Missing

Data Interpretation

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Missing DI Tricks & Tips

Now a days, Missing Data Interpretation questions is asked frequently in exams. These involve tabular DI questions where certain fields are missing data. Students are required to either find out what these missing blanks stand for, or try to work around them and answer questions. But most students consider these the toughest questions precisely because they don't know which approach to take.

Remember that DI questions will give you easy marks. This fear of Missing Data Interpretation questions is only a mental fear. All we have to do is do one extra calculation only to find the missing data.

Let us understand it with an example.

Example of Missing Data Interpretation Questions

Directions: *Some data is missing in the table given. Calculate the missing data and solve the questions based on the table.*

The table given below shows the total revenue (in Rs. Millions) generated by six different super stores and the percentage contribution of different categories of products – Packed Food, Health Care, Cosmetics, Electronics, Stationery and Garments – in the respective total revenue generated by the six super stores.

Total Revenue generated by all the six super stores = Rs. 125 millions

Super Store	Total Revenue Generated (in Rs. Millions)	Percentage contribution in Total Revenue generated					
		Packed Food	Health Care	Cosmetics	Electronics	Stationery	Garments
Small Bazar	45	10	....	35	10	5	15
Hypomart	10	.....	30	25	15	5	10
Toughday	5	25	30	5	10	....	20
Less4More	20	30	20	....	10	10	5
Kubhiksha	....	10	20	15	....	10	10
Alliance	20	20	10	5	15	25	.....

Q1. *What is the percentage contribution of stationery products in the Total Revenue generated by the six super stores together?*

(a) 10.75%
(b) 10.8%
(c) 10.5%
(d) 10%
(e) 10.2%

Ans: (e)
Solution:

Here we can see that, some data are missing. But the trick is that it only looks like data is missing. In reality, all the data are already there; they are just hidden.

For example, in the table, how much revenue Kubhiksha generated is not given. But they have given total revenue and revenue of all other stores, so we can easily find the revenue generated by Kubhiksha by subtracting all the other stores' revenues from total revenue.

Similarly, this is the case for Percentage Contributions also.

Since, total revenue generated for every company is 100%, so we can easily fill in the missing data. All we need to take care of is whether we have to calculate vertically or horizontally.

We can do this by entering an extra column and extra row at the right and bottom respectively. The bottom row will tell us the total revenue generated by all the stores. The column on the right tells us at the total percentage contributions of every segment adds up to 100% for each store.

Super Store	Total Revenue Generated (in Rs. Millions)	Percentage contribution in Total Revenue generated						
		Packed Food	Health Care	Cosmetics	Electronics	Stationery	Garments	TOTAL
Small Bazar	45	10	....	35	10	5	15	**100**
Hypomart	10	....	30	25	15	5	10	**100**
Toughday	5	25	30	5	10	....	20	**100**
Less4More	20	30	20	....	10	10	5	**100**
Kubhiksha	....	10	20	15	....	10	10	**100**
Alliance	20	20	10	5	15	25	....	**100**
TOTAL	**125**	**X**	**X**	**X**	**X**	**X**	**X**	**X**

Note: Do not waste time adding up quantities that are not related. Since we are talking about percentage contribution, each segment will not add up for different stores. That is, it is meaningless if you add up the Packed Food percentage contributions for different stores.

Filling in the missing data from the given information

Super Store	Total Revenue Generated (in Rs. Millions)	Percentage contribution in Total Revenue generated						
		Packed Food	Health Care	Cosmetics	Electronics	Stationery	Garments	TOTAL
Small Bazar	45	10	25	35	10	5	15	**100**
Hypomart	10	15	30	25	15	5	10	**100**
Toughday	5	25	30	5	10	10	20	**100**
Less4More	20	30	20	25	10	10	5	**100**
Kubhiksha	25	10	20	15	35	10	10	**100**
Alliance	20	20	10	5	15	25	25	**100**
TOTAL	**125**	**X**	**X**	**X**	**X**	**X**	**X**	**X**

Now the table has become fully filled, like you want. See how easy it was? These questions are just like the other simple tabulation problems with some extra calculations added.

Now, Let us solve a problem.

General formula:

$$Generated\ Revenue\ (Sector) = \frac{Contribution\ \%}{100} \times Total\ Revenue\ Generated$$

Super Store	Total Revenue Generated (in Rs. Millions)	Contribution in Total Revenue generated (in Rs Millions)					
		Packed Food	Health Care	Cosmetics	Electronics	Stationery	Garments
Small Bazar	45	4.5	11.25	15.75	4.5	2.25	6.75
Hypomart	10	1.5	3	2.5	1.5	0.5	1
Toughday	5	1.25	1.5	0.25	0.5	0.5	1
Less4More	20	6	4	5	2	2	1
Kubhiksha	25	2.5	5	3.75	8.75	2.5	2.5
Alliance	20	4	2	1	3	5	5
Total	125	19.75	26.75	28.25	20.25	12.75	17.25

First we must individually calculate the contributions of different sectors in each company's total revenue. Once you have all the contributions from different companies towards a particular sector, you can find the contribution of that sector in the total revenue generated (Rs. 125 million, in this case).

Hence percentage contribution of stationery products in the total revenue generated by the six super stores together = (12.75/125) × 100 = 10.2 %

***Note:** Here we have shown the individual revenues of each sector from every store. But in the exam, do not sit and calculate everything. First read what is asked, figure out what all data you will need to know for that, and then calculate only the required ones.*

Important Point on Missing Table Chart

- *Understanding the various condition of **Missing DI table** is very important.*
- *Try to **find relation between data in missing D.I** on the basis of condition.*
- ***Most cases in missing D.I.** you can fill all missing data by the help of given data.*
- *Missing **D.I.question solving** helps to solving some other questions.*
- *Don't try to use **short tricks** on Missing D.I question.*

*To make the **chapter easy for you all,** we are providing you **how to Solve Missing Table Questions in DI** and explain with the help of example. Here we are explaining two types of Missing D.I question with explanation.*

Type 1 - Missing D.I Sample Question

***Direction :(1-4)** Study the following table carefully and answers the following questions carefully.*

Details of various items sold by Shop keeper.

Name of Item	Cost price	Profit%	Markup%	Selling Price
Wheat	800	-	20	-
Rice	-	-	-	600
Oil	160			192

***Question 1 :-** If shopkeeper earns 5% profit on Wheat then what percent discount allowed by shop keeper?*

***(1)** 12.5%*

***(2)** 15%*

***(3)** 18%*

***(4)** 10%*

***(5)** None of these*

Note :- In this type of question you can approach two types

(1). Fill all blank space given in table

(2). According to question try to solve because many blank space in this table.

Explanation:-

*In this question we have **cost price and profit%** on the basis of given values easily find out the **discount %***

***Markup price of Wheat** = (800*20)/100 = 160 → 800+160 = 960*

***5% profit** means selling price is = 840*

***Required discount %** = (960 – 840)/960 = 12.5%*

***Question 2;-** What percentage of profit earn by the shopkeeper on oil?*

***(1)** 15%*

***(2)** 25%*

***(3)** 20%*

***(4)** 18%*

***(5)** None of these*

***Explanation:-** Here we have cost & selling price of oil so easily can find percentage values of profit*

***Required profit %** = (192-160)/160 = 20%*

Question 3

Ifshopkeeperr allowed 10% discount on mark price of Wheat then what is the selling price of the Wheat?

***(1)** Rs. 875*

***(2)** Rs. 864*

***(3)** Rs. 892*

***(4)** Rs. 882*

***(5)** None of these*

Explanation:-

*In this question we have **cost price and markup%** on the basis of given values easily find out the **selling price.***

***Mark price of Wheat** = 960*

After allowing 10% discount *= (960*10)/100 = 96*

Selling price of the Wheat *= 960 -96 = 864*

Question 4:- *If shopkeeper Face 20% loss on Rice then what is cost price of the Rice?*

(1) *Rs. 750*

(2) *Rs. 580*

(3) *Rs. 700*

(4) *Rs. 620*

(5) *None of these*

Explanation:-

*In this question we have **selling price and loss%** on the basis of given values easily find out the **cost price.***

Cost price of Rice *= (600*80)/100 = 750*

Type 2- Missing D.I Sample Question

Directions (5-8): *In the following questions information about number of candidates interviewed by five public banks on different working days has been provided. You are required to read the table carefully and answer the questions given below:*

Number of candidates interviewed by five banks on different working days

Working Day	Banks				
	PNB	BOI	IDBI	ICICI	AXIS
Monday	17	18	23	25	18
Tuesday	21	-	14	28	25
Wednesday	23	22	23	-	18
Thursday	-	14	12	23	18
Friday	10	10	-	15	22
Saturday	17	26	20	20	24
Total	112	109	108	123	125

Note:- *In this type of question* ***before proceeding to the question****, our aim should be to find the* ***missing values*** *because very less number of* ***missing space****.*

Missing Values in PNB = *[112- (17+21+23+10+17)] = 24*

Missing Values in BOI = *[109- (18+22+14+10+26)] = 19*

Missing Values in IDBI = *[108- (23+14+23+12+20)] = 16*

Missing Values in ICICI = *[123- (25+28+23+15+20)] = 12*

Question 5:- *What is the respective ratio between the number of candidates interviewed by ICICI banks on Friday and Saturday together and that of candidates interviewed by BOI banks on the same day?*

(1) *35:38*

(2) *39:40*

(3) *43:44*

(4) *45:46*

(5) *None of these*

Explanation:-

Required Ratio = *(15+20) :(10+26) = 35 : 36*

Question 6:-*The number of candidates interviewed by IDBI bank on Wednesday is what per cent of total number of candidates interviewed by all banks on the same day*

(1) *26.65*

(2) *23.45*

(3) *28.45*

(4) *24.35*

(5) *None of these*

Explanation:-

Required percentage = *{23/98 * 100} = 23.45*

Question 7:*-What is the number of candidates interviewed by all banks on Tuesday?*

(1) *101*

(2) *108*

(3) *104*

(4) *107*

(5) *None of these*

Explanation:-

Required number = *(21+19+14+28+25) = 107*

Question 8:*-By Approximate what per cent the number of candidates interviewed by ICICI bank on Thursday increased with respect to that of interviewed on previous day?*

(1) *80%*

(2) *96%*

(3) *88%*

(4) *92%*

(5) *None of these*

Explanation:-

Required percentage = *(23-12)/12 * 100 = 91.66%*

Example Question:

Directions (1 – 6) :*Read the following table carefully and answer the questions given below it.*

*Data related to number of employees who joined (**Jo**) and left (**Le**) five given companies**A,B,C,D**and**E** during the given years.*

Companies / Years	A		B		C		D		E	
	Jo	Le	Jo	Le	Jo	Le	Jo	Le	Jo	Le
2011	161	—	148	—	179	—	116	—	128	—
2012	148	58	172	60	161	90	208	60	191	50
2013	135	69	188	96	143	101	169	45	167	79
2014	112	88	173	59	165	58	142	56	185	82
2015	141	39	151	48	179	66	155	108	142	91

*1.If the respective ratio of number of male and female employees in **CompanyB** at the end of 2013 was 5 : 6, what was the number of female employees in **ComnpanyB** at the end of 2013 ?*

1. *a)208*
2. *b)172*
3. *c)186*
4. *d)192*
5. *e)212*

*2.What was the total number of employees in **CompanyA** at the end of 2014 ?*

1. *a)347*
2. *b)363*
3. *c)329*
4. *d)335*
5. *e)341*

*3.Number of employees in **CompanyE** at the end of 2012 is what percent more then the number of employees in **CompanyC** at the end of 2012 ?*

1. *a)9 ×1/5*
2. *b)3 ×4/5*
3. *c)11 ×1/5*
4. *d)7 ×3/5*
5. *e)5 × 4/5*

4.In which of the given companies, the number of employees was highest at the end of 2012 ?

1. *a)D*
2. *b)C*
3. *c)B*
4. *d)A*
5. *e)E*

*5.What is the average number of employees who joined **CompanyD** during all the given years taken together?*

1. *a)166*
2. *b)156*
3. *c)162*
4. *d)164*
5. *e)158*

*6.What is the respective ratio between total number of employees who joined **Company C** in 2013 and 2014 together and total number of employees who left Company E in 2013, 2014 and 2015 together ?*

1. *a)22 : 17*
2. *b)11 : 9*
3. *c)22 : 19*
4. *d)13 : 9*
5. *e)11 : 7*

***GIVEN**:*

- *5 Companies **A,B,C,D** and **E**.*
- *In 5 Companies Number Of Employees are Joined (**Jo**) and Left (**Le**) during the given **years**.*

SOLUTION :

*Data interpretation **Missing data** tabular form.*

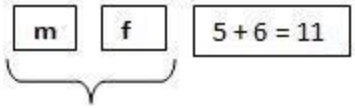
***Question 1**: Explanation.*

*STEP 1: Find the Number of employees who joined in **CompanyB** till 2013 = 148 + 172 + 188 = 508*

STEP 2: Find the Number of employees who left = 60 + 96 = 156

*STEP 3: Find the Difference from **Jo** & **Le** in **CompanyB** = 508 – 156 = 352*

STEP 4: Finally find the **Number of females** = ratio 5 : 6 -→ 6/11 x 352 = 192.



Ans: (4) 192

Question 2*: Explanation.*

STEP 1: The Number of employees in ***CompanyA*** *at the end of 2014 => Add Joined Employees from 2011 to 2014(because question they mentioned end of 2014) – Add Left of Employees from 2011 to 2014.*

= (161 + 148 + 135 + 112) – (58 + 69 + 88) = 556 – 215 = 341.

Ans: *(5) 341*

Question 3*: Explanation.*

STEP 1: Number Of Employees at the end of 2012 :

CompanyE*à128 + 191 – 50 = 269*

CompanyC*à179 + 161 – 90 = 250*

STEP 2: Required per cent = 269 – 250 / 250 x 100 = 38 / 5 = 7 3/5 %

Ans : *(4) 7 3/5*

Question 4*: Explanation.*

STEP 1:Number of employees at the end of 2012:

CompanyA *= 161 + 148 – 58 = 251*

CompanyB*= 148 + 172 – 60 = 260*

CompanyC*= 250*

CompanyD*= 116 + 208 – 60 = 264*

CompanyE*= 269*

The number of employees was highest at the end of 2012 is ***Company E***

Ans : *(5) E*

Question 5*: Explanation.*

STEP 1:Required Average = 1/5 (116 + 208 + 169 + 142 + 155)

= 790 / 5

= 158

Ans : *(5) 158*

Question 6: Explanation.

STEP 1: Required Ratio → (143 + 165) : (79 + 80 + 91)

⇨ 308 : 252

⇨ 11 : 9

Ans: (2) 11 : 9

Solved Examples with Guidelines of Missing DI questions

These questions are easy to solve provided that the candidates are aware of the correct approach to attempt them. Keeping this view in mind, our experts have devised this article which will assist candidates about the correct approach to use while solving missing data interpretation questions so that they can save their time while answering.

Example 1: Level of Difficulty I

Directions:

The proportion of male employees and the proportion of post-graduates in a company are given below. The company has a total of 800 employees, 80% of whom are in the production department and the rest equally divided between the marketing and the accounts department.

Department	Male	Post graduates
Marketing	0.60	
Accounts	0.55	0.50
Production		0.55
Total	0.475	0.53

What is the percentage of male employees in the production department?

A) 40%

B) 45%

C) 50%

D) 55%

E) 60%

Total number of male employees in the company= 0.475% of 800= 380
We now have to see how many of these are from Production department.

Number of employess in Production= 80% of 800= 640

Number of employess in Marketing = Number of employess in Marketing = 10% of 800

Number of Male employess in Marketing = 60% of 10% of 800 = 48

Number of Male employess in Accounts = 55% of 10% of 800 = 44

Male employess in Production= 380- (48+44)= 288

Percentage of Male employess in Producion= (288/640)x 100= 45%

This one was easy. Now lets try a more difficult question on missing data interpretation question.

Example 2: Level of Difficulty II

Directions :

A team of 5 players Arpit, Bimal, Chatur, Dinu and Elan participated in a 'Freaket' tournament and played four matches (1 to 4). The following table gives partial information about their individual scores and the total runs scored by the team in each match.

		Match-1	Match-2	Match-3	Match-4
Runs scored by player	Arpit		100		53
	Bimal	88	65		52
	Chatur			110	
	Dinu	72	75	20	56
	Elan	60		78	
Total		270	300	240	200

Each column has two values missing. These are the runs scored by the two lowest scorers in that match. None of the two missing values is more than 10% of the total runs scored in that match.

1) What is the maximum possible percentage contribution of Arpit in the total runs scored in the 4 matches?

A) 19.7%

B) 19.9%

C) 20.1%

D) 20.2%

Answer: *Option A*

Explanation:

Now you have no clue about Arpit's score in Match 1 and 3. So you must work with estimates and use the statement: None of the two missing values is more than 10% of the total runs scored in that match

Maximum possible runs scored by Arpit in Match-1 = 10% of 270 = 27

Maximum possible runs scored by Arpit in Match-3 = 19

Why is Arpit's score not 24? Because he has to score less than 3rd lowest scorer = 20)

So, Maximum possible percentage contribution:

(27+100+19+53) / (270+300+240+200) x 100% = 199 / 1010 x 100% = 19.7%

This was easy right…. But only if you are prepared for such calculations because of past practice during preparation and mocks.

2) If the absolute difference between the total runs scored by Arpit and Chatur in the four matches is minimum possible then what is the absolute difference between total runs scored by Bimal and Elan in the four matches?

A) 32

B) 37

C) 27

D) Cannot be determined

Answer: *Option B*

Explanation:

Maximum possible total runs scored by Chatur in the four matches = 27 + 30 + 110 + 20 = 187.

You can see that we have again taken 10% values in each match.

Completing the table:

		Match-1	Match-2	Match-3	Match-4
Runs scored by player	Arpit	23	100	13	53
	Bimal	88	65	19	52
	Chatur	27	30	110	20
	Dinu	72	75	20	56
	Elan	60	30	78	19
Total		270	300	240	200

In such a case minimum possible total runs scored by Arpit in the four matches = 23 + 100 + 13 + 53 = 189.

Difference = 189 – 187 = 2 (minimum possible)

To minimize the difference, we have taken minimum possible score of Arpit. Hence his score in Match-3 is taken as 13.

Subsequently total runs scored by Bimal in the four matches = 88 + 65 + 19 + 52 = 224.

Also, total runs scored by Elan in the four matches = 60 + 30 + 78 + 19 = 187

Absolute difference = 224 – 187 = 37

3) The players are ranked 1 to 5 on the basis of the total runs scored by them in the four matches, with the highest scorer getting Rank 1. If it is known that no two players scored the same number of total runs, how many players are there whose rank can be exactly determined?

A) 0

B) 1

C) 3

D) 5

Answer: *Option C*

Explanation:

Rage of every player's minimum and maximum score is:

Arpit >> 189-199

Bimal >> 218-224

Chatur >> 182-187

Dinu >> 223

Elan >> 187-188

So we can conclude that:

Aprip: Rank 3

Elan : Rank 4

Chatur : Rank 5

Since the score of Bimal and Dinu partially overlap, we can not determine the exact ranks of Bimal and Dinu.

Tricks to solve Missing Data Interpretation Questions:

The only tricks that work while solving questions on data interpretation with missing data in SBI-PO and IBPS-PO are the following:

1. *Solve all questions with a cool mind. Don't leave Data Interpretation questions for the last when your mind is tired and anxious.*
2. *Take into consideration a range of values possible to be fit in the blank. Choose the most appropriate value as per the conditions given in the question.*
3. *If the question involves extensive calculation, use approximation method to solve the questions. Finding exact values is only necessary when the answer options are very close.*
4. *Attempt questions on data interpretation in the order in which they appear. It is usually seen that answer of previous question is useful in next question. The questions are usually in increasing order of difficulty.*
5. *Practice missing data interpretation questions before the exam so that you don't feel confused in the exam.*

Read the following table carefully and answer the questions given below it. Data related to number of students who got admission and who left the given five colleges 1,2,3,4 and 5 during the given years.

	COLLEGE 1		COLLEGE 2		COLLEGE 3		COLLEGE 4		COLLEGE 5	
YEARS	ADM	LEFT	ADM	LEFT	ADM	LEFT	ADM	LEFT	ADM	LEFT
2008	161	-	148	-	179	-	116	-	128	-
2009	148	58	172	60	161	90	208	60	191	50

2010	*135*	*69*	*188*	*96*	*143*	*101*	*169*	*45*	*167*	*79*
2011	*112*	*88*	*173*	*59*	*165*	*58*	*142*	*56*	*185*	*82*
2012	*141*	*39*	*151*	*48*	*179*	*66*	*155*	*108*	*142*	*91*

Ques 1. *What is the average number of students who got admission in College 4 during all the given years taken together?*

(a) 156

(b) 164

(c) 166

(d) 162

(e) 158

Ques 2. *If the respective ratio of number of boys and girls in College 2 at the end of 2010 was 5:6, what was the number of girls in College 2 at the end of 2010?*

(a) 212

(b) 186

(c) 208

(d) 192

(e) 172

Ques 3. *In which of the given colleges the number of students were the highest at the end of 2009?*

(a) 1

(b) 2

(c) 3

(d) 4

(e) 5

Ques 4. *What was the total number of students in College 1 at the end of 2011?*

(a) 335

(b) 347

(c) 329

(d) 363

(e) 341

Ques 5. *Number of students in College 5 at the end of 2009 is what percent more than the number of students is College 3 at the end of 2009 ?*

(a) 9 1/5 ----

(b) 11 4/5 ----

(c) 3 3/5 ----

(d) 7 4/5 ----

(e) 5 ----

Ques 6. *What is the respective ratio between total number of students who joined College 3 in 2010 and 2011 together and total number of students who left College 5 in 2010, 2011 and 2012 together ?*

(a) 22:17
(b) 11:9
(c) 13:9
(d) 11:7
(e) 22:19

ANSWERS

(1) (e) - 158

(2) (d) 192

(3) (e) 5

(4) (e) 341

3
(5) (d) 7 ----

5

(6) (b) 11:9

SOLUTIONS

(1) Average = (116 + 208 + 169 + 142 + 155) / 5

= 158

(2) Total admitted student till 2010 = 148 + 172 + 188 = 508

Total number of students who left till 2010 = 60 + 96 = 156

Difference = 352

*Number of girls = 6/11 * 352 = 192*

(3) College 1 = 161 + 148 - 58 = 251

College 2 = 148 + 172 - 60 = 260

College 3 = 179 + 161 - 90 = 250

College 4 = 116 + 208 - 60 = 264

College 5 = 128 + 191 - 50 = 269

(4) (116 + 148 + 135 + 112) - (58 + 69 + 88) = 341

(5) Students of College 5 at the end of 2009 = 128 + 191 - 50 = 269

Students of College 3 at the end of 2009 = 179 +161 - 90 = 250

*Percentage = (269-250) / 250 * 100 = 38/5*

(6) Ratio = (143 + 165) : (79 + 82 + 91)

11 : 9

Directions: *A team of 5 players Ashutosh, Narendra, Praveen, Arpit and Manoj participated in a 'Freaket' tournament and played four matches (1 to 4). The following table gives partial information about their individual scores and the total runs scored by the team in each match.*

Each column has two values missing. These are the runs scored by the two lowest scores in that match. None of the two missing values is more than 10% of the total runs scored in that match.

Runs scored by player	Match-1	Match-2	Match-3	Match-4
Ashutosh	....	100	....	53
Narendra	88	65	....	52
Praveen	....	....	110	....
Arpit	72	75	20	56
Manoj	60	....	78	....
Total	**270**	**300**	**240**	**200**

What is the maximum possible percentage contribution of Ashutosh in the total runs scored in the four matches?

1.19.7%

2.19.9%

3.20.1%

4.20.2%

5.20.5%

Solution

Answer:1It is given that empty values are the lowest scores in that match and none of them is more than 10%.

∴ Maximum possible runs scored by Ashutosh in Match-1 = 10% of 270 = 270 × (10/100) = 27

In Match – 3, Runs scored by Arpit is 20, So Runs scored by Ashutosh will be less than 20.

So, maximum possible runs scored by Ashutosh will be 19.

Maximum possible percentage contribution $= \frac{27+100+19+53}{270+300+240+200} \times 100 = \frac{199}{1010} \times 100 = 19.7\%$

Que. 2

What is the minimum possible runs scored by Manoj in the four matches?

1.188

2.187

3.189

4.199

5.223

Solution

Answer:2Runs scored by Manoj in Match -2 and match – 4 will be minimum when runs scored by Praveen in the match 2 and match – 4 will be maximum.

Maximum runs scored by Praveen in match – 2 = 10% of 300 = 30

∴ Minimum runs scored by Manoj in match 2 = 300 – 100 - 65 – 30 – 75 = 30

Similarly, Maximum runs scored by Praveen in match – 4 = 10% of 200 = 20

∴ Minimum runs scored by Manoj in match 2 = 300 – 53 - 52 – 20 – 56 = 19

⇒ Minimum possible total runs scored by Manoj in the four matches = 60 + 30 + 78 + 19 = 187

Que. 3

If the absolute difference between the total runs scored by Ashutosh and Praveen in the four matches is minimum possible then what is the absolute difference between total runs scored by Narendra and Manoj in the four matches?

1.32

2.37

3.27

4.24

5.Cannot be determined

Solution

Answer:2Maximum possible total runs scored by Praveen in the four matches = 10% of 270 + 10% of 300 + 110 + 10% of 200

= 27 + 30 + 110 + 20 = 187

In such a case minimum possible total runs scored by Ashutosh,

In Match - 1 = 270 – 88 – 27 – 72 – 60 = 23

In Match – 2 = 100

In Match – 3 = 240 – 19 – 110 – 20 – 78 = 13 (Here, Maximum possible runs scored by Narendra is 19)

In Match – 4 = 53

∴ In such a case minimum possible total runs scored by Ashutosh, in four matches = 23 + 100 + 13 + 53 = 189

Difference = 189 – 187 = 2 (minimum possible) subsequently total runs scored by Narendra in the four matches = 88 + 65 + 19 + 52 = 224

Also, total runs scored by Manoj in the four matches = 60 + 30 + 78 + 19 = 187

∴ Absolute difference = 224 – 187 = 37

Que. 4

The players are ranked 1 to 5 on the basis of the total runs scored by them in the four matches, with the highest scorer getting Rank 1. If it is known that no two players scored the same number of total runs, how many players are there whose rank can be exactly determined?

1.0

2.1

3.2

4.3

5.5

Solution

Answer:3Ashutosh's score in Match -1 will be minimum when Praveen's score will be maximum in Match – 1

i.e. Ashutosh's minimum score in Match – 1 = 270 – 88 – (10% of 270) – 72 – 60 = 23

Similarly, Ashutosh's minimum score in Match – 3 = 240 – 19 – 110 – 20 – 78 = 13

So, Minimum possible total runs scored by Ashutosh in 4 matches = 23 + 100 + 13 + 53 = 189

And Maximum possible total runs scored by Ashutosh in 4 matches = 27 + 100 + 19 + 53 = 199

Narendra's score in Match -3 will be minimum when Ashutosh's score will be maximum in Match – 3

i.e. Narendra's minimum score in Match – 3 = 240 – 19 – 110 – 20 – 78 = 13

∴ Minimum possible total runs scored by Narendra in 4 matches = 88 + 65 + 13 + 52 = 218

And Maximum possible total runs scored by Narendra in 4 matches = 88 + 65 + 19 + 52 = 224

Similarly, Minimum possible total runs scored by Praveen in 4 matches = 23 + 30 + 110 + 19 = 182

And Maximum possible total runs scored by Praveen in 4 matches = 27 + 30 + 110 + 20 = 187

Similarly, Total runs scored by Arpit in 4 matches = 72 + 75 + 20 + 56 = 223

Similarly, Minimum possible total runs scored by Manoj in 4 matches = 60 + 30 + 78 + 19 = 187

And Maximum possible total runs scored by Manoj in 4 matches = 60 + 30 + 78 + 20 = 188

Individual ranges for total score:

Ashutosh = 189-199

Narendra = 218-224

Praveen = 182-187

Arpit = 223

Manoj= 187 – 188

Least total will be of Praveen (Rank 5)

2nd least will be Manoj (Rank 4)

Rank 3 must be of Ashutosh.

It is not possible to determine the exact ranks of Narendra and Arpit.

Direction (1-5): ***The table shows the Cost Price of 5 products divided in 3 costs: Production Cost, Transportation Cost and Packaging Cost, the selling price, profit/loss and profit%/loss%. Some values are missing. Find the answers based on information in table and respective questions.***

Products ***Product- Transport- Packag- Selling Profit/ Profit%/***

	ion Cost	ation Cost	ing Cost	Price	-Loss	Loss%
A	Rs 40	Rs 8	–	Rs 150	–	–
B	Rs 50	Rs 10	Rs 4	–	–	30%profit
C	Rs 45	–	Rs 10	–	Rs 50	–
D	Rs 30	Rs 6	Rs 15	–	–	–
E	Rs 60	Rs 10	–	Rs 110	–	10% loss

1. If the percentage of profit on selling product A is 15%, then what is its cost of packaging?
   A) Rs 82.43
   B) Rs 83.50
   C) Rs 86.56
   D) Rs 71.09
   E) Rs 77.80

   Answer

   Option A
   Solution:
   SP = 150, profit% = 15%
   So CP = 100/115 * 150 = Rs 130.43
   So cost of packaging = 130.43 – (40+8) = Rs 82.43

2. What is the difference between the selling price of products B and C, if the cost of transportation of C is Rs 8?
A) Rs 26.6
B) Rs 32.4
C) Rs 29.8
D) Rs 36.4
E) Rs 12.2

   Answer

   Option C
   Solution:
   CP of B = 50+10+4 = Rs 64
   30% profit
   So SP of B = 130/100 * 64 = Rs 83.2

CP of C = 45+8+10 = Rs 63
Profit = Rs 50
So SP of C = 63+50= Rs 113
So difference = 113 – 83.2 = Rs 29.8

3. Suppose all the prices are given for per kg of a product. What amount of product B will have to added to 33 kg of product E such that the resultant product costs Rs 86.
A) 64.1 kg
B) 51.9 kg
C) 62.7 kg
D) 54.3 kg
E) 50.7 kg

Answer

Option D
Solution:
CP of B = 50+10+4 = Rs 64
For CP of E:
SP = 100, loss% = 10%
*So CP of E = 100/90 * 110 = Rs 122.2*
Using method of allegation
(x kg)……(33 kg)
Rs 64…….Rs 122.2
……Rs 86
(122.2-86)……(86-64)
36.2……..22
So
x/33 = 36.2/22
Solve, x = 54.3 kg

4. What is the percentage profit (approximate) on selling product D if its selling price is 80% of the selling price of B?
A) 28%
B) 30%
C) 40%
D) 35%
E) 38%

Answer

Option B
Solution:
*SP of B = 130/100 * 64 = Rs 83.2*

*SP of D = 80/100 * 83.2 = Rs 66.56*
CP of D = 30+6+15 = Rs 51
*So profit% = 15.56/51 * 100 = 30%*

5. If 2 kg of A, 3 kg of C and 4 kg of E are sold, then what will be the final profit/loss% (approximate) on selling these given transportation cost of C as Rs 5 and profit of 5% on selling A?
A) 22%
B) 8%
C) 17%
D) 14%
E) 12%

Answer

Option E
Solution:
*SP of A = 150, profit is 5%, So CP of A = 100/105 * 150 = Rs 143 (we have to find approximate)*
Given transportation cost of C is Rs 5, so total CP of C = 45+5+10 = Rs 60, profit is Rs 50, so SP of C = Rs 110
SP of E = Rs 110, at 10% loss, CP of E = Rs 122
*So CP of (2 kg of A + 3 kg of C + 4 kg of E) = 2*143 + 3*60 + 4*122 = Rs 954*
*Similarly SP of (2 kg of A + 3 kg of C + 4 kg of E) = 2*150 + 3*110 + 4*110 = Rs 1070*
*So profit% = 116/954 * 100 = 12%*

Direction (6-10): The table given below shows the scorecard of India during a test match. Some values are missing. Find the answers based on information in table and respective questions.

Player	*Runs*	*Balls Faced*	*4's*	*6's*
V Kohli	*148*	*104*	*13*	*–*
S Raina	*40*	*55*	*3*	*–*
R Ashwin	*37*	*42*	*1*	*1*
C Pujara	*–*	*21*	*2*	*0*
R Jadeja	*13*	*5*	*0*	*1*
MS Dhoni	*81*	*–*	*11*	*3*
Total	*–*	*–*	*–*	*10*

Further information is:

(i) Total runs scored by V Kohli from those scored by 1's and 2's are in the ratio of 1 : 5
(ii) Number of white balls faced by C Pujara is 6.
(iii) A white ball is defined as the ball on which no run is scored.
(iv) During the entire match only 1's, 2's, 4's and 6's were taken by the batsmen.
(v) V Kohli hits the maximum number of 6's among all the batsmen.
(vi) Beside C Pujara every player has hitted at least a six.
(vii) Every player has taken at least a 1 and a 2.

6. What is the total number of white balls face by V Kohli?

A) 42
B) 53
C) 49
D) 45
E) 38

Answer

Option D
Solution:
*Runs scored by 4's = 13*4 = 52*
Total 6's = 10, Each player except Pujara hit at least a 6. And Kohli hit the maximum 6's.
*So 6's by Kohli = 4. So runs scored by 6's = 4*6 = 24*
Total runs scored by 4's and 6's = 52+24 = 76
For these runs balls played are 13+4 = 17 …….(1)
So runs by 1'2 and 2's = 148-76 = 72
1's and 2's runs ratio = 1 : 5
*So 12 runs by 1'2 and 60(2*30) by 2's*
So balls for 1's and 2's = 12+30 = 42 ……..(2)
So total balls = 17+42 = 59
So number of white balls = 104 – 59 = 45

7. What is the minimum number of balls faced by MS Dhoni?

A) 24
B) 32
C) 29
D) 36
E) 20

Answer

Option A
Solution:
*Runs scored by 4's = 11*4 = 44 ….(1)*

*by 6's = 3*6 = 18 ……(2)*
Total runs by 4's and 6's = 44+18 = 62
remaining runs = 81-62 = 19
By taking 1's and 2's he has scored these 19 runs. To minimize the number of balls Dhoni has to score more runs taking 2's. So he can score 18 runs by taking 2's and 1 by taking a 1.
So balls for 1's and 2's = 9+1 = 10 …….(3)
So total balls (minimum) = 11+3+10 = 24

8. If the number of balls faced by C Pujara to take 1's is greater than that for 2's, then he can score a maximum of how many runs?
A) 24
B) 27
C) 32
D) 21
E) 34

Answer

Option B
Solution:
*Runs by 4's = 2*4 = 8 ….(1)*
Number of white balls = 6
So remaining balls = 21 – (2+6) = 13
So, to maximize his score in 13 balls, he can take 7 one's and 6 two's. ……(2)
*So a maximum of 8 + 7*1 + 6*2 = 27 runs*

9. Assume if only the given players score during the match for the team, then what is the minimum score of the team?
A) 333
B) 309
C) 403
D) 358
E) 341

Answer

Option E
Solution:
In order to find the minimum score of team, we have to find the minimum runs scored by Pujara.
*he takes 2 four's so 2*4 = 8 runs*
So now 21-2 = 19 balls left. Now given that he faced 6 white balls, So now balls left = 19-6 = 13 balls. Now for minimum runs, he should score more 1's than 2's

*Since at least one 1's and one 2's is necessary so minimum runs on 13 balls is 1*12 + 2*1*
*So total min runs by Pujara = 2*4 + 1*12 + 2*1 = 22*
So minimum score of team = 148+40+37+22+13+81 = 341

10. What was the maximum possible new run rate of the team?
A) 9.32
B) 8.48
C) 7.56
D) 4.45
E) 12.23

Answer

Option B
Solution:
First find the maximum runs scored and minimum balls faced.
Minimum number of balls faced by Dhoni = 24
*Maximum runs scored by Pujara = 2*12 + 1*1 + 4*2 = 33*
Maximum runs scored by team = 148+40+37+33+13+81 = 352
Minimum number of balls faced = 104+55+42+21+5+24 = 251 balls or 251/6 = 41.5 overs
So maximum run rate = 352/41.5 = 8.48

Directions: *The proportion of female employees and the proportion of Ph. D scholars in a company are given below. The company has a total of 700 employees, 60% of whom are in the HR department and the rest equally divided between the Development and the Testing department.*

Department	***Female***	***Ph. D scholars***
Development	*0.50*	
Testing	*0.45*	*0.60*
HR		*0.45*
Total	*0.51*	*0.73*

1). What is the percentage of female employees in the HR department (approx)?

a. 41%
b. 47%

c. 53%
d. 55%
e. 68%

Answer: c)
Explanation:
In this question, total no. of employees and the % of employees in HR department are given. In table, the ratio of the (i.e. x/100) female and Ph. D scholars were given. On the basis of given values we can easily find out the values of blanks in the table.
Total number of female employees in the company= 0.51 of 700= 357
We now have to see how many of these are from HR department.
Number of employees in HR department = 60% of 700= 420
Number of employees in Development = 20% of 700
Number of Female employees in Development = 0.50 of 20% of 700 = 70
Number of Female employees in Testing = 0.45 of 20% of 700 = 63
Female employees in HR department = 357 – (70 + 63) = 224
Percentage of Female employees in HR = (224/420) x 100= 53.33%
Similarly, we can find the no. of Ph.D scholars in each department of the company.
Note: *For this type of missing DI we should calculate the missing values of table first. Then solving the questions will be easy.*
Example 2: (Moderate – Difficult)
Directions: *A group of 5 players Arjun, Bindhu, Charan, Dinesh and Elan participated in a 'cricket' tournament and played four days (1 to 4). The following table gives partial information about their individual scores and the total runs scored by the team in each day.*

Players	Day 1	Day 2	Day 3	Day 4
Arjun		120		63
Bindhu	88	65		61
Charan			130	
Dinesh	92	82	25	76
Elan	80		68	
Total	320	330	260	240

In this DI, two values are missing in each column. These are the runs scored by the two lowest scorers in that day. None of the two missing values is more than 10% of the total runs scored in that day.

1) What is the maximum possible percentage contribution of Arjun in the total runs scored in 4 days?

a. 20.78%
b. 19.98%
c. 20.18%
d. 20.28%
e. None of these

Answer: Option A
Explanation:
Now we have no clue about Arjun's score in day 1 and 3.
So we must consider the statement: "None of the two missing values is more than 10% of the total runs scored in that day.
Maximum possible runs scored by Arjun in Day 1 = 10% of 320 = 32
Maximum possible runs scored by Arjun in Day 3
= 24 (Since the 3rd lowest score of the day is 25. So Arjun's score should be less than 25).
So, Maximum possible percentage contribution:
(32+120+24+63) / (320+330+260+240) x 100% = 239 / 1150 x 100% = 20.78%
Note:*For this type of question in missing DI we need not calculate the missing values of table first, since there are more no. of blanks. So we can find the values according to the information given in the question.*
2). If the absolute difference between the total runs scored by Arjun and Charan in the four days is minimum possible then what is the absolute difference between total runs scored by Bindhu and Elan in the four days?

a. 32
b. 44
c. 27
d. Cannot be determined
e. None of these

Answer: b)
Explanation:
Maximum possible total runs scored by Charan in the four days
= 32 + 33 + 130 + 24 = 219.
(By taking 10% values of total score in each day).
Completing the table:

Players	Day 1	Day 2	Day 3	Day 4
Arjun	28	120	13	63

Bindhu	*88*	*65*	*24*	*61*
Charan	*32*	*33*	*130*	*24*
Dinesh	*92*	*82*	*25*	*76*
Elan	*80*	*30*	*68*	*16*
Total	*320*	*330*	*260*	*240*

Note: *In Day 3, we have considered Bindhu's score as 10% of total score on that day. So only, the difference between total score of Arjun and Charan will be Minimum. So we have taken minimum possible score of Arjun.*
In such a case minimum possible total runs scored by Arjun in the four days
= 28 + 120 + 13 + 63 = 224.
Difference = 224 – 219 = 5 (minimum possible)
Subsequently total runs scored by Bindhu in the four days
= 88 + 65 + 24 + 61 = 238.
Also, total runs scored by Elan in the four days = 80 + 30 + 68 + 16 = 194
Absolute difference = 238 – 194 = 44.
Note: *For this type of question in missing DI we have to calculate the missing values of table first, otherwise we cannot answer the question. After finding the missing values, we can solve the question.*

Data related to performance of 6 Batsman in a tournament

Batsman	***Number of matches played in the tournament***	***Average Runs scored in the tournament***	***Total balls faced in the tournament***	***Strike Rate***
A	*8*	*—*	*—*	*129.6*
B	*20*	*81*	*—*	*—*
C	*—*	*38*	*400*	*114*
D	*—*	*—*	*—*	*72*
E	*28*	*55*	*1280*	*—*
F	*—*	*—*	*—*	*66*

Note:
*i. Strike Rate = [Total Runs Scored/Total Balls Faced]*100*
ii. All the given Batsmen could bat in all the given matches played by him.
iii. Few Values are missing in the table (indicated by —). A candidate is expected to calculate the

missing value, if it is required to answer the given question, on the basis of the given data and information.

1. ***The respective ratio between total number of balls faced by D and that by F in the tournament is 3:4. Total number of runs scored by F in the tournament is what percent more than the total runs scored by D in the tournament?***
   A. 200/9%
   B. 150/9%
   C. 350/9%
   D. 325/9%
   E. 100/9%

   *Answer – **A. 200/9%***
   Explanation :
   *F = D = [Strike Rate * Total Balls Faced]/100*
   *F = 66*4x/100, D = 72*3x/100*
   F = D[(100+y)/100]*
   *264x/100 = 216x/100 * [(100+y)/100]*
   y = 200/9%

2. ***If the runs scored by E in last 3 matches of the tournament are not considered, his average runs scored in the tournament will decrease by 9. If the runs scored by E in the 26th and 27th match are below 128 and no two scores among these 3 scores are equal, what are the minimum possible runs scored by E in the 28th match?***
A. 137
B. 135
C. 141
D. 133
E. 130

*Answer – **A. 137***
Explanation :
*Total runs scored = Number of matches played in the tournament * Average Run = 28 * 55 = 1540*
*Total runs scored(excluding last 3 matches) = 25 * 46(decrease 9 in avg) = 1150*
Total runs of last 3 matches = 1540 – 1150 = 390
Average = 390/3 = 130
26th and 27th match are below 128 and no two scores among these 3 scores are equal.So
Assume 26th = 127
then 27th = 126
and therefore 28th = 137

3. ***In the tournament, the total number of balls faced by Batsman A is 74 less than the total number of runs scored by him. What is the average run scored by Batsman A in the tournament?***

A. 42.5
B. 39.5
C. 38
D. 44
E. 40.5

*Answer – **E. 40.5***
Explanation :
*129.6 = [x/x-74]*100 [Strike rate formula given)*
129.6x -9590.4 = 100x
x = 324
Average = 324/8 = 40.5

4. ***Batsman B faced equal number of balls in first 10 matches he played in the tournament and last 10 matches he played in the tournament. If his Strike rate in first 10 matches of the tournament are 120 and 150 respectively, what is the total number of balls faced by him in the tournament?***

A. 1000
B. 1100
C. 1200
D. 1250
E. 1300

*Answer – **C. 1200***
Explanation :
(120/100)(x/2) + (150/100)*(x/2) = 1620*
x = 1200

5. ***What is the number of matches played by batsman C in the tournament?***

A. 10
B. 16
C. 12
D. 18
E. 8

*Answer – **C. 12***
Explanation :
114 = (38x / 400) 100*
x = 12

II. Refer to the table and answer the given questions

Person	Type of Interest	Principal(P)	Amount (A)	Years	Rate of Interest(%)
A	Compound	—	—	2	2
B	Simple	—	—	4	—
C	Compund	20000	—	2	4
D	Simple	—	29500	3	—
E	Compound	10000	—	—	4

6. **If the ratio of interest rate of E to that of D is 2:3 then what is the Principal(P) of D?**

A. 15000
B. 20000
C. 35000
D. 25000
E. 30000

Answer – **D. 25000**
Explanation :
R(%) = 4*3/2 = 6
Principal – x
x + (x*3*6/100) = 29500
x = 25000

7. **If the interest is compounded yearly for three years then what is the amount to be earned by C?**

A. 23497.28
B. 20497.28
C. 22597.28
D. 22697.28
E. 22497.28

Answer – **E. 22497.28**
Explanation :
Amount = P(1 + (R/100)^3)
A = 20000 * 1.04 * 1.04 * 1.04
A = 22497.28

8. **What is the Simple Interest(SI) of B ? If the ratio of Principal of C to that of B is 4:5 and the rate of interest is 10% more than that of C.**

A. 3300
B. 4400
C. 2200
D. 1100
E. 5500

*Answer – **B. 4400***
Explanation :
*P = 5/4 * 20000 = 25000*
The rate of interest is 10% more than that of C.
R(%) = 4 + (4(10/100)) = 4.4 %*
*SI = [25000 * 4.4 * 4]/100 = 4400*

9. ***If the Principal(P) of A is 20% more than that of E, then What is the amount of A?***
A. 12694.60
B. 16584.60
C. 12584.80
D. 12484.80
E. 15684.60

*Answer – **D. 12484.80***
Explanation :
*Principal(P) of A = 10000 * 120/100 = 12000*
A = P(1 + (R/100)^N) = 12000(1 + (2/100)^2) = 12484.80

10. ***If amount of D equals to five times that of his Principal then what is the Rate of Interest(%)?***
A. 122.22%
B. 144.44%
C. 133.33%
D. 155.55%
E. None of the Above

*Answer – **C. 133.33%***
Explanation :
Amount of D = Rs.29500
Principal – x
Amount of D = 5x
5x = 29500 => x= 5900
SI = 29500 – 5900 = 23600
*R = 23600 * 100 / 5900 * 3 = 133.33%*

Directions (Q.1-5):Given below is the table showing income, expenditure and profit percentage of company A from 2011-2016.

	Income	*Expenditure*	*Profit%*
2011	*103.824*	*—*	*12%*
2012	*—*	*83.8*	*25%*
2013	*95.76*	*84*	*—*
2014	*113.28*	*—*	*20%*

2015	*133.1*	*110*	*—*
2016	*121.6*	*—*	*—*

NOTE: (i) Income and expenditure are in million rupees and
(ii) Percentage increase in profit percent in year 2016 in comparison to previous year is 33 (1/3)%.

Q1. Find the expenditure of the company in 2016.
(a) 94 million
(b) 95 million
(c) 99 million
(d) 81 million
(e) None of these

Q2. Expenditure in 2014 is what percent more or less than the expenditure in 2011? (round off to 2 decimal places)
(a) 1.22% more
(b) 1.69% less
(c) 1.83% more
(d) 1.45% less
(e) None of these

Q3. What is average expenditure of the company from year 2012 to 2016?
(a) 93.44 million
(b) 92.88 million
(c) 93.98 million
(d) 94.88 million
(e) None of these

Q4. Find the approx percent profit of company till 2014 taking total expenditure and total income till the end of 2014 together.
(a) 15.77
(b) 18.92
(c) 16.47
(d) 18.24
(e) 17.67

Q5. If expenditure was increased by 20% in year 2011 in comparison to previous year, and profit percentage in the previous year was 25% less than the profit percentage in 2011 then find the income in 2010.

(a) 83.202 million
(b) 85.6211 million
(c) 81.243 million
(d) 84.2025 million
(e) None of these

Directions (6-10): Study the table carefully and answer the following questions carefully— Distribution of LEDs in different states and among different category of people of India under Unnatjyoti Affordable LED's for All (UJALA) scheme. Total LEDs distributed = 30 lakh

States	LEDs distributed (in lakh)	High income people	Middle income people	Low income people
Uttrakhand	6.5	15%	—	50%
Bihar	3.4	12%	32%	—
U.P.	2.5	8%	13%	—
Haryana	5.2	—	25%	—
Punjab	—	21%	22%	—
Assam	4.2	—	9%	78%
Kerala	4.7	15%	—	60%

Note- some values are missing, you have to find these values as per given data only.

Q6. Total distribution of LEDs in Uttrakhand is what % more/less than that of total distribution of LEDs in Assam and Punjab together?

(a) 15.58 % less
(b) 12.98 % more
(c) 18.42 %less
(d) 17.23 % more
(e) None of these

Q7. What is the ratio of distribution of LEDs in low income people of Bihar to the middle income people of Kerala ?
(a) 25:18
(b)17:29
(c) 19:12
(d) 18 : 25
(e) None of these

Q8. What is the difference between the LED's distribution in High income people of UP, Uttrakhand and Kerala together to the LED's distribution in Middle income people of Haryana, Punjab and Kerala together?
(a) 144800
(b) 136500
(c) 140900
(d) 144200
(e) None of these

Q9. In Haryana state the ratio of % distribution of LED's in High income people to the Low income people is 2 : 3, then the distribution of LED's in high income people in the same state is how much more than that of in middle income people?
(a) 26000
(b) 14000
(c) 21000
(d) 24000
(e) None of these

Q10. Total distribution of LEDs in low income people of all the state together excluding Haryana is approximately what % of the total distribution of LEDs in all states together?
(a) 63.7%
(b) 45.6%
(c) 54.9%
(d) 50.7%
(e) 58.3%

Solutions

S1. Ans.(b)
Sol.
Profit in 2015 = $\frac{23.1\times100}{110} = 21\%$
In 2016, P % = $\frac{21\times400}{3\times100} = 28\%$
So, expenditure = $\frac{121.6\times100}{128} = 95$ million

S2. Ans.(c)
Sol.
Expenditure in 2014 = $\frac{113.28\times100}{120} = 94.4$
Expenditure in 2011 = $\frac{103.824\times100}{112} = 92.7$
Required answer = $\frac{94.4-92.7}{92.7}\times100 = 1.83\%$ more

S3. Ans.(a)
Sol.
Required average = $\frac{83.8+84+94.4+110+95}{5} = 93.44$ million

S4. Ans.(e)
Sol.
Total income = $103.824 + 95.76 + 113.28 + 83.8 \times \frac{125}{100} = 417.614$
Total expenditure= 92.7+83.8+84+94.4= 354.9
Profit % = $\frac{417.614-354.90}{354.90}\times100 = 17.67\%$

S5. Ans.(d)
Sol.
Expenditure in 2011 = 92.7
So, Expenditure in 2010 = $\frac{92.7\times100}{120} = 77.25$
Profit in 2010 = $\frac{12\times75}{100} = 9$
Income = $\frac{77.25\times109}{100} = 84.2025$ million

S6. Ans.(a)
Sol.
LED's distribution in Uttrakhand = 6.5
In Assam + Punjab = 4.2 + 3.5 = 7.7
Required answer = $\frac{7.7-6.5}{7.7}\times100 = 15.58\%$ less

S7. Ans.(e)
Sol.
Required ratio = $\frac{3.4\times56}{4.7\times25} = 1904 : 1175$

S8. Ans.(b)
Sol.
LED's distribution in high income people in UP, Kerala, Uttrakhand
$= 2.5\times\frac{8}{100} + 6.5\times\frac{15}{100} + 4.7\times\frac{15}{100} = 1.88$

In middle income people of Haryana, Punjab and Kerala = 5.2 × 25% + 3.5 × 22% + 4.7 × 25%
= 3.245
Difference = 3.245 – 1.88 = 1.365 lakh
= 136500

S9. Ans.(a)
Sol.
In Haryana = High+low = 100 – 25 = 75%
High : low = 2 : 3
So, High income people = $2\times\frac{75}{5} = 30\%$
Low income people = 45%
Required answer = $5.2\times\frac{30-25}{100}$ Lakh
$= \frac{5.2\times5}{100} = 26000$

S10. Ans.(d)
Sol.
Total distribution in Low income people
$= 6.5\times\frac{1}{2} + 3.4\times\frac{56}{100} + 2.5\times\frac{79}{100} + 3.5\times\frac{57}{100} + 4.2\times\frac{78}{100} + 4.7\times\frac{60}{100}$
= 15.22 lakh
Total distribution = 30 Lakh
Required answer = $\frac{15.22\times100}{30} = 50.7\%$

Example 1: Level of Difficulty I

Directions:

The proportion of male employees and the proportion of post-graduates in a company are given below. The company has a total of 800 employees, 80% of whom are in the production department and the rest equally divided between the marketing and the accounts department.

DEPARTMENT MALE POSTGRADUATES
Marketing *0.60*

Account	*0.55*	*0.50*
Production		*0.55*
Total	*0.475*	*0.53*

What is the percentage of male employees in the production department?

A) 40%

B) 45%

C) 50%

D) 55%

E) 60%

Total number of male employees in the company= 0.475% of 800= 380
We now have to see how many of these are from Production department.

Number of employess in Production= 80% of 800= 640

Number of employess in Marketing = Number of employess in Marketing = 10% of 800

Number of Male employess in Marketing = 60% of 10% of 800 = 48

Number of Male employess in Accounts = 55% of 10% of 800 = 44

Male employess in Production= 380- (48+44)= 288

Percentage of Male employess in Producion= (288/640)x 100= 45%

This one was easy. Now lets try a more difficult question on missing data interpretation question.

Example 2: Level of Difficulty II

Directions :

A team of 5 players Arpit, Bimal, Chatur, Dinu and Elan participated in a 'Freaket' tournament and played four matches (1 to 4). The following table gives partial information about their individual scores and the total runs scored by the team in each match.

Player	Match 1	Match 2	Match 3	Match 4
Arpit		100		53
Birbal	88	65		52
Chatur			110	
Dinu	72	75	20	56
Elaan	60		78	
Total	270	300	240	200

Each column has two values missing. These are the runs scored by the two lowest scorers in that match. None of the two missing values is more than 10% of the total runs scored in that match.

1) What is the maximum possible percentage contribution of Arpit in the total runs scored in the 4 matches?

A) 19.7%

B) 19.9%

C) 20.1%

D) 20.2%

Answer: *Option A*

Explanation:

Now you have no clue about Arpit's score in Match 1 and 3. So you must work with estimates and use the statement: None of the two missing values is more than 10% of the total runs scored in that match

Maximum possible runs scored by Arpit in Match-1 = 10% of 270 = 27

Maximum possible runs scored by Arpit in Match-3 = 19

Why is Arpit's score not 24? Because he has to score less than 3rd lowest scorer = 20)

So, Maximum possible percentage contribution:

(27+100+19+53) / (270+300+240+200) x 100% = 199 / 1010 x 100% = 19.7%

***Directions (6-10)**: The following table shows the monthly income and various expenditures of six friends in absolute value or in percentage(in terms of total income). Some values are missing which you are expected to calculate if required.*

Friends	Salary (in Rs.)	Incentive (in Rs.)	Expenditure (in Rs.) on			
			Travel	Parties	Accommodation	Marketing
Babu	46000	-	-	5480	10%	15%
Gaurav	-	7200	7640	8500	6200	-
Arunoday	-	6300	12%	8%	-	12%
Mohit	44000	-	-	7560	9%	8400
Kamal	40000	-	5%	-	4200	5620
Mohan	-	5700	4200	8%	-	6860

*Note:1. Incentive amounts to 15% of salary and all friends save 40% of their total income **(salary + incentive)***
2. There is no expenditure other than the given expenditures.

6.Find the total amount (in Rs) expended by all friends together on travelling?
A. 42817
B. 42871
C. 41817
D. 41781
E. None of these

7.Find the difference in the amount spent by Gaurav on parties and Marketing together and that of Arunoday on Accomodation?
A. 5656
B. 5776
C. 5756
D. 5576
E. None of these

8.What amount is saved by all friends together?
A. Rs 126880
B. Rs 118680
C. Rs 118860

D. Rs 181680
E. None of these

9.Total amount income of Mohit is by what amount less than that of Babu?
A. Rs 2300
B. Rs 23600
C. Rs 27600
D. Rs 2700
E. None of these

10.Expenditure by Babu on Travelling constitutes what percent (Approx.) of salary of Mohan?
A. 30%
B. 38%
C. 32%
D. 34%
E. 80%

Answers: (6-10)

Solution

Friends	Salary (in Rs.)	Incentive (in Rs.)	Expenditure (in Rs.)				Saving (in Rs.)
			Travel	Parties	Accom.	Marketing	
Babu	46000	6900	13035	5480	5290	7935	21160
Gaurav	48000	7200	7640	8500	6200	10780	22080
Arunoday	42000	6300	5796	3864	13524	5796	19320
Mohit	44000	6600	9846	7560	4554	8400	20240
Kamal	40000	6000	2300	15480	4200	5620	18400
Mohan	38000	5700	4200	3496	11664	6860	17480

6.

Solution
Expenditure on travelling =13035+7640+5796+9846+2300+4200=42817 Rs

7.

Solution

Required difference =8500+10780-13524 = Rs 5756

8.

Solution

Total saving =21160+22080+19320+20240+18400+17480=Rs 118680

9.

Solution

Required difference =(52900-50600)×12=Rs 27600

10.

Solution

Required percentage $= \frac{13035}{38000} \times 100 \approx 34\%$

Direction (1-5): Study the following table carefully and answer the given questions. Table shows the number and percentage of candidates appeared and selected in a SBI PO exam from two cities during five years respectively.

	Delhi		Mumbai	
Years	Number of appeared candidates	Percentage of appeared candidates who selected	Number of appeared candidates	Percentage of appeared candidates who selected
2012	900	60%	-	30%
2013	1200	43%	-	45%
2014	-	60%	560	60%
2015	960	70%	1100	50%
2016	760	-	800	-

Note : *Few value are missing in the table (A examinee is expected to calculate the missing value, if it is required to answer the given questions on the basis of given data and information.)*

1.Out of the number of selected candidates from Delhi A in the year 2014, the respective ratio of male and female candidates is 11 : 7. If the number of selected female candidates from Delhi is 252, then what is the number of appeared candidates (both male and female) from Delhi A in the year 2014 ?

A. 930
B. 110
C. 1570
D. 1690
E. 1080

2.The number of appeared candidates from Mumbai is increased by 100% in the year 2012 to 2013. If the total number of selected candidates from mumbai in the 2012 and 2013 together is 816, then what is number of appeared candidates from Mumbai in the year 2012?

A. 780
B. 560
C. 680
D. 640
E. 800

3.What is the difference between the number of selected candidates from Delhi in year 2012 and 2013 ?

A. 24
B. 22
C. 34
D. 28
E. 36

4.If the average number of selected candidates from Mumbai in the year 2014, 2015 and 2016 is 420, then what is the number of selected candidates from Mumbai in the year 2016?

A. 384
B. 395
C. 483
D. 374
E. 479

5.If the respective ratio between the number of selected candidates from Delhi in the year 2015 and 2016 is 14: 9, then what is number of selected candidates from Mumbai in the year 2016?

A. 352
B. 407
C. 432
D. 534
E. 598

Directions (6-10): Study the following table carefully. Some values are missing. Complete that based on given information in each question to answer the question.

The table shows the number of employees in an organization in 5 different cities with total employees being 2130 in the organization. Table also shows the percentage of employees working in 4 departments – HR, Finance, Software and Accounts with each employee in only 1 department.

Class	Employees	HR	Finance	Software	Accounts
Delhi	450		18%		28%
Mumbai	380	15%		30%	
Bengaluru		18%	20%		32%
Hyderabad			25%	18%	35%
Gurgaon	350	20%	22%		20%

6.What is the total number of employees in Mumbai and Gurgaon who work in Software department?

A. 292
B. 226
C. 285
D. 274
E. None of these

7.If in Delhi, employees who work in Accounts department are 40% more than employees who work in HR department, then what is the number of employees who work in Software department in Delhi?

A. 133
B. 153
C. 176
D. 147
E. None of these

8.If number of employees in Bengaluru is 10% less than number of employees in Hyderabad, then what is the difference between number of employees who work in Accounts department in these 2 cities and who work in Finance department in these 2 cities?

A. 122
B. 104
C. 97

D. 135
E. None of these

9. If a same criterion as taken in question 3 is taken, in which city the total employees who work in Finance and Accounts departments is more?
A. Delhi
B. Mumbai
C. Bengaluru
D. Hyderabad
E. Gurgaon

10.If in Mumbai, number of employees who work in Accounts department is 19 more than the number of employees who work in Software department in Gurgaon, then what is the number of employees who work in Finance department in Mumbai?
A. 57
B. 60
C. 49
D. 62
E. None of these

Answers with Detailed Explanation :-

1.

(E) 1080

Explanation:

No. of selected male candidates from

Delhi $= \frac{252}{7} \times 11 = 396$

Required no. of appeared candidates from Delhi in the year 2014

$= \frac{(396+252)}{60} \times 100 = 1080$

2.

(C) 680

Explanation:

Let the appeared candidates from
Mumbai in the year 2012 = 100
So, number of appeared candidates from
Mumbai in the year 2013 = 200
Required no. of appeared candidates from Mumbai in the year 2012 =

$$\frac{816}{30+90} \times 100 = 680$$

3.

(A) 24

Explanation:

Required difference

$$= 900 \times \frac{60}{100} - 1200 \times \frac{43}{100} = 540 - 516 = 24$$

4.

(D) 680

Explanation:

Total no. of selected candidates from Mumbai in the year 2014, 2015 and 2016 Together = 420 × 3 = 1260

∴ No. of selected candidates from Mumbai in the year 2016

$$= 1260 - \left[560 \times \frac{60}{100} + 1100 \times \frac{50}{100}\right]$$

= 1260 – (336 + 550)
= 1260 – 886 = 374

5.

(C) 432

Explanation:

No. of selected candidates from Delhi in the year 2015

$= 960 \times \frac{70}{100} = 672$

So, No of selected candidates from Delhi in the year 2016 =

$\frac{672}{14} \times 9 = 432$

6.

D) 247

Explanation:

In Gurgaon, Software % = 100 – (20+22+20) = 38%

Required Ans = (30/100)*380 + (38/100)*350

7.

B) 153

Explanation:

Let % of employees who work in HR in Delhi is x%. So

[28/100 * 450 – x/100 * 450]/[x/100 * 450] * 100 = 40

Which is [(28-x)/x] * 100 = 40

Solve, x = 20

So % of employees who work in Software is 100 – (20+18+28) = 34%

So required ans = 34/100 * 450

8.

B) 104

Explanation:

Total employees in Bengaluru and Hyderabad = 2130 – (450+380+350) = 950

So if in Hyderabad, employees is x, then in Bengaluru – 90/100 * x

So x + 90x/100 = 950

Solve, x = 500, so in Hyderabad = 500, and in Bengaluru = 90/100 * 500 = 450

So required answer = [32/100 * 450 + 35/100 * 500] – [20/100 * 450 + 25/100 * 500]

Or = 12/100 * 450 + 10/100 * 500

9.

D) Hyderabad
Explanation:
Delhi – (18+28)/100 * 450 = 207
Mumbai– 55/100 * 380 = 209
Bengaluru – (20+32)/100 * 450 = 234
Hyderabad – (25+35)/100 * 500 = 300
Gurgaon – (22+20)/100 * 350 = 147

10.

A) 57
Explanation:
% of employees who work in Software in Gurgaon = 100 – (20+22+20) = 38%
Number of employees who work in Software in Gurgaon = 38/100 * 350 = 133
So number of employees who work in Accounts in Mumbai is 133+19 = 152
So number of employees who work in Finance in Mumbai = 380 – [152 + ((15+30)/100 * 380)] = 57