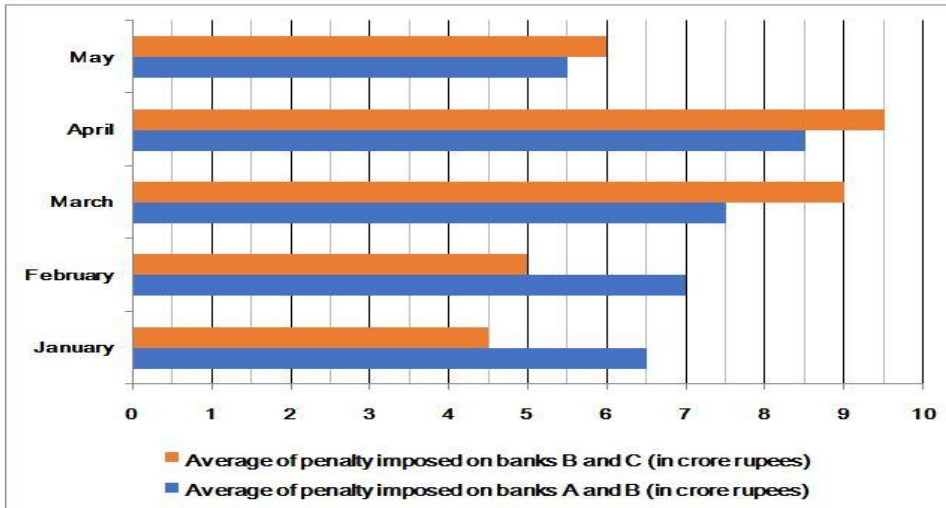


DI Test 3

SET 1. Study the following data carefully and answer the questions:

The data given below is related to the penalty (in crore rupees) imposed on three foreign banks A, B and C in five months January, February, March, April and May.

The bar graph given below shows the following data:



Some other data is also given:

The penalty imposed on bank A in March is ₹1 crore more than that imposed on bank A in January and also ₹4 crores more than that imposed on bank A in April. Ratio of the penalty imposed on bank A in February to that imposed in May, is 13: 7. The ratio of the penalty imposed on bank B in February to that imposed on bank B in April, is 5: 8 and the penalty imposed on bank C in May is 112.5% of that imposed on bank C in January.

- The penalty imposed on bank A in January is $P\%$ of the total penalty imposed on bank A in all the given five months together and the penalty imposed on bank C in May is $Q\%$ of the total penalty imposed on bank C in all the given five months together. Find the ratio of the value of P and Q. 1.5:2 2.4:1 3.3:2 4.5:3 5.5:1
- If the total penalty imposed on bank B in that year is Rs.[180% of (P + Q)] and the ratio of the total penalty imposed on bank B in 1st six months to that imposed in last six months is 7: 5, then find that the penalty imposed on bank B in June is what per cent of that imposed in bank B in May? (Take the values of P and Q from the previous question)
1.Data inadequate 2.33(1/3)% 3.40% 4.44(4/9)% 5.53(1/3)%
- In February, the ratio of the total penalty imposed on banks A and D together to that imposed on banks C and D together, is 4: 3. In May, the ratio of the total penalty imposed on banks A and D together to that imposed on banks B and D together, is 3: 5. If the penalty imposed on bank D in February and May are Rs.M crore and Rs.N crore respectively, then find which of the following statements is/are true? I: Both M and N are whole numbers. II: The ratio of M to N is 19: 7. III: An average of M and N is a prime number.
1.Only III 2.None is true 3.Only I and III 4.Only II and III 5.Only I and II
- A series is formed, which contains numerical values of the penalty imposed on bank A in February, March, April and May, numerical values of the penalty imposed on bank B in February and March and numerical values of the penalty imposed on bank C in January, April and May. If all the numbers in the series are arranged in ascending order from left to right, then find the average of the 3rd number from the left end and the 4th number from the right end?
1.6 2.5 3.5.5 4.7 5.6.5

SET 2. Study the following data carefully and answer the questions:

A restaurant sells only four types of fast food: Pizzas, Burgers, Donuts and Patties. The data given below is related to the number of given fast foods sold by the restaurant in five days Monday, Tuesday, Wednesday, Thursday and Friday.

Table given below shows the following data:

Day	Average no. of pizzas and burgers sold	No. of sold burgers as % of the no. of sold pizzas	Average no. of donuts and patties sold	No. of sold patties as % of the no. of sold donuts
Monday	4X	166(2/3)%	R	33(1/3)%
Tuesday	22	P%	4Y	122(2/9)%
Wednesday	3X	68%	S	60%
Thursday	(3X + Y)	126(2/23)%	18	T%
Friday	18	Q%	(X + Y)	U%

Notes: 1: The number of burgers sold on Monday is 6 more than those sold on Thursday. 2: The ratio of the total number of donuts and patties together sold on Tuesday to that sold on Friday is 5: 3.

- If the number of pizzas sold on Friday is $11(X + 1)\%$ of that sold on Wednesday and the ratio of the number of burgers sold on Friday to the number of patties sold on Friday is 7: 4, then find the values, which will come in places of Q and U, respectively? 1.The value of Q can't be determined and the value of U is 50. 2.87(3/11) and 75 3.63(7/11) and 50 4.50 and 55(6/11) 5.75 and 75(8/11)
- If the price of burgers is Rs.80 per piece, the price of patties is Rs.25 per piece and the total amount received by selling burgers and patties together on Monday is Rs.2900, then find the value of R. 1.(5X + Y)/5 2.(X + Y - 2) 3.None of these 4.(X + Y)/2 5.(XY + 1)/4

- If the number of donuts sold on Tuesday is $10(X + Y)\%$ of that sold on Thursday and the ratio of the number of patties sold on Wednesday to that sold on Thursday is (X - 3): (Y + 2), then find that which of the following statements related to S and T given in options is true?

- Ratio of S to T is 1: 8
- Value of (15S - T) is a perfect square.
- Value of (T - 6S) is a multiple of 12.
- Both (a) and (b)
- All (a), (b) and (c)

- The difference between the number of burgers sold on Tuesday and Wednesday is 12 and the number of pizzas sold on Tuesday is not more than 15. If the price of pizzas is Rs.[P - 19(1/3)] per piece then find the ratio of the amount received by selling pizzas on Tuesday.

- Rs. 2420
- Rs. 2230
- Rs. 2210
- Rs. 2610
- Rs. 2720

SET 3. Study the following data carefully and answer the questions:

A shopkeeper has a different number of units of three articles A, B and C and the cost price of each article is different. The ratio of the cost of price of 1 unit of article A to that of 1 unit of article B, is 14: 25 and the ratio of the total cost price of 'X' units of article A to that of (X - 3) units of article B, will be 7: 10. The difference between the cost prices of 1 unit of articles A and B is Rs.22X. The average cost price of 1 unit of articles A, B and C is Rs.(40X + Y) and the total cost price of (Y/14) units of article C will be Rs.4200.

Note: Number of sold units of each article can be different for each question

- If the shopkeeper sold (X - 8) units of article B at (Y - 50)% profit and (X - 10) units of article B at [(Y/14) + 3]% profit, then find the total profit per cent received by the shopkeeper by selling all the given units of article B. 1.12.5% 2.10% 3.16.67% 4.15% 5.None of these

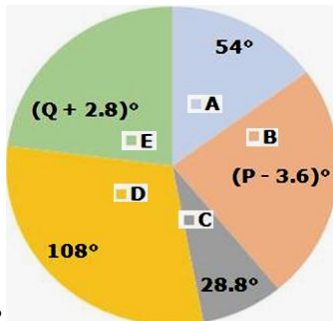
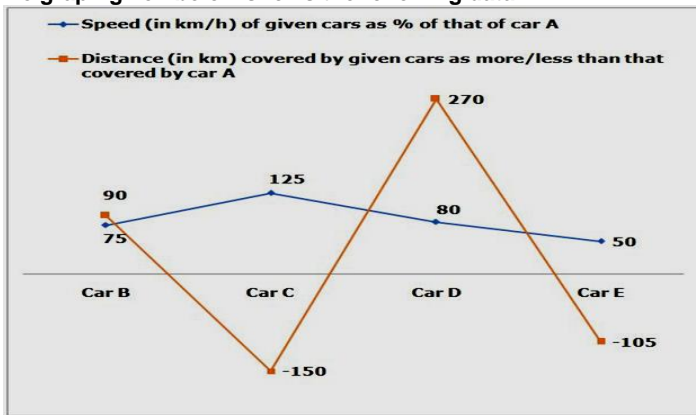
- If the number of sold units of article B is 8 less than the number of sold units of article A, which is 10 more than the number of sold units of article C and the total amount received by the shopkeeper is Rs.21780, then find that which of the following statements is/are true?(Articles A, B, and C were sold at their cost price.) I: The number of sold units of article A is equal to the total number of sold units of articles B and C together. II: Average number of sold units of articles A, B and C is 80% of X. III: The total number of sold units of articles A, B and C together is 1 more than 50% of Y.
1.Only I and III 2.Only II 3.All are true 4.Only I and II 5.Only III

- The shopkeeper marked up each unit of article A by 75%, each unit of article B by 60% and each unit of article C by 50%. He sold each unit of article A at 4% discount on marked price, each unit of article B at 10% discount on marked price and each unit of article C at 15% discount on marked price. Which of the following statements is true? 1.Selling price of one articles B and C is equal 2.Selling price of one articles A and B is equal 3.Profit received on 1 unit of article A is maximum. 4.Selling price of one articles A and C is equal 5.Profit received on 1 unit of article B is maximum.

SET 4. Study the following data carefully and answer the questions:

Five cars A, B, C, D and E went on different trips. The speed (in km/h) of each car during their respective trips was different and the distance (in km) covered by each car is also different

Line graph given below shows the following data:



Note: 1. Positive number shows that the distance covered by given car is more than that covered by car A and negative number shows that the distance covered by given car is less than that covered by car A. Pie chart given below shows the degree distribution of time (in hours) taken by each of the given cars to complete their trips.

Note: 2. The time taken by car B to complete its trip is 12 hours.

12. Car A started its trip from point P at 7:40 AM. When car A travelled for $10[(P/10) - 1]$ minutes, then car C started its trip from the same point on the same route. At what time, car C crossed car A.

1. None of these 2. 12:50 PM 3. 2.20 PM 4. 11:45 AM 5. 12:30 PM

13. Which of the following statements is/are not true?

I: If the speed of car D was 32 km/h for the first five hours, then it will have to cover the remaining distance at 56 km/h to complete its trip on time.

II: If car B paid toll tax at the rate of Rs. 120 per 80 km, then the total toll tax paid by car B will be Rs. 840.

III: Average distance covered by each of the given cars is less than the distance covered by car A.

1. Only II and III 2. None is true 3. Only I 4. Only II 5. Only III

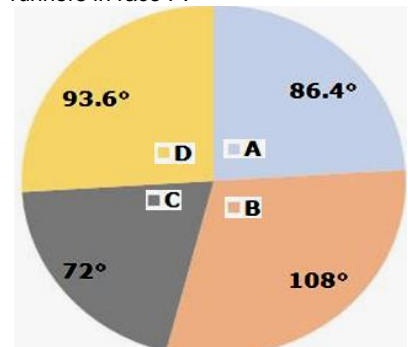
14. If the lengths of the bridges crossed by cars B, D and E are $10(P - Q)$ metres, $5[(P/5) - 2]$ metres and $5[(Q/5) + 4]$ metres respectively, then find the ratio between the time taken by cars B, D and E respectively to cross the bridges. 1.4: 3: 6 2.8: 6: 15 3.2: 1: 3 4.4: 3: 5 5.8: 5: 10

15. A series is given below: $(4P + 35)$, $(4Q - 6)$, $(3Q + 2)$, $(2P - 1)$, $(1.5Q + 5)$

If the speed of car F is the next term of the given series and the average of distances covered by cars D and F is $[6P + (Q/8)]$ km, then find the time taken by car F to complete its trip. 1.5 hours 15 minutes 2.4 hours 45 minutes 3.4 hours 30 minutes 4.5 hours 20 minutes 5.5 hours 30 minutes

SET 5. Study the following data carefully and answer the questions:

Four runners A, B, C and D participated in two running competitions of 1.6 km and 4.8 km. The competition of 1.6 km running is called race P and the competition of 4.8 km running is called race Q. The pie chart given below shows the degree distribution of the speeds (in km/h) of each of the given runners in race P.



Racer	(Speed in race P) - (Speed in race Q) (in km/h)
A	-1.2
B	-1.5
C	-3
D	-0.9

The table given below shows the difference between the speed of a runner in race P and that in race Q.

Notes: 1: In race Q, the average of the speeds of A, B, C and D is $3(7/12)$ m/s.

16. Find the difference between the time taken by that runner to complete race P, who came 1st in race P and the time taken by that runner to complete race Q, who came 2nd in race Q

1. None of these 2. $(992/63)$ minutes 3. $(1112/63)$ minutes 4. $(1042/63)$ minutes 5. $(752/63)$ minutes

17. If the ratio between the time taken by those two racers (whose speeds in race Q were equal) in race P is M: N, and $M < N$, then find the ratio between the time taken by other two racers to complete race P in order to (one who took more time: one who took less time)?

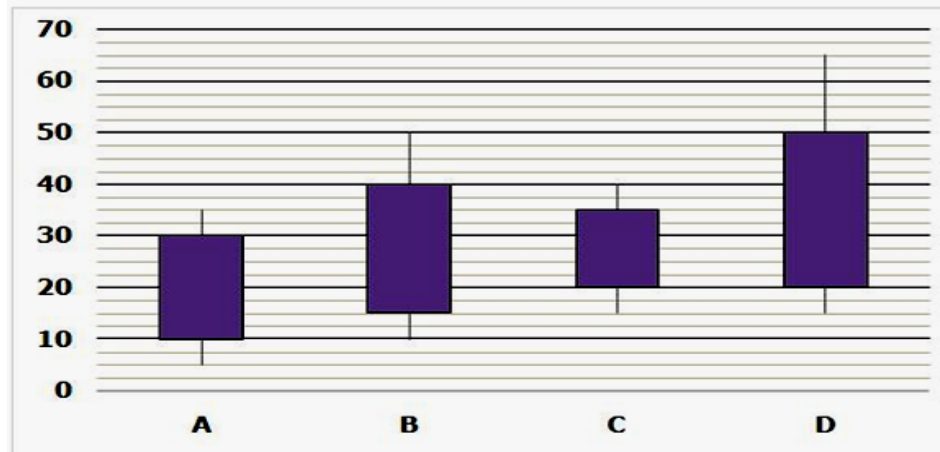
1. 3M: (2N + 1) 2. (2N + 3): (2M + 1) 3. 3M: (3N - 4) 4. Both (a) and (c) 5. Both (b) and (c)

18. Runner E also participated in races P and Q. In race P, the speed of E is 33(1/3)% more than that of A and in race Q, the average speed of C, D and E is 11.2 km/h. If the time taken by E to complete races P and Q are 'T' minutes and 't' minutes respectively, then find which of the following relations between 'T' and 't' is not correct? I: $(3T + 10) < t$ II: $T > (t/8)$ III: $1.5T = t/4$

1. Only I and III 2. All are correct 3. Only III 4. Only II and III 5. Only I

SET 6. Study the following information carefully and answer the following questions.

The below candlestick chart shows the details about the number of articles and that of magazines published and the price per article of four different newspapers in April.



Notes: i) The difference in the number of floors and ceiling lines represents the price per article for four different newspapers. ii) The difference between the floor and ceiling boxes represents the number of articles published in a month for four different newspapers. iii) The difference between the ceiling line and ceiling box represents the number of magazines published in a month for four different newspapers. iv) The total selling amount of Articles/Magazines = The number of Articles/Magazines published * The price per Article/Magazine

19. If the total selling amount of articles and magazines of newspaper A in April is Rs. 850. If the price per article and that of magazines in May are increased by 10% and 8%, respectively, find the price per article and that of magazine of newspaper A in May. 1. Rs. 36 and Rs. 55 2. Rs. 33 and Rs. 54 3. Rs. 36 and Rs. 54 4. Rs. 39 and Rs. 58 5. Rs. 33 and Rs. 58

20. If the ratio of price per magazine of newspaper B to that of newspaper C in April is 2:1, respectively, and the ratio of the total selling amount of articles and magazines together of newspaper B to that of newspaper C in April is 64:21, respectively, find the total selling amount of magazines of newspapers B and C together in April. 1. Rs. 750 2. Rs. 700 3. Rs. 900 4. Rs. 850 5. Cannot be determined.

21. If the price per magazine of newspaper D is a multiple of 25, which is less than 100. Find the possible total selling amount of magazines of newspapers D in April. I: Rs. 375 II: Rs. 1500 III: Rs. 1125. 1. Only II 2. Only I 3. Only III 4. All I, II, and III 5. Both I and III

22. If the number of articles published in newspaper E in May is 40% more than the number of articles published in newspaper C in April and the number of magazines published in newspaper E in April is 20% more than that of newspaper B. Find the total number of articles and magazines published in newspaper E in April. 1. 40 2. 30 3. Cannot be determined 4. 25 5. 20

23. What is the ratio of the number of articles published in all newspapers in April to the number of magazines published in all newspapers in May. **Note:** the number of magazines published in all newspapers in May is 40% less than that of previous month. 1. 20: 3 2. 30: 7 3. 18: 7 4. 22: 3 5. None of these

{1 – 4}

Solution

Let the penalty imposed on bank A in January = Rs.x crore
 So, the penalty imposed on bank A in March = Rs.(x + 1) crore
 And the penalty imposed on bank A in April = (x + 1 – 4) = Rs.(x – 3) crore
 Let the penalty imposed on bank A in February and May be Rs.13y crore and Rs.7y crore.
 The penalty imposed on bank B in February = (2 * 7) – 13y = Rs.(14 – 13y) crore
 The penalty imposed on bank B in April = (2 * 8.5) – (x – 3) = (17 – x + 3) = Rs.(20 – x) crore
 Since, the ratio of the penalty imposed on bank B in February to that imposed in April, is 5: 8.
 So,
 $\Rightarrow (14 - 13y)/(20 - x) = 5/8$
 $\Rightarrow 112 - 104y = 100 - 5x$
 $\Rightarrow 104y - 5x = 12$ -----(1)
 Since, the penalty imposed on bank B in January = (2 * 6.5) – x = Rs.(13 – x) crore
 So, the penalty imposed on bank C in January = (2 * 4.5) – (13 – x) = Rs.(x – 4) crore
 Since, the penalty imposed on bank B in May = (2 * 5.5) – 7y = Rs.(11 – 7y) crore
 So, the penalty imposed on bank C in May = (2 * 6) – (11 – 7y) = Rs.(1 + 7y) crore
 Since, the penalty imposed on bank C in May is 112.5% of that imposed on bank C in January.
 So,
 $\Rightarrow (1 + 7y) = (x - 4) * (112.5/100)$
 $\Rightarrow (1 + 7y) = (x - 4) * (9/8)$
 $\Rightarrow 8 + 56y = 9x - 36$
 $\Rightarrow 9x - 56y = 44$ -----(2)
 Bu equation (1) * 9 + equation (2) * 5:
 $\Rightarrow 936y - 45x + 45x - 280y = 108 + 220$
 $\Rightarrow 656y = 328$
 $\Rightarrow y = 0.5$
 From equation (2):
 $\Rightarrow 9x - 56 * 0.5 = 44$
 $\Rightarrow x = 8$

Month	Penalty imposed on bank A (in crore rupees)	Penalty imposed on bank B (in crore rupees)	Penalty imposed on bank C (in crore rupees)
January	8	$2 * 6.5 - 8 = 5$	$2 * 4.5 - 5 = 4$
February	$13 * 0.5 = 6.5$	$2 * 7 - 6.5 = 7.5$	$2 * 5 - 7.5 = 2.5$
March	$8 + 1 = 9$	$2 * 7.5 - 9 = 6$	$2 * 9 - 6 = 12$
April	$8 - 3 = 5$	$2 * 8.5 - 5 = 12$	$2 * 9.5 - 12 = 7$
May	$7 * 0.5 = 3.5$	$2 * 5.5 - 3.5 = 7.5$	$2 * 6 - 7.5 = 4.5$

1. Answer: D
 Since the total penalty imposed on bank A in all the given five months together = 8 + 6.5 + 9 + 5 + 3.5 = Rs.32 crore
 And the penalty imposed on bank A in January = Rs.8 crore
 So, $P = (8/32) * 100$
 $\Rightarrow P = 25\%$
 Since the total penalty imposed on bank C in all the given five months together = 4 + 2.5 + 12 + 7 + 4.5 = Rs.30 crore
 And the penalty imposed on bank C in May = Rs.4.5 crore
 So, $Q = (4.5/30) * 100$
 $\Rightarrow Q = 15\%$
 Required ratio = 25: 15 = 5: 3
Hence, option (d) is correct.

2. Answer: E

From the previous question:
 $\Rightarrow P = 25$ and $Q = 15$
 Since the total penalty imposed on bank B in that year = 180% of (P + Q) = 180% of (25 + 15) = Rs.72 crore
 So, the total penalty imposed on bank B in 1st six months = $72 * (7/12) = Rs.42$ crore
 Since the total penalty imposed on bank B in all the given five months together = 5 + 7.5 + 6 + 12 + 7.5 = Rs.38 crore
 So, the penalty imposed on bank B in June = 42 – 38 = Rs.4 crore
 Since the penalty imposed on bank B in May = Rs.7.5 crore
 So, the required percentage = $(4/7.5) * 100 = 53(1/3)\%$
Hence, option (e) is correct.
3. Answer: B
 Since, in February, the ratio of the total penalty imposed on banks A and D together to that imposed on banks C and D together, is 4: 3.
 So,
 $\Rightarrow (6.5 + M)/(2.5 + M) = 4/3$
 $\Rightarrow 19.5 + 3M = 10 + 4M$
 $\Rightarrow M = 9.5$
 Since, in May, the ratio of the total penalty imposed on banks A and D together to that imposed on banks B and D together is 3: 5.
 So,
 $\Rightarrow (3.5 + N)/(7.5 + N) = 3/5$
 $\Rightarrow 17.5 + 5N = 22.5 + 3N$
 $\Rightarrow N = 2.5$

From I:
 Since both M and N are decimal numbers and not whole numbers.
 So, I is not true.
From II:
 Since, ratio of M to N = 9.5: 2.5 = 19: 5
 So, II is not true.
From III:
 Since, the average of M and N = $(9.5 + 2.5)/2 = 6$
 And 6 is not a prime number.
 So, III is not true.
 Since none is true.
Hence, option (b) is correct.

4. Answer: C
 The numerical values of the penalty imposed on bank A in February, March, April and May are 6.5, 9, 5 and 3.5 respectively
 The numerical values of the penalty imposed on bank B in February and March are 7.5 and 6 respectively
 The numerical values of the penalty imposed on bank C in January, April and May are 4, 7 and 4.5 respectively.
 Now, the series:
 $\Rightarrow 6.5, 9, 5, 3.5, 7.5, 6, 4, 7, 4.5$
 The ascending order of the numbers given in the series:
 $\Rightarrow 3.5, 4, 4.5, 5, 6, 6.5, 7, 7.5, 9$
 Since, the 3rd number from left end = 4.5
 And the 4th number from right end = 6.5
 So, the required average = $(4.5 + 6.5)/2 = 5.5$
Hence, option (c) is correct.

{5 – 8}
Solution
 The total number of pizzas and burgers sold on Monday = $2 * 4X = 8X$
 The ratio of the number of pizzas to the number of burgers sold on Monday = 100: 166(2/3) = 100: (500/3) = 3: 5
 So, the number of burgers sold on Monday = $8x * (5/8) = 5x$
 The total number of pizzas and burgers sold on Thursday = $2 * (3X + Y) = (6X + 2Y)$

The ratio of the number of pizzas to the number of burgers sold on Thursday = 100: 126(2/23) = 100:

$$(2900/23) = 23: 29$$

So, the number of burgers sold on Tuesday = $(6X + 2Y) * (29/52)$

Since, the number of burgers sold on Monday is 6 more than that sold on Thursday.

So,

$$\Rightarrow 5X - (6X + 2Y) * (29/52) = 6$$

$$\Rightarrow 260X - 174X - 58Y = 312$$

$$\Rightarrow 86X - 58Y = 312$$

$$\Rightarrow 43X - 29Y = 156 \text{ -----(1)}$$

Since, the ratio of the total number of donuts and patties together sold on Tuesday to that sold on Friday is 5: 3.

So,

$$\Rightarrow (2 * 4Y) / [2 * (X + Y)] = 5/3$$

$$\Rightarrow 12Y = 5X + 5Y$$

$$\Rightarrow Y = 5X/7 \text{ -----(2)}$$

From equations (1) and (2):

$$\Rightarrow 43X - 29 * (5X/7) = 156$$

$$\Rightarrow 301X - 145X = 1092$$

$$\Rightarrow X = 7$$

From equation (2):

$$\Rightarrow Y = (5 * 7)/7$$

$$\Rightarrow Y = 5$$

Day	Average no. of pizzas and burgers sold	No. of sold burgers as % of the no. of sold pizzas	Average no. of donuts and patties sold	No. of sold patties as % of the no. of donuts sold
Monday	$4 * 7 = 28$	166(2/3)%	R	33(1/3)%
Tuesday	22	P%	$4 * 5 = 20$	122(2/9)%
Wednesday	$3 * 7 = 21$	68%	S	60%
Thursday	$(3 * 7 + 5) = 26$	126(2/23)%	18	T%
Friday	18	Q%	$(7 + 5) = 12$	U%

5. Answer: C

Let according to the question

Since, the total number of pizzas and burgers sold on Wednesday = $2 * 21 = 42$

And the ratio of the number of pizzas to that of burgers sold on Wednesday = 100: 68 = 25: 17

So, the number of pizzas sold on Wednesday = $42 * (25/42) = 25$

Since, the number of pizzas sold on Friday is $11(X + 1)$ % of that sold on Wednesday.

So, the number of pizzas sold on Friday = $11(X + 1)$ % of 25 = $11(7 + 1)$ % of 25 = 22

The number of burgers sold on Friday = $(2 * 18) - 22 = 14$

And the value of Q = $(14/22) * 100 = 63(7/11)$

Since, the ratio of the number of burgers sold on Friday to the number of patties sold on Friday = 7: 4

So, the number of patties sold on Friday = $14 * (4/7) = 8$

The number of donuts sold on Friday = $(2 * 12) - 8 = 16$

And the value of U = $(8/16) * 100 = 50$

The values of Q and U are $63(7/11)$ and 50 respectively.

Hence, option (c) is correct.

6. Answer: A

Since, the total number of pizzas and burgers together sold on Monday = $2 * 28 = 56$

And the ratio of the number of pizzas to that of burgers sold on Monday = 100: 166(2/3) = 100: (500/3) = 3:

5

So, the number of burgers sold on Monday = $56 * (5/8) = 35$

Let the number of patties sold on Monday = p

So,

$$\Rightarrow (35 * 80) + (p * 25) = 2900$$

$$\Rightarrow 2800 + 25p = 2900$$

$$\Rightarrow p = 4$$

Since, the number of patties sold on Monday = 4

So, the number of donuts sold on Monday = $4 * (300/100) = 12$

And the value of R = $(4 + 12)/2 = 8$

From option (a):

Since, the value of $(5X + Y)/5 = (5 * 7 + 5)/5 = 8$

So, option (a) is correct.

From option (b):

Since, the value of $(X + Y - 2) = (7 + 5 - 2) = 10$

So, option (b) is not correct.

From option (d):

Since, the value of $(X + Y)/2 = (7 + 5)/2 = 6$

So, option (d) is not correct.

From option (e):

Since, the value of $(XY + 1)/4 = (7 * 5 + 1)/4 = 9$

So, option (e) is not correct.

Hence, option (a) is correct.

7. Answer: B

Since, the total number of donuts and patties together sold on Tuesday = $2 * 20 = 40$

And the ratio of the number of donuts to that of patties sold on Tuesday = 100: 122(2/9) = 100: (1100/9) = 9: 11

So, the number of donuts sold on Tuesday = $40 * (9/20) = 18$

Since, the number of donuts sold on Tuesday is $10(X + Y)$ % of that sold on Thursday.

So, the number of donuts sold on Thursday = $18 * 100/[10(X + Y)] = 18 * 100/[10(7 + 5)] = 15$

The number of patties sold on Thursday = $(2 * 18) - 15 = 21$

So, the value of T = $(21/15) * 100 = 140$ %

Since, the ratio of the number of patties sold on Wednesday to that sold on Thursday = $(X - 3): (Y + 2) = (7 - 3): (5 + 2) = 4: 7$

So, the number of patties sold on Wednesday = $21 * (4/7) = 12$

The number of donuts sold on Wednesday = $12 * (100/60) = 20$

And the value of S = $(20 + 12)/2 = 16$

From option (a):

Since, the ratio of S to T = $16: 140 = 4: 35$

So, the statement given in option (a) is not correct.

From option (b):

Since, the value of $(15S - T) = (15 * 16 - 140) = 100$

And 100 is a perfect square.

So, the statement given in option (b) is correct.

From option (c):

Since, the value of $(T - 6S) = (140 - 6 * 16) = 44$

And 44 is not a multiple of 12.

So, the statement given in option (c) is not correct.

Hence, option (b) is correct.

8. Answer: D

Since, the total number of pizzas and burgers together sold on Wednesday = $2 * 21 = 42$

And the ratio of the number of pizzas to that of burgers sold on Wednesday = 100: 68 = 25: 17

So, the number of burgers sold on Wednesday = $42 * (17/42) = 17$

Since, the difference between the number of burgers sold on Tuesday and Wednesday is 12.

So, the number of burgers sold on Tuesday will either be $(17 + 12) = 29$ or $(17 - 12) = 5$

Case I: When the number of burgers sold on Tuesday = 29

Then the number of pizzas sold on Tuesday = $(2 * 22) - 29 = 15$

Case I: When the number of burgers sold on Tuesday = 5

Then the number of pizzas sold on Tuesday = $(2 * 22) - 5 = 39$

Since, the number of pizzas sold on Tuesday is not more than 15.

So, case II can be neglected.

Since, the number of pizzas sold on Tuesday = 15

And the number of burgers sold on Tuesday = 29

So, the value of $P = (29/15) * 100 = 193(1/3)\%$

Since, the price of pizzas = $[P - 19(1/3)] = [193(1/3) - 19(1/3)] = \text{Rs.}174$ per piece

So, the amount received by selling pizzas on Tuesday = $\text{Rs.}(15 * 174) = \text{Rs.} 2610$

Hence, option (d) is correct.

{9 – 11}

Solution

Let the CPs of 1 unit of articles A and B be Rs. '14p' and Rs. '25p' respectively.

Since, the ratio of the total CP of 'X' units of article A to that of (X – 3) units of article B, is 7: 10.

So,

$$\Rightarrow [14p * X]/[25p * (X - 3)] = 7/10$$

$$\Rightarrow [2 * X]/[5 * (X - 3)] = 1/2$$

$$\Rightarrow 4X = 5X - 15$$

$$\Rightarrow X = 15$$

Since, the difference between the CPs of 1 unit of articles A and B = $22X = 22 * 15 = \text{Rs.}330$

So, the CP of 1 unit of article A = $330 * 14/(25 - 14) = \text{Rs.}420$

And the CP of 1 unit of article B = $330 * 25/(25 - 14) = \text{Rs.}750$

Since, the average of the CPs of 1 unit of articles A, B and C = $(40X + Y) = (40 * 15 + Y) = \text{Rs.}(600 + Y)$

So, the CP of 1 unit of article C = $3 * (600 + Y) - (420 + 750) = (1800 + 3Y - 1170) = \text{Rs.}(3Y + 630)$

Since, the total CP of (Y/14) units of article C = $\text{Rs.}4200$

So,

$$\Rightarrow (3Y + 630) * (Y/14) = 4200$$

$$\Rightarrow 3Y^2 + 630Y = 14 * 4200$$

$$\Rightarrow Y^2 + 210Y = 19600$$

$$\Rightarrow Y^2 + 210Y - 19600 = 0$$

$$\Rightarrow Y^2 + 280Y - 70Y - 19600 = 0$$

$$\Rightarrow Y(Y + 280) - 70(Y + 280) = 0$$

$$\Rightarrow Y = 70$$

The CP of 1 unit of article C = $(3 * 70 + 630) = \text{Rs.}840$

9. Answer: D

Value of $(X - 8) = (15 - 8) = 7$

Value of $(X - 10) = (15 - 10) = 5$

Value of $(Y - 50) = (70 - 50) = 20$

Value of $[(Y/14) + 3] = [(70/14) + 3] = 8$

Since, the CP of 1 unit of article B = $\text{Rs.}750$

So, the total SP of 7 units of article B, when sold at 20% profit = $7 * (120\% \text{ of } 750) = \text{Rs.}6300$

And the total SP of 5 units of article B, when sold at 8% profit = $5 * (108\% \text{ of } 750) = \text{Rs.}4050$

Since, the total CP of 12 units of article B = $12 * 750 = \text{Rs.}9000$

And the total SP of 12 units of article B = $6300 + 4050 = \text{Rs.}10350$

So, the profit percentage = $[(10350 - 9000)/9000] * 100 = 15\%$

Hence, option (d) is correct.

10. Answer: C

Let the number of sold units of article A = a

So, the number of sold units of article B = $(a - 8)$

And the number of sold units of article C = $(a - 10)$

Since, the total amount received by the shopkeeper = $\text{Rs.}21780$

So,

$$\Rightarrow [420 * a] + [750 * (a - 8)] + [840 * (a - 10)] = 21780$$

$$\Rightarrow 420a + 750a - 6000 + 840a - 8400 = 21780$$

$$\Rightarrow 2010 = 36180$$

$$\Rightarrow a = 18$$

The number of sold units of article A = 18

The number of sold units of article B = $(18 - 8) = 10$

The number of sold units of article C = $(18 - 10) = 8$

From I:

Since, the number of sold units of article A = the total number of sold units of article B and C together

$$\Rightarrow 18 = 10 + 8$$

$$\Rightarrow 18 = 18$$

So, I is true.

From II:

Since, the average number of sold units of articles A, B and C = $(18 + 10 + 8)/3 = 12$

And the value of $(80\% \text{ of } X) = 80\% \text{ of } 15 = 12$

So, II is true.

From III:

Since, the total number of sold units of articles A, B and C together = $18 + 10 + 8 = 36$

And the value of 1 more than 50% of Y = $50\% \text{ of } 70 + 1 = 36$

So, III is true.

Since, all are true.

Hence, option (c) is correct.

11. Answer: E

Since, the CP of 1 unit of article A = $\text{Rs.}420$

So, the SP of 1 unit of article A = $420 * (175/100) * (96/100) = \text{Rs.}705.6$

And the profit received on 1 unit of article A = $705.6 - 420 = \text{Rs.}285.6$

Since, the CP of 1 unit of article B = $\text{Rs.}750$

So, the SP of 1 unit of article B = $750 * (160/100) * (90/100) = \text{Rs.}1080$

And the profit received on 1 unit of article B = $1080 - 750 = \text{Rs.}330$

Since, the CP of 1 unit of article C = $\text{Rs.}840$

So, the SP of 1 unit of article C = $840 * (150/100) * (85/100) = \text{Rs.}1071$

And the profit received on 1 unit of article C = $1071 - 840 = \text{Rs.}231$

Since, the profit received on 1 unit of any article is not equal and the profit received on 1 unit of article B is maximum.

Hence, option (e) is correct.

{12 – 15}

Solution

Let the speed of car A = '4x' km/h

Also let the distance covered by car A = 'd' km

So,

Car	Speed (in km/h)	Distance covered (in km/h)	Degree distribution of time taken to complete the trip
A	4x	D	54°
B	75% of 4x = 3x	(d + 90)	(P – 3.6)°
C	125% of 4x = 5x	(d – 150)	28.8°
D	80% of 4x = 3.2x	(d + 270)	108°
E	50% of 4x = 2x	(d – 105)	(Q + 2.8)°

The time taken by car A to complete its trip = $(d/4x)$

The time taken by car D to complete its trip = $(d + 270)/3.2x$

Since, the ratio of the time taken by car A to that taken by car D to complete their respective trips = 54: 108 = 1: 2

So,

$$\Rightarrow (d/4x)/[(d + 270)/3.2x] = 1/2$$

$$\Rightarrow 3.2d/[4(d + 270)] = 1/2$$

$$\Rightarrow 3.2d = 2d + 540$$

$$\Rightarrow d = 450$$

Since, the time taken by car B to complete its trip = 12 hours

So,

$$\Rightarrow 12 = (d + 90)/3x$$

$$\Rightarrow 12 = (450 + 90)/3x$$

$$\Rightarrow x = 15$$

Since, the time taken by car A to complete its trip = $d/4x = 450/(4 * 15) = 7.5$ hours

And the time taken by car B to complete its trip = 12 hours

So,
 $\Rightarrow (P - 3.6)/54 = 12/7.5$
 $\Rightarrow P - 3.6 = 86.4$
 $\Rightarrow P = 90$

From the pie chart:
 $\Rightarrow 54 + (P - 3.6) + 28.8 + 108 + (Q + 2.8) = 360$
 $\Rightarrow 54 + (90 - 3.6) + 28.8 + 108 + Q + 2.8 = 360$
 $\Rightarrow Q = 80$

Now, the time taken by car C to complete its trip = $7.5 * (28.8/54) = 4$ hours
 The time taken by car D to complete its trip = $7.5 * (108/54) = 15$ hours
 And the time taken by car E to complete its trip = $7.5 * [(80 + 2.8)/54] = 11.5$ hours

Car	Speed (in km/h)	Distance covered (in km)	Time taken to complete the trip (in hours)
A	$4 * 15 = 60$	450	7.5
B	$3 * 15 = 45$	$450 + 90 = 540$	12
C	$5 * 15 = 75$	$450 - 150 = 300$	4
D	$3.2 * 15 = 48$	$450 + 270 = 720$	15
E	$2 * 15 = 30$	$450 - 105 = 345$	11.5

12. Answer: C
 The time, for which, car A travelled initially = $10[(P/10) - 1] = 10[(90/10) - 1] = 10[9 - 1] = 80$ minutes
 Since, the speed of car A = 60 km/h
 So, the distance covered by car A in 80 minutes = $60 * (80/60) = 80$ km
 7.40 AM + 80 minutes = 9.00 AM
 Time taken = $80/(75 - 60) = 80/15 = 5$ hours 20 minutes
 Then, Car C meets car A = 9.00 AM + 5 hours 20 minutes = 2.20 PM

Hence, option (c) is correct

13. Answer: A

From I:
 Since, the distance covered by car D in first 5 hours = $32 * 5 = 160$ km
 And the remaining distance = $720 - 160 = 560$ km
 So, the speed of car D for remaining distance to be covered to complete the trip on time = $560/(15 - 5) = 56$ km/h

So, I is true.
From II:
 Since, car B paid toll tax at the rate of Rs.120 per 80 km.
 And the total distance covered by car B = 540 km
 So, the total toll tax paid by car B = $(540/80) * 120 = \text{Rs.}810$

So, II is not true.
From III:
 The average distance covered by each of the given cars:
 $\Rightarrow (450 + 540 + 300 + 720 + 345)/5$
 $\Rightarrow 471$ km

Since, the calculated average distance is not less than the distance covered by car A.
 So, III is not true.

Since, only II and III are not true.

Hence, option (a) is correct.

14. Answer: A

Since, the speed of car B = 45 km/h = $45 * (5/18) = 12.5$ m/s
 And the length of the bridge crossed by car B = $10(P - Q) = 10(90 - 80) = 100$ metres
 So, the time taken by car B to cross the bridge = $100/12.5 = 8$ seconds
 Since, the speed of car D = 48 km/h = $48 * (5/18) = (40/3)$ m/s
 And the length of the bridge crossed by car D = $5[(P/5) - 2] = 5[(90/5) - 2] = 80$ metres

So, the time taken by car D to cross the bridge = $80/(40/3) = 6$ seconds
 Since, the speed of car E = 30 km/h = $30 * (5/18) = (25/3)$ m/s
 And the length of the bridge crossed by car E = $5[(Q/5) + 4] = 5[(80/5) + 4] = 100$ metres
 So, the time taken by car E to cross the bridge = $100/(25/3) = 12$ seconds
 Required ratio = 8: 6: 12 = 4: 3: 6

Hence, option (a) is correct.

15. Answer: B

From the series:
 $\Rightarrow (4P + 35), (4Q - 6), (3Q + 2), (2P - 1), (1.5Q + 5)$
 $\Rightarrow (4 * 90 + 35), (4 * 80 - 6), (3 * 80 + 2), (2 * 90 - 1), (1.5 * 80 + 5)$
 $\Rightarrow 395, 314, 242, 179, 125$
 Since, the logic in the series:
 $\Rightarrow 395 - 81 = 314$
 $\Rightarrow 314 - 72 = 242$
 $\Rightarrow 242 - 63 = 179$
 $\Rightarrow 179 - 54 = 125$

So, the next term of the series = $125 - 45 = 80$

And the speed of car F = 80 km/h

Since, the average of distances covered by cars D and F = $[(6P + (Q/8))] = [6 * 90 + (80/8)] = [540 + 10] = 550$ km

And the distance covered by car D = 720 km

So, the distance covered by car F = $(2 * 550) - 720 = 380$ km

And the time taken by car F to complete its trip = $380/80 = 4.75$ hours = 4 hours 45 minutes

Hence, option (b) is correct.

{16 - 18}

Solution

Let the speeds of A, B, C and D in race P be 86.4x km/h, 108x km/h, 72x km/h and 93.6x km/h respectively.

So, the speed of A in race Q = $(86.4x + 1.2)$ km/h

The speed of B in race Q = $(108x + 1.5)$ km/h

The speed of C in race Q = $(72x + 3)$ km/h

And the speed of D in race Q = $(93.6x + 0.9)$ km/h

Since, in race Q, average of the speeds of A, B, C and D = $3(7/12) \text{ m/s} = (43/12) * (18/5) = 12.9$ km/h

So,

$$\Rightarrow [(86.4x + 1.2) + (108x + 1.5) + (72x + 3) + (93.6x + 0.9)]/4 = 12.9$$

$$\Rightarrow 360x + 6.6 = 51.6$$

$$\Rightarrow x = 0.125$$

Runner	Speed in race P (in km/h)	Speed in race Q (in km/h)
A	$86.4 * 0.125 = 10.8$	$10.8 + 1.2 = 12$
B	$108 * 0.125 = 13.5$	$13.5 + 1.5 = 15$
C	$72 * 0.125 = 9$	$9 + 3 = 12$
D	$93.6 * 0.125 = 11.7$	$11.7 + 0.9 = 12.6$

16. Answer: B

Since, in race P, the speed of B was maximum.

So, B came 1st in race P.

And the time taken by B to complete race P = $(1.6/13.5) * 60 = (96/13.5) = (64/9)$ minutes

Since, in race Q, the speed of D was 2nd maximum.

So, D came 2nd in race Q.

And the time taken by D to complete race Q = $(4.8/12.6) * 60 = (288/12.6) = (160/7)$ minutes

Required difference = $(160/7) - (64/9) = (1440 - 448)/63 = (992/63)$ minutes

Hence, option (b) is correct.

17. Answer: A

Since, the two racers, whose speeds in race Q were equal, are A and C.

And the ratio of the speed of A to that of C in race P = 10.8: 9 = 6: 5
 So, the ratio of the time taken by A to that taken by C to complete race P = 5: 6
 And, M: N = 5: 6
 Since, the other two racers are B and D.
 And the ratio between the speeds of B and D in race P = 13.5: 11.7 = 15: 13
 So, the ratio between the time taken by B and D to complete race P = 13: 15
 Since, ratio should be in order to (One who took more time: One who took less time)
 So, the required ratio = 15: 13

From option (a):
 Since, the ratio of 3M to (2N + 1) = (3 * 5): (2 * 6 + 1) = 15: 13
 So, option (a) is correct.

From option (b):
 Since, the ratio of (2N + 3) to (2M + 1) = (2 * 6 + 3): (2 * 5 + 1) = 15: 11
 So, option (b) is not correct.

From option (c):
 Since, the ratio = 3M: (3N - 4) = (3 * 5): (3 * 6 - 4) = 15: 14
 So, option (c) is not correct.

Hence, option (a) is correct.

18. Answer: C
 Since, the speed of A in race P = 10.8 km/h
 So, the speed of E in race P = 133(1/3)% of 10.8 = 14.4 km/h
 And the time taken by E to complete race P = $T = (1.6/14.4) * 60 = (20/3)$ minutes
 Since, the average speed of C, D and E in race Q = 11.2 km/h
 So, the speed of E in race Q = (3 * 11.2) - (12 + 12.6) = 9 km/h
 And the time taken by E to complete race Q = $t = (4.8/9) * 60 = 32$ minutes

From I:
 $\Rightarrow (3T + 10) < t$
 $\Rightarrow [3 * (20/3) + 10] < 32$
 $\Rightarrow 30 < 32$
 The relation given in I is correct.

From II:
 $\Rightarrow T > (t/8)$
 $\Rightarrow (20/3) > (32/8)$
 $\Rightarrow 6.67 > 4$
 The relation given in II is correct.

From III:
 $\Rightarrow 1.5T = t/4$
 $\Rightarrow (1.5 * 20/3) = 32/4$
 $\Rightarrow 10 = 8$
 The relation given in III is not correct.

Hence, option (c) is correct.

{19 - 23}

Solution

Newspaper A
 The number of articles published in April = 30 - 10 = 20
 The price per article = 35 - 5 = Rs. 30
 The total selling amount of articles published in April = 20 * 30 = Rs. 600
 The number of magazines published in April = 35 - 30 = 5

Newspaper B
 The number of articles published in April = 40 - 15 = 25
 The price per article = 50 - 10 = Rs. 40
 The total selling amount of articles published in April = 25 * 40 = Rs. 1000
 The number of magazines published in April = 50 - 40 = 10

Newspaper C
 The number of articles published in April = 35 - 20 = 15
 The price per article = 40 - 15 = Rs. 25
 The total selling amount of articles published in April = 15 * 25 = Rs. 375
 The number of magazines published in April = 40 - 35 = 5

Newspaper D

The number of articles published in April = 50 - 20 = 30
 The price per article = 65 - 15 = Rs. 50
 The total selling amount of articles published in April = 30 * 50 = Rs. 1500
 The number of magazines published in April = 65 - 50 = 15

Let table

Newspaper	Articles			Magazines		
	Nos.	The price per Article (Rs.)	The total amount (Rs.)	Nos.	The price per Article (Rs.)	The total amount (Rs.)
A	20	30	600	5	-	-
B	25	40	1000	10	-	-
C	15	25	375	5	-	-
D	30	50	1500	15	-	-

19. Answer: B

Let according to the question

The price per magazine of newspaper A in April = Rs. a
 The total selling amount of magazines of newspaper A in April = Rs. 5a
 Let
 $600 + 5a = 850$
 $5a = 250$
 $a = 50$
 The price per magazine of newspaper A in April = Rs. 50
 Let
 The price per article of newspaper A in May = 110% of 30 = Rs. 33
 The price per magazine of newspaper A in May = 108% of 50 = Rs. 54

20. Answer: A

The ratio of price per magazine of newspaper B to that of newspaper C in April = 2:1 = 2x: x
 The total selling amount of magazines of newspaper B = 10 * 2x = Rs. 20x
 The total selling amount of magazines of newspaper C = 5 * x = Rs. 5x
 Let
 $(1000 + 20x)/(375 + 5x) = 64/21$
 $21 * (50 + x) = 16 * (75 + x)$
 $1050 + 21x = 1200 + 16x$
 $5x = 150$
 $x = 30$

Then
 The total selling amount of magazines of newspaper B = 10 * 60 = Rs. 600
 The total selling amount of magazines of newspaper C = 5 * 30 = Rs. 150
 Thus, total = 600 + 150 = Rs. 750

21. Answer: E

The possible value price per magazine of newspaper D is 25 or 50 or 75
 The total selling amount of magazines of newspapers D in April = (15 * 25) or (15 * 50) or (15 * 75) = Rs. (375 or 750 or 1125)

22. Answer: C

The number of articles published in newspaper E in May = 140% of 15 = 21
 The number of magazines published in newspaper E in April = 120% of 10 = 12
 We don't know the number of articles published in newspaper E in April. So answer is cannot be determined.

23. Answer: B

The number of articles published in all newspapers in April = 20 + 25 + 15 + 30 = 90
 The number of magazines published in all newspapers in April = 5 + 10 + 5 + 15 = 35
 The number of magazines published in all newspapers in May = 60% of 35 = 21
 Thus, ratio = 90: 21 = 30: 7