absents in school Q.
- Number of boys present in R is M, while girls present in the same school is (M – 40).
- Number of girls present in school P is 3Y, and Z = Y^2.

14. Find the total number of students absent in all three schools together?
1.100 2.90 3.120 4.110 5.None of these
15. Boys present in school P is what percent more or less than that of school Q?
1.37.5% 2.66.66% 3.62.5% 4.60% 5.None of these
16. A = Total students present in school R
B = Difference between boys and girls absent in school P
Find the value of (A + 4B).
1.90 2.120 3.100 4.75 5.None of these
17. In another school S, the total number of students is (Z^2 + 3Y), while present students in school S are 80%. Find the number of students absent in school S?
1.128 2.120 3.130 4.136 5.None of these
SET 5. Read the following information carefully and answer the questions based on it.
A carpet-making factory has certain number of workers, divided into two teams A and B. In each team workers are from two age groups G1 and G2. The total number of workers in team B is 25 which is 37.5% less than that of team A. Each G1 worker of team A is 66.66% more efficient than that of G2 worker of same team, while each G2 worker of team B is same efficient as that of G1 worker of team A. The number of workers in team A is Z. Three G1 workers of team A and 15 G2 workers of team B together can make 600 black carpets in 40 days, while Z workers of team A together can make 750 black carpets in 25 days. Each G1 worker of team B is twice efficient as that of each G2 worker.
18. Find the number of G1 workers in team A?
1.25 2.30 3.15 4.10 5.None of these
19. The number of G2 workers in team B is four times as that of G1 workers. The time taken by all G1 workers of team B to make 900 black carpets is T days. Find the value of T?
1.108 days 2.72 days 3.90 days 4.120 days 5.Cannot be determined
20. Find the number of black carpets made by ten G1 workers of team A and twenty G1 workers of team B together in 72 days?
1.7200 2.3000 3.3600 4.1800 5.None of these
21. Company got a contract of 300 black carpets. 12 G2 workers of team A started the work and after 30 days, they were replaced by 18 G2 workers of team B, so that the remaining work was completed in T days. Find the value of (T + 12)?
1.28 2.18 3.20 4.24 5.None of these

{1 – 5}

Solution

For School P,

Number of boys > Number of girls

Ratio of boys to girls = 3: Y

Value of Y = 1 or 2

If value of Y = 1,

The ratio of boys to girls = 3:1

So, number of boys = 3/2 x 40 = 60

(2Z + 30) = 60

Value of Z = 15

But (Boys – Girls) in Q = 2(Z – 15) = 15 – 15 = 0

The difference between boys and girls cannot be zero, because in each school, the number of boys > number of girls.

So, the value of Y = 2

The number of boys in school P = 3/1 x 40 = 120

The number of girls in school P = 120 x 2/3 = 80

The total students in school P = 120 + 80 = 200

2Z + 30 = 120

Value of Z = 45

For School Q,

The ratio of boys and girls = 3:1

(Boys – Girls) = 2(Z – 15) = 2(45 – 15) = 60

So, the number of boys (M) = 3/2 x 60 = 90

The number of girls = 90 – 60 = 30

The total students = 90 + 30 = 120

For School R,

Boys: Girls = 5:1

(Boys – girls) = 160

So, the number of boys = 5/4 x 160 = 200

The number of girls = 1/4 x 160 = 40

The total students = 200 + 40 = 240

Now,

$(K^2 + M + 3K + 2) = 200$

$K^2 + 90 + 3K + 2 = 200$

$K^2 + 3K – 108 = 0$

K = - 12, 9

Possible value of K = 9

For School S,

The number of boys = 45

(Boys – Girls) = 10

So, girls = 45 – 10 = 35

Ratio of boys and girls = L: N = 45:35 = 9:7

Value of L = 9

Value of N = 7

For school T,

The number of boys = 10 x (9 + 1) = 100

The number of girls = 3/5 x 100 = 60

The difference between boys and girls (U) = 100 – 60 = 40

The total students = 100 + 60 = 160

School	Total Students	Number of boys	Number of girls
P	200	120	80
Q	120	90	30
R	240	200	40
S	80	45	35
T	160	100	60
Total	800	555	245

1. Answer: B

According to the question,

The number of boys in science stream of school P= 120/2 = 60

The number of girls in science stream of school P = 25% x 80 = 20

So,the total students in science stream of school P = 60 + 20 = 80

The total students in science stream of school T = 160 x 5/8 = 100

Required % = (100 – 80)/100 x 100 = 20%

Hence answer is option B

2. Answer: A

For school R,

Students from Delhi = 2/3 x 240 = 160

Boys from Delhi = (90 – 15) % x 200 = 150

Girls from Delhi = 160 – 150 = 10

Girls not from Delhi = 40 – 10 = 30

Required % = 30/40 x 100 = 75%

Hence answer is option A

3. Answer: D

The total number of students in all schools together = 800

Students in school S = 80

Required central angle = 80/800 x 360 = 36^0

Hence answer is option D

4. Answer: C

For school Q

The total number of students = 120

The ratio of students in science and commerce stream = 5:3

Students in science stream = 5/8 x 120 = 75

So, girls in science stream = = 75 – 52 = 23

Boys in commerce stream = 90 – 52 = 38

Required difference = 38 – 23 = 15

Hence answer is option C

5. Answer: E

Total number of girls in all schools together = 245

Hence answer is option E

{6 – 8}

Solution

When 60% mixture is removed from vessel R, then 40% mixture is left. Also, 40% of its component is also left.

So, 40% of water in vessel R = 40 ml

So, the initial quantity of whisky in vessel R = 40/40 x 100 = 100 ml

The ratio of wine to whisky in vessel P = 6Y:2Y = 3:1

When 40 ml from vessel P poured in to vessel Q, then quantity of wine in vessel Q becomes = 55 ml

So, the initial quantity of wine in vessel Q = 55 – 3/4 x 40 = 25 ml

So, the initial quantity of water in vessel Q = 25 x 3 = 75 ml

So, quantity of mixture in vessel Q = 25 + 75 = 100 ml

5M = 100

Value of M = 20

So, the initial quantity of mixture in vessel R = 8 x 20 = 160 ml
So, the initial quantity of whisky in vessel R = 160 – 100 = 60 ml
Value of Y = 60/4 = 15
So, quantity of whisky in vessel P = 15 x 2 = 30 ml
The quantity of wine in vessel P = 3 x 30 = 90 ml
The quantity of mixture in vessel P = 90 + 30 = 120 ml

6. Answer: B

According to the question,
Value of Z = 120
The initial quantity of water in vessel R = 100 ml
Required % change = (120 – 100)/100 x 100 = 20%
Hence answer is option B

7. Answer: A

The amount of water in final mixture Q = 75 ml
The amount of whisky in final mixture Q = 1/4 x 40 = 10 ml
Required ratio = 75:10 = 15:2
Hence answer is option A

8. Answer: D

The quantity of mixture in vessel P, after removal of 40 ml = 120 – 40 = 80 ml
Required difference = 2/4 x 80 = 40 ml
Hence answer is option D

{9 – 13}

Solution

The total number of students in school = 440
The number of students in section P = 5/11 x 440 = 200
The number of students in section Q = 6/11 x 440 = 240
The number of students who failed (0 – 30) in section Q = 15
So, students failed (0 – 30) in section P = 4/3 x 15 = 20
Now,
4Z + 20 = 200 – 20
4Z = 160
Value of Z = 40
Also,
4Y – 15 = 240 – 15
Value of Y = 60
The number of students who had scored in the range (51 – 60) in section P = 30
So, (2N + 10) – 80 = 30
Value of N = 50
The number of students who had scored in the range (51 – 60) in section Q = 30 x 5/6 = 25
So, 140 – (3Z - K) = 25
140 – 120 + K = 25
Value of K = 5
The number of students who had scored in the range (41 – 50) in section P = (10K + 70) – (2N + 10) = (10 x 5 + 70) – (2 x 50 + 10) = 10
The number of students who had scored in the range (41 – 50) in section Q = 3N + 6K – 140 = 3 x 50 + 6 x 5 – 140 = 40
The number of students who had scored in the range (31 – 40) in section Q = (4Y – 15) – (3N + 6K) = 225 – 180 = 45
The number of students who had scored in the range of (61 – 70) in section Q = 3Z – K – 80 = 3 x 40 – 5 – 80 = 35
The number of students who had scored in the range of > 70 in section Q = 240 – 15 – 45 – 40 – 25 – 35 = 80
The number of students who had scored in the range of (31 – 40) in section P = 4Z + 20 – 10K – 70 = 4x 40 + 20 – 10 x 5 – 70 = 60
The number of students who had scored more than 70 in section P = M + 5 = 35 – 10 =25
Value of M = 20
The number of students who had scored in range (61 – 70) in section P = 80 – 25 = 55

Range of marks	Students in P	Students in Q
(0 – 30)	20	15
(31 – 40)	60	45
(41 – 50)	10	40
(51 – 60)	30	25
(61 – 70)	55	35
Above 70	25	80

9. Answer: C

According to the question,
The number of students in section P who had scored range (41 – 50) = 10
Hence answer is option C

10. Answer: A

Required difference = 55 – 35 = 20
Hence answer is option A

11. Answer: D

The value of N = 50
Hence answer is option D

12. Answer: B

Required sum = 60 + 45 = 105
Hence answer is option B

13. Answer: E

Required difference = 65 x 4 – 2 x 60 = 140
Hence answer is option E

{14 – 17}

Solution

The total number of students in each school = 90
The number of boys in each school = 90 x 2/3 = 60
The number of girls in each school = 90 – 60 = 30
The total number of students absent in school R = 30
The total number of students absent in school Q = 3/2 x 30 = 45
Boys absent in school Q = Z + 10 = Y^2 + 10
Girls absent in school Q = 45 – 7Y
Now,
Y^2 + 10 + 45 – 7Y = 45
Y^2 – 7Y + 10 = 0
(Y – 5) (Y – 2) = 0
The value of Y = 2, 5
If Y = 2
The number of girls absent in Q = 45 – 7 x 2 = 31
But the total number of girls in each school = 30
So, this is clear the value of Y = 5
Value of Z = 5^2 = 25
The number of boys absent in Q = 25 + 10 = 35
The number of boys present in school Q = 60 – 35 = 25
The number of girls absent in school Q = 45 – 7 x 5 = 10
The number of girls present in school Q = 30 – 10 = 20
The total students present in school R = 90 – 30 = 60
The number of boys present in R + The number of girls present in R = 60…… (1)
Also,
The number of boys present in R – The number of girls present in R = M – (M – 40) = 40…….. (2)
So, boys present in R = (100 + 40)/2 = 50
The number of girls present in R = 60 – 50 = 10
The number of girls present in school P = 3Y = 3 x 5 = 15

So, boys present in school P = 8/3 x 15 = 40

School	Boys Present	Girls present	Total present
P	40	15	55
Q	25	20	45
R	50	10	60
Total	115	45	160

14. Answer: D
According to the question,
The total number of students absent in all schools together = 270 – 160 = 110
Hence answer is option D
15. Answer: D
The number of boys present in school P = 40
The number of boys present in school Q = 25
Required % change = (40 – 25)/25 x 100 = 60%
Hence answer is option D
16. Answer: E
The value of A = 60
The value of B = 20 – 15 = 5
Required value = 60 + 4 x 5 = 80
Hence answer is option E
17. Answer: A
The total number of students in school S = 25^2 + 15 = 640
The total number of students absent in school S = 20% x 640 = 128
Hence answer is option A
{18 – 21}
Solution
Workers in team B = 25
So, workers in team A = 8/5 x 25 = 40
Ratio of efficiency of G1 worker and G2 worker of team A = 5:3 [5a, 3a]
Ratio of efficiency of G1 worker and G2 worker of team B = 2:1 = 10:5 [10a, 5a]
Now,
[3 x 5a + 15 x 5a] x 40 = 600
90a = 15
Value of a = 15/90 = 1/6
Let G1 workers of team A = K
So, G2 workers of team B = (40 – K)
Now,
[5 x K + 3 x (40 – K)] x 1/6 x 25 = 750
2K + 120 = 180
Value of K = 30
So, G1 workers in team A = 30
G2 workers in team B = 40 – 30 = 10
18. Answer: B
According to the question,
Number of G1 workers in team A = 30
Hence answer is option B
19. Answer: A
The total workers in team B = 25
The number of G1 workers in team B = 1/5 x 25 = 5
The efficiency of a G1 worker of team B = 10a
G1 workers of team B to make 900 black carpets take T days
So,
(10*5)1/6*T =900
Value of T = 900*6/50 = 108 days
Hence answer is option A
20. Answer: B
Required number of black carpets = (10 x 5 + 20 x 10) x 1/6 x 72 = 3000
Hence answer is option B
21. Answer: C
Number of carpets made by 12 G2 workers of team A in 30 days = 12 x 3 x 1/6 x 30 = 180 carpets
Now,
18 x 5 x 1/6 x T = (300 – 180)
Value of T = 8
Required value = 8 + 12 = 20
Hence answer is option C