TIME AND WORK:

Arun works thrice as fast as Mani. If Mani alone completes the work in 48 days, then in how many days Arun and Mani together can complete the work?

a) 16days b) 20 days c) 12 days d) 8days

**Answer :** c) 2 days.

Solution:

Ratio of work efficiencies of Arun and Mani = 3:1.
So, Ratio of Time Taken to complete same unit of work by Arun to Mani = 1:3 (Time taken will be inversely proportional to Efficiency)
Mani completes the work in 48 days. Then Mani's 1 day work = 1/48.
Therefore, Arun can complete the same work in 16 days, as he is 3 times more efficient than Mani.
Arun's 1 day work = 1/16.
Work that can be completed by Mani and Arun when working together for a day = 1/48 + 1/16 = 4/48 = 1/12.
Therefore, Arun and Mani together can complete the work in 12 days.

## Question 2

X and Y can complete a work in 12 days and 10 days respectively. With the help of Z, X and Y can together complete the work in 5 days for a total wage of Rs.6000. Then what wage should be paid to Z for his part of work?

a) Rs.1000 b) Rs.1500 c) Rs.500 d) Rs.2000

**Answer :** c) Rs.500

Solution:

From given data,
X's 1 day work = 1/12
Y's 1 day work = 1/10
If X,Y and Z would complete the work in 5 days, then Z's 1 day work = One day work of X,Y and Z combined - (One day work of X + One day work of Y) =
1/5 -[(1/12)+(1/10)].
= 1/5 - 11/60 = 1/60.
Now we have to find Z's share of the salary.
X's share : Y's share : Z's share = 1/12 : 1/10 : 1/60 = 5 : 6 : 1
Z's share of wage from the total wage of Rs.6000 = 1/(5 + 6 + 1) x 6000 = Rs.500

## Question 3

10 women and 14 children can finish a work in 5 days, 11 women and 22 children can finish the same work in 4 days. Find the ratio of work done by a woman on a day to the work done by a child on the same day.

a) 2:3 b) 3:2 c) 3:1 d) 1:3

**Answer :** d) 1:3

Solution:

Let w, c be the per day work done by a woman and a child respectively.

From the given data, the rate equations are

eq 1 : $10w + 14c = 1/5$. (... Sum of 1 day work of 10 women and 14 children is 1/5)
eq 2 : $11w + 22c = 1/4$. (... Sum of 1 day work of 11 women and 22 children is 1/5)

Multiplying eq 1 by 5 on both sides, we get, $50w + 70c = 1$ ... eq 3
Multiplying eq 2 by 4 on both sides, we get, $44w + 88c = 1$ ... eq 4

Since both the equations 3 and 4 have a value of 1 on right hand side, we can equate the left hand side terms as follows,

$50w + 70c = 44w + 88c$
$6w = 18c$
$w = 3c$.

In other words, a woman can do thrice as much work as a child.
Hence the answer is 1:3.

RELATIVE SPEED:

**Question 1**

Avinash Yadav went to coffee shop in his Pulsar motor cycle. He was deeply engaged in talking to his close friend. At 5.00 pm a thief steals his motor cycle and drive it at 40 kmph. Avinash Yadav realizes about the theft of his motor cycle at 5.15 pm and takes another motor cycle from his friend and chases him at 60 kmph. At what time Avinash Yadav will overtake the thief, assuming they travel at the indicated speed all the time?

a) 6.00 pm b) 6.15 pm c) 5.30 pm d) 5.45 pm

**Answer :** d) 5.45 pm

Solution :

This problem is based on relative speed. Relative speed is the difference in speed of two moving objects – in this case two motor cycles. In the given problem relative speed of Avinash Yadav with respect to the thief = (60 – 40) = 20 kmph.
The motor cycle has been stolen at 5.00 pm and the thief has driven for 15 minutes before Avinash Yadav starts chasing him . Since speed of the thief is 40Kmph or 40 km per 60 minutes, in 15 minutes he would have travelled , 40 x 15/60 = 10 km.
Time taken for Avinash to catch the thief = Distance travelled by the thief / Relative Speed of Avinash with respect to thief = 10Km/20Kmph = 1/2 hour
1/2 hours i.e half an hour after 5.15 pm is 5.45 pm, which is our answer.

**Question 2**

John, Chief Executive Officer of Infacan , Mumbai drove by his Benz car from Mumbai to New Delhi. He started at 2 pm and drove at 60 kmph. Around 2.30 pm his personal assistant called him over his cell phone and told that John had not taken an important paper with him and sought instructions from him. John advised his personal assistant to send those papers through Don Lee. Don Lee started from Mumbai at 2.45 pm and he was driving his Hyundai car at 75 kmph. At what time Don Lee will overtake John assuming they travel at speeds indicated and they do not stop in between?

a) 5.15 pm b) 5.45 pm c) 5.30pm d) 6.00 pm

**Answer :** b) 5.45 pm

Solution :

Distance travelled by John before Don Lee starting from Mumbai is 45 km.
Relative speed of Don Lee with respect to John = 75 - 60 = 15 kmph.
Time taken by Don Lee to overtake John = Distance travelled by John before Don Lee starting /

Relative speed = 45/15 = 3 hours
So Don Lee will overtake at 2.45 + 3 = 5.45 hours

**Question 3**

Raghavan and Krishnan started from Chennai to Mumbai in two different cars at 10 am one day. Raghavan was driving his car at 50 kmph and Krishnan was driving his car at 40 km per hour. Around 11 am their friend Gopalan started in his car from Chennai and drove his car at 70 kmph. At what time Gopalan will overtake Raghavan and Krishnan?

a) 1.00pm and 12.20 pm b) 1.30 pm and 12.10 pm c) 1.30 pm and 12.20 pm d) none of these.

Answer : c) 1.30 pm and 12.20 pm

**Solution :**

Raghavan and Krishnan would have travelled 50 km and 40 km by the time Gopalan starts at 11 am.
Gopalan is driving at 70 kmph.
Relative speed – Gopalan with respect to Raghavan = 70 - 50 = 20 kmph
Distance travelled by Raghavan when Gopalan started = 50 km. To catch up with Raghavan, time taken by Gopalan = Distance covered by Raghavan when Gopalan starts / Relative speed of Gopalan with respect to Raghavan = 50/20 = 2 ½ hours. Therefore, he will overtake Raghavan at 11.00 + 2.30 = 1.30 pm.
Relative speed of Gopalan with respect to Krishnan = 30 kmph
Distance travelled by Krishnan when Gopalan started = 40 Km.
Time taken by Gopalan to cross Krishnan = Distance covered by Krishnan when Gopalan started / Relative speed of Gopalan with respect to Krishnan = 40/30 = 1.33 hours = approximately 1 hour 20 minutes
Gopalan is starting at 11 am . So he will overtake Krishnan at 11 + 1hr 20 min = 12.20 pm

DIRECTIONS AND DISTANCES:

Manohar Prasad Singh was busy with his office party on Sunday evening. Next day morning he got up very late and was in a hurry to reach his office. From his house he jogged/walked 15 km towards south direction initially. Then he turned left and walked 12 km and remembered about an important thing and turned left again and walked 15 km. At this stage instead of turning left he turned right and walked further 13 km. How far is he from his house now?

a) 55 km b)25 km c)30 km d) none of these.

**Answer :** b) 25 km.

Solution :

Plotting the path of Manohar Prasad, we would end up in a diagram like the one shown below.
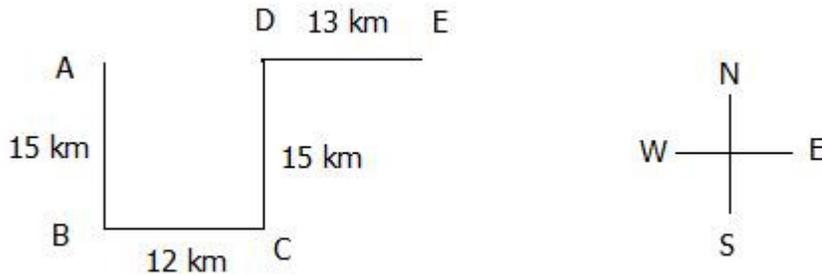


Based on the above diagram, his distance from the office = AE = AD + DE = BC + DE = 12 + 13 = 25Km eastwards.
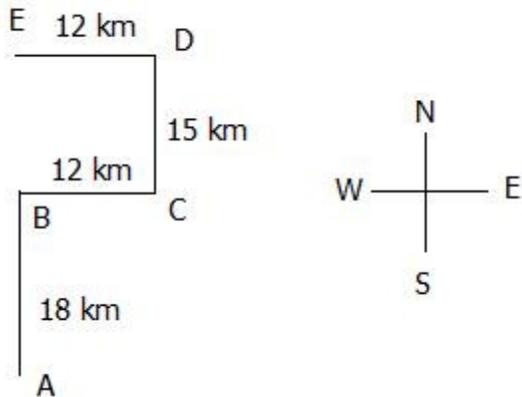
**Question 2**

Akhilesh Yadav started from his office one day around 5 pm. He travelled in his Nissan Car-northern direction 18 km. A construction work was being done in that road and he had to take a right turn and drive 12 km further. At this stage (6 pm) the traffic police advised him to take a left turn. He travelled 15 km and stopped in a coffee shop around 6.22 pm. After taking capuchino coffee he started his car leftwards and travelled 12 km and stopped his car around 7.15 pm and reached the lawyer's office. How far is lawyer's office from Akhilesh Yadav's office?

a) 33 km b) 35 km c)57 km d) none of these.

**Answer :** a) 33 km.

Solution :

Please look at the diagram,



Based on the diagram, distance between his office and lawyer office = AE = AB + BE = AC + CD =18 + 15 = 33 km
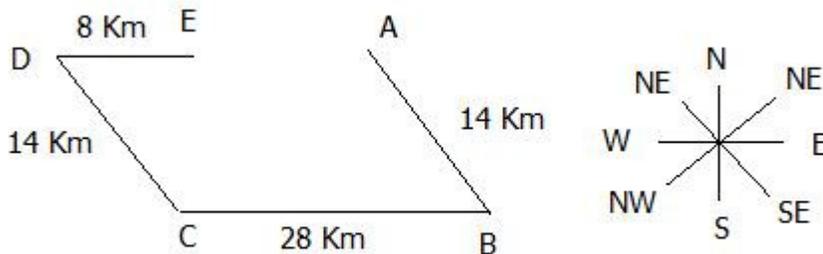
## Question 3

Jeremy Mirez moves towards South-East a distance of 14 km, then he moves towards West and travels a distance of 28 km. From here he moves towards North-West a distance of 14 km and finally he moves a distance of 8 km towards East. How far is he now from the starting point?

a) 20 km b) 22 km c) 24 km d) none of these.

**Answer :** a) 20 km

Solution :

Please look at the figure ,



From the diagram, the distance where he is now from starting point is = AE = AD - DE
But since AB and CD are parallel to each other, AD should be equal to BC. Therefore above equation becomes,
AE = BC - DE = 28 - 8 = 20 km.

GENERAL APTITUDE:

In the General Body meeting of "Saidapet Friends Recreation Club", a discussion about improving infrastructure was held between members. At the end of the discussion, the Secretary said, "Costs to the Club will Rs 31200 and I propose that this expense be equally beared by the members". Everyone agreed to the proposal. However, after the infrastructure improvement project, four members resigned from the club leaving the remaining members to pay an extra Rs 260 each.How many members did the Recreation Club originally have?

(a) 24 (b) 32 (c ) 36 (d) 38

**Answer :** a) 24

Solution:

Such types of questions can be solved directly or backwards inspecting one option at a time.
Now let us try backward method of going by options.
Let us try option (a) to check if it is the correct answer.
Total expense is Rs. 31200 and we have assumed 24 members (as per option a). Each member would had agreed to pay Rs 31200 / 24 = Rs. 1300 each. If 4 members had resigned there would have been 20 members. Therefore the actual expense of every member would be Rs 31200 / 20 =1560. 1560 is **260** more than 1300 initially agreed. This fits the data in question perfectly. Hence option a is the right answer.

**Question 2**

Imagine a sanctuary with lot of rare varieties of birds and animals. The forest officials were counting the number of four legged animals and birds in a particular region of the sanctuary. The number of animals was 11 more than the number of birds. If there were as many animals as there were birds and as many birds as there were animals, the total number of legs get reduced by one fifth (1/5). How many number of birds were there ?

(a) 22 (b) 18 (c) 11 (d) 14

**Answer :** c) 11

Solution:

Let the number of birds be x. Then, as per data, number of animals would be x + 11.
Every bird has two legs and every animal has four legs.
Total number of legs of animals and birds in the region of counting, Toriginal =2x + 4(x + 11) = 6X + 44 legs.
Total number of legs if number of birds and animals were interchanged, Tinterchanged = 2(x + 11) + 4x = 6x + 22 legs

Second part of the question says that if number of animals and birds were interchanged, the number of legs would be reduced to 1/5th.
This means Tinterchanged is four fifth's of Toriginal
Or 6x + 22 = 4 / 5 (6x + 44)
30x + 110 = 24x + 176
6x = 66
or x = 11 = Total number of birds in the region

## Question 3

During first week of June, professors and students of Shri Ramanuja College planned a picnic to Mahabalipuram. Normally the college reopens during second week of June every year, and the faculty and students start the academic year with a picnic. All the participants contribute equally towards the expenses every time. When they planned to contribute 20% more than previous year's contribution ( number of participants being same last year and this year initially ) they found that the amount each has to contribute is equal to the total number of persons planning to go for picnic. One day before picnic, 15 persons withdrew from the plan due to personal reasons. On the day of picnic, another 10 could not turn up. The actual contribution increased by 33 1/3% than the planned contribution. How many were initially interested in the picnic?

(a)125 (b) 100 (c) 133.33 (d) 110

**Answer :** b) 100

Solution:

Let the original number of participants be P.
According to question data, each would had agreed to contribute Rs. P.
Actually planned total contribution = Number of original members X Contribution per member = P x P = $P^2$ ...(A)
15 persons withdrew a day before picnic and another 10 withdrew on the day of picnic.
Therefore, total number of participants who turned up for Picnic = P - (15 + 10) = P - 25

To pay the total expense of Rs. $P^2$ (refer equation A), every member had to contribute 33 1/3% or 100/3% more than planned individual contribution of Rs. P
That is the actual contribution per member = P + Px100/3% = P + P/3 = 4P/3
Actual total contribution = Number of present members X Actual contribution per member = (P - 25)(4P/3) ...(B)

Since actual total contribution should match the amount of initially planned total expense, values of equations A and B must be same.
i.e (P - 25)(4P/3) = $P^2$
Or (4$P^2$-100P) / 3 = $P^2$
Or 4$P^2$-100P = 3$P^2$
Or $P^2$ = 100P
Or P = 100

Therefore original number of participants = 100
So, option (b) is correct.

PROBABABILITY:

The exciting super final IPL match between Chennai Superkings and Delhi Daredevils was about to start. The thrill and excitement of the fans were shadowed by the forecast that it may rain. Before match it was predicted that the probability of rain was 40%. If it rained, the Chennai Superkings had a 30% chance of winning. If it did not rain, the Chennai Superkings had a 55% chance of winning. If you are asked to calculate the overall probability of Chennai winning the match what will be your answer ?

(a)58% (b)45% (c)55% (d)48%

**Answer :** b)45%

Solution:

Probability that Chennai will win = Probability that it rains X Probability of Chennai winning during rain + Probability that it does not rain X Probability of Chennai winning when it is not raining
= 40/100 X 30/100 + 60/100 X 55/100 = 1200/10000 + 3300/10000 = 4500/10000 = 45/100 = 45%

**Question 2**

In a college, semester marks are given to I year students.23% of students passed in both I and II semesters and 45% of students passed in I semester. Find what percent of student who have passed in I semester also passed in the II semester.

a) 35% b)42% c)51% d)56%

**Answer :** c)51%

Solution :

To solve such problems, we have to use the conditional probability formula,
$P(B|A) = P(A$ and $B)/P(A)$.
In the above formula,
$P(A$ and $B)$ denotes percentage of students passed in both semester
$P(A)$ denotes percentage of students passed in I semester.
$P(B|A)$ denotes percentage of student those who have passed in II semester after having passed I semester
$P(A$ and $B) = 23\%$ or $0.23$ , $P(A) = 45\%$ or $0.45$
$P(B|A) = 0.23 / 0.45 = 51\%$

**Question 3**

In a kinder garden school, there are 500 students in LKG, and 400 students in UKG. Among these students, there are 30 sibling pairs, each consisting of one LKG student and one UKG student.If one student is to be selected at random from each class, find the probability that the two students selected will be a sibling pair?

(a)3/20000 (b)1/3600 (c)9/1000 (d)1/15

**Answer :** a)3/20000

Solution:

The probability of selecting a student from the 500 LKG students who is a member of a sibling pair is 30/500 =3/50. Then the probability of selecting one student among the 400 UKG students who is the other member of that pair is 1/400.
Therefore, the probability that the two students selected will be a sibling pair is (3/50) (1/400) =3/20000

REASONING:

## Question 1

If PREVENTION is coded as DWDSOOSJNO then how will CONTENTION will be coded ?

a) DUBPMOSJON b)DUMPBOSJNO c)OSJDUMPBON d)JDMUNOSBOP

**Answer :** b)DUMPBOSJNO

Reason :

This is actually a bit tough one and would require some application and analysis of options to arrive at the correct one.

The word PREVENTION is first split into two halves PREVE and NTION. In both halves each odd place letter is replaced with the previous letter and each even place letter is replaced with the next letter in alphabet.By doing so the halves would now become OSDWD and OSJNO respectively. Then the first half is reversed while the second half is preserved/kept as it is to arrive at our code DWDSOOSJNO .

By applying the above logic to CONTENTION you can get to the answer DUMPBOSJNO.

## Question 2

Read the following sentences carefully and answer the below questions:

"Sky is blue" is coded as "tau hok sek"
"Cloud covers sky" is coded as "kef sek raq"

"Its raining" is coded as "hsf awe"

a) What is the code used for sky?

a)sek b)awe c)raq d)hok

**Answer :** a)sek

Reason :

These type of questions are easy to answer.

The word sky is occuring in first and second statements. No other word is common between first and second statements. This implies that the code that is common between first and second statements would be the answer. The code 'sek' is common between first and second statements and hence is the answer.

**Question 3**

In a code language SECURITY is coded as CUESTYRI then the code for WATCHMAN is ?

a)TCWAANHM b)TCWANAMH c)TCAWANHM d)TAWCHANM

**Answer :** c)TCAWANHM

Reason :

Let us check how SECURITY would had got its code CUESTYRI .

The word SECURITY is split into two halves SECU and RITY .

Now SECU is further split into SE and CU. Letters of first sub half SE is reversed. Then the halves are switched places to get CUES. ...(1)

Similarly the second half RITY is split into RI and TY. Now, the halves are just switched to get TYRI....(2)

Combining 1 and 2 we get CUESTYRI. This is how the code for SECURITY is arrived.

Applying similar logic to WATCHMAN we can get the answer TCAWANHM.

CIRCULAR ARRANGEMENT:

. Which of the following pairs sit between Hirman and Ganesh?

a) Balu- Hirman b) Ekambaram- Felix c) Cheena -Ekambaram d) Daya-Balu

**Answer :** c) Cheena-Ekambaram

To answer this question as well the following questions we will have to draw the circle with positions of the friends plotted. Clockwise – Hirman, Ekambaram, Cheena, Ganesh, Arvind, Daya, Felix, Balu.
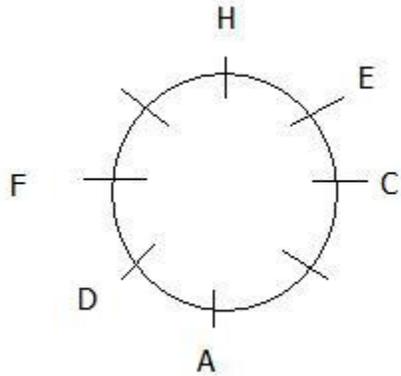Arvind sits fourth to the right of Hirman while Hirman is second to the left of Felix. We can plot these three friends as below. (Fig i)
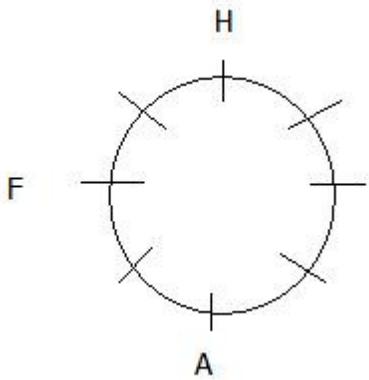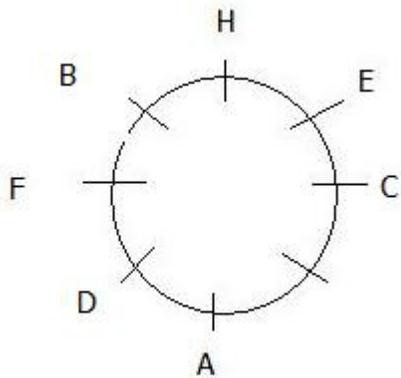


Ekambaram sits third to the left of Felix. This can be plotted as below. (Fig ii)
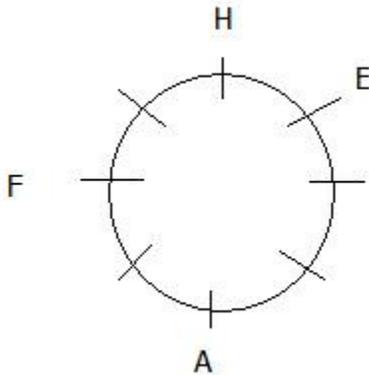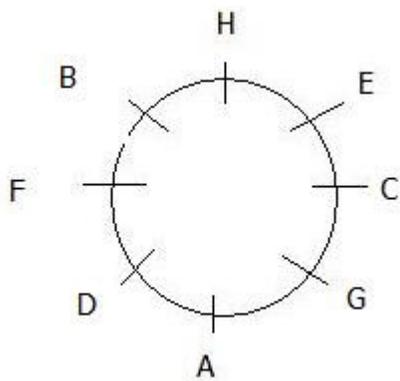


Daya sits third to the left of Cheena.There is only one way this is possible which is plotted as below. (Fig iii)

Cheena is not the neighbour of Felix and Balu. Therefore, Balu has to be adjacent to Hirman as plotted below. (Fig iv)



Only one spot left is for Ganesh. It is given he is not a neighbour of Ganesh which is satisfied as well by the below plot. (Fig v)



Now from the above diagram we can easily say that Cheena-Ekambaram pair sits between Hirman and Ganesh.

(While drawing this diagram we have to be careful to see that left-right is for the people seated in the circle and not for us. Also they are seated facing the centre. This should be kept in mind. )

2. Who sits second to the right of Balu?

a) Arvind b) Cheena c) Daya d) Ekambaram

**Answer :** c) Daya. (based on the diagram already drawn)

3. Which is the position of Balu with respect to Cheena?

(i) Third to the right
(ii) Sixth to the left
(iii) Third to the left
(iv) Fifth to the left

a) Only II b) Only II and III c) Only I and IV d) Both III and IV

**Answer :** c) Only I and IV

4. Who amongst the following sits between Balu and Daya?

a) Ganesh b) Felix c) Hirman d) Arvind

**Answer :** b) Felix

5. Who is immediate right to Arvind?

a) Cheena b) Daya c) Ganesh d) Data inadequate

**Answer :** c) Ganesh.

6.Four of the following are alike in a certain way based on their positions in the seating arrangement and so form a group. Which is the one that does not belong to that group?

a) Arvind-Ekambaram b) Hirman -Felix c) Balu - Daya d) Ganesh - Ekambaram

**Answer :** a) Arvind-Ekambaram. In all othe

pairs one person is sitting between them whereas in this pair two people are there.

**Question 1**

Gangaram Sait bought three DVD players for Rs.1000 each. He wanted to make a profit of 20% by selling these and accordingly marked the selling price. He was forced to sell the first two DVD players with a discount of 5% for cash. Now he wanted to see that he makes over- all profit of 20% by selling of these three DVD players. Hence for ensuring this by what percentage over the cost price should he sell the third DVD player?

a) 32% b) 28% c) 42% d) 48%

**Answer :** a) 32%

Solution :

Cost price of the DVD players = Rs.1000 each
Selling price marked by him to achieve 20% profit = 120/100 x 1000 = Rs. 1200 each
The first two DVD players he sold at a discount of 5% on S.P.
Without discount the SP of Two DVD players should had been = Rs. 1200 x 2 = Rs.2400
But since he discounts 5% from SP, he sold them at 2400 x 95/100 = Rs.2280

Since he wanted to make overall gain of 20% on the sale of the three DVD players he should sell them at 3000 x 120/100 = Rs.3600
Since he has already sold 2 DVD players for Rs. 2280, he must sell the third DVD player for 3600 - 2280 = Rs.1320
Profit Percentage on Third DVD Player = SP - CP / CP X 100% = 1320 - 1000 / 1000 X 100% = 32%

**Question 2**

Miserlal and Company dealing in computers and laptop marked up its laptop selling prices by 40% over its cost.(for 12 laptops) In order to attract more youngsters they offered a discount of 30% over the selling price of these laptops. They advertised in the leading English dailies and vernacular dailies besides using Television media. The company sold 8 laptops on these terms. The company sold the remaining four laptops at a discount of 20% over the selling price. What is resultant profit or loss percentage made in the sale of these 12 laptops by Miserlal and Company.

a) Loss of 2 2/3% b) profit of 2 2/3 % c) Loss of 4 1/3% d) profit of 4 1/3%

**Answer :** b) profit of 2 2/3%

Solution :

Let the cost of price of these 12 laptops be Rs.100 each
Then Selling price of these 12 laptops at 40% profit will be 140/100 x 100 = Rs.140 each

Eight laptops are sold at a discount of 30% on S.P
Then each of these 8 laptops is sold at 140 x 70/100 = Rs.98
Therefore, Total SP of Eight laptops = 98 x 8 = Rs.784 ...(1)

Four laptops are sold at discount of 20% over S.P.
Each such laptop is sold at 140 x 80/100 = Rs.112
Therefore, Total SP of these four laptops = 112 x 4 = Rs. 448 ...(2)

Totally 12 laptops are sold at Rs.784 + Rs. 448 = Rs.1232 (we get this by adding values from (1) and (2))
CP of 12 laptops = 12 x 100 = Rs. 1200
Therefore profit percentage = SP - CP / CP x 100% = 1232 - 1200 / 1200 x 100% = (32/1200) x 100% = 2 2/3% profit

**Question 3**

Vivek and Sons are leading sellers of luxury goods like Air conditioners, refrigerators, colour televisions, washing machines etc. They bought twenty branded refrigerators at Rs. 9600 each. They marked the selling price adding 25% over the purchase price. The company wanted to make 20% profit by the sale of these twenty refrigerators. A group of software programmers from Sugarwell Info Systems, Chennai approached them for buying refrigerators and in order to get new clientele they offered 10% discount on the selling price and sold 12 refrigerators. What is the percentage of profit they should add over the selling price already marked while selling the other 8 refrigerators in order to ensure that they make a profit of 20% over cost price in the sale of twenty refrigerators?

a) 5% b) 6% c) 7% d) none of these.

**Answer :** a) 5%

Solution :

Cost price of twenty refrigerators = Rs. 9600 x 20 = Rs.192000
Selling price marked on each of these 20 refrigerators at 25% over cost price = 125/100 x 9600 = Rs.12000
12 Refrigerators were sold with a discount of 10% over selling price i.e they are sold at 90/100 x 12000 = Rs.10800 each

Amount received on sale of 12 refrigerators - Rs.10800 x 12 = Rs.129600
Vivek and Company wants to make an over all profit of 20%
On Rs. 192000 and hence they should receive totally 120/100 x 192000 = Rs.230400
Balance amount to be received by selling 8 refrigerators to make a profit of 20% = Rs.230400 - 129600 = Rs.100800

Price at which these 8 refrigerators to be sold = Rs.100800 / 8 = Rs.12600
Earlier planned selling price = Rs.12000

To sell each of the 8 refrigerators at Rs. 12600 each instead of the planned Rs. 12000 each, the price has to be marked up by Rs.600 which means 600/12000 x 100 =5% over planned SP.

PIPES:

Mr. Pugazh Vendhan, a building contractor was approached by Sumanth Apartments for constructing a new water tank and installation of pipes for filling up the same. Mr. Pugazh Vendhan made a study of the complex and fitted with Pipe A and Pipe B. Pipe A can fill the tank fully in 16 hours and Pipe B can fill the tank fully in 24 hours. Pipe A and Pipe B run together for 8 hours. Thereafter Pipe A was shut and Pipe B alone was used. How many hours more would Pipe B take to fill the tank fully?

a) 3 hours b) 4 hours c) 6 hours d) 8 hours

**Answer :** b) 4 hours.

Solution :

Pipe A can fill the tank fully in 16 hours.
In one hour Pipe A will fill 1/16 of the tank.
Similarly Pipe B will fill in one hour 1/24 of the tank.
The two pipes run for 8 hours.
So in 8 hours Pipe A and Pipe B will fill
( 1/16 + 1/24) 8 = (5/48 ) x 8 = 5/6 of the tank.
1/6 of the tank is to be filled in by Pipe B

```
hour                portion of tank that can be filled
1                     1/24
?                     1/6
```

Pipe B can fill in 1 hour 1/24 of tank
1/6 of the tank will be filled in 1/6 x 24/1 = 4 hours.

**Question 2**

Velavan and Company are experts in providing plumbing facilities. They were approached for construction of a community water tank in Oragadam. Velavan and Company built a huge water tank and fitted it with three pipes named Cauvery, Ganga and Godavari . Pipes Ganga, Cauvery and Godavari can fill the community water tank in 30 hours, 25 hours and 40 hours respectively. In order to see that all the pipes are put into use equally, the Chairman of Oragadam Municipality advised the operator to run the Pipes Ganga, Cauvery and Godavari one after the other i.e. each pipe to be run for one hour each. Viz. Ganga will run for one hour followed by Cauvery for one hour and Godavari for one hour. Again the cycle will be repeated like this. When will the tank be filled fully i.e. during the running of Ganga or Cauvery or Godavari ?

a) Ganga, 33$^{rd}$ hour b) Ganga, 31$^{st}$ hour
c) Cauvery, 33$^{rd}$ hour d) Cauvery, 32$^{nd}$ hour

**Answer :** b) Ganga, 31$^{st}$ hour

Solution :

Ganga can fill the tank in 30 hours. In one hour it can fill 1/30$^{th}$ part of tank.
Cauvery can fill the tank in 25 hours. In one hour it can fill 1/25$^{th}$ part of tank.
Godavari can fill the tank in 40 hours. In one hour it can fill 1/40$^{th}$ part of tank.
Ganga, Cauvery and Godavari, when they run for one hour each (totally 3 hours)
(1/30 + 1/25 + 1/40 ) of the tank will be filled in.
= 59/600 of the tank will be filled in three hours

So in 30 hours 590/600 of the tank will be filled in.
Portion of tank unfilled after 30 hours would be 1 - 590/600 = 1/60
1/60 of the tank will be left unfilled after 30 hours.
During 31$^{st}$ hour Ganga is capable of filling 1/30 of the tank.
But since 1/30 is greater than that of the remaining tank portion 1/60, Ganga will be filling the
tank during 31$^{st}$ hour comfortably.

## Question 3

Anjali Plumbing Company has two pipes –Pipe X and Pipe Y – these pipes can fill a tank in 37
½ minutes and 45 minutes respectively. Both pipes are opened. The tank will be filled in just 30
minutes, if the pipe Y is turned off after ___ .

a) 10 min b) 5 min c) 9 min d) 15 min

**Answer :** c) 9 min.

Solution :

Pipe X can fill the full tank in 37 ½ = 75/2 minutes . Therefore in one minute it can fill 1/(75/2 )
= 2/75$^{th}$ portion of tank.
Pipe Y can fill the full tank in 45 minutes. Therefore in one minute it can fill 1/45th portion of
tank.

Let Pipe Y be turned off after x minutes
Both the pipes would be running for the first x minutes, and then pipe Y alone will run for the
remaining (30 - x) minutes.
Then Part filled in by (pipe X + pipe Y) in x min + part filled in pipe Y in (30-x) min = 1 (as you
would be knowing1 represents full tank)

Therefore ( 2/75 + 1/45)x + (30- x) 2/75 = 1
11x /225 + (60 - 2x) / 75 = 1
11x + 180 - 6x = 225
x = 9 min.

**BOAT:**

**Question 1**

Sridevi can row 15 kmph in still water. If in a river running at 3 km an hour, it takes her 40 minutes to row to a place and back, how far off is the place?

a) 5 4/5 km b)4 4/5 km c) 6 2/5 km d) none of these.

**Answer :** b) 4 4/5 km

Solution :

Speed of boat – 15 kmph ---- B
Speed of current(river) ---3 kmph – C
Effective downward speed D (downward ) = Speed of boat + Speed of river = 15 +3 = 18 kmph
Effective upward speed U (upward ) = Speed of boat - Speed of river = 15 – 3 = 12 kmph
Let the place of interest be at a distance of x Km from start.
Time taken to row to x and come back = x/D + x/U = 40mins = 2/3 hours
Or, x/18 + x/12 = 2/3 (40 minutes)
x = 4 4/5 km

**Question 2**

AK Rehman can row 180 km upstream and 120 km downstream in 28 hours. Also he can row 90 km upstream and 90 km downstream in 16 hours. Find the speed of AK Rehman in still water and the speed of the current.(km/hour)

a) 15,2 b) 18,2 c) 14,2 d) 12, 3

**Answer :** d) 12, 3

Solution :

Let the effective upstream speed be x and the effective downstream speed be y
AK Rehman can row 180 km upstream and 120 km downstream in 28 hours.
Distance while travelling upstream / Effective upstream speed + Distance while travelling downstream / Effective downstream speed = Total time taken for upstream and downstream
Or 180/x + 120/y = 28 …(1)

Also it is given that he can row 90 km upstream and 90 km downstream in 16 hours
Similar to eq 1 we can form a new equation as below
90/x + 90/y = 16 ….(2)
Multiply by 2 on both sides of eq 2 we get,
180/x + 180/y = 32….. (3)
(1) - (3) = 180/x + 120/ y - 180/x – 180/y = 28 - 32 = -4

-60/y = -4
Effective downstream speed = y = 15
Effective upstream speed = x = 9

Speed of boat can be calculated using the below formula :
Speed of Boat = Effective upstream speed + Effective downstream speed / 2 = (15 +9)/2 = 12.
Speed of current can be calculated using the below formula :
Speed of Current = Effective upstream speed - Effective downstream speed / 2 = (15 - 9)/2 = 3.

## Question 3

On Monday Mayawati rows 42 Km upstream to a spot and returns back. While returning she overshoots the starting point by 48 km. The overall travel time is 8 hours. On Tuesday Mayawati rows 70 km upstream to a spot. Now while returning she is careful not to overshoot as on Monday. However, she again overshooted the origin by 2 km. The overall journey time was 9 hours.What is the speed of Mayawati in still water?

a) 18 km/hour b) 12 km/hour c) 14 km/hour d) 16 km/hour

**Answer :** d) 16 km/hour

Solution :

Note : This question is very much similar to the $2^{nd}$ question except for the way the question is worded. On Monday she travels 42 Km upstream. While returning she overshoots her starting point by 48 km. This means she has travelled 42 + 48 = 90 km during downstream. In total for upstream and downstream she has taken 8 hours.
Let her upstream speed be U and downstream speed be D. Then similar to 2nd question, we can form the below equation.
42/U + 90/D = 8 ....(1)

On Tuesday she travels 70 Km upstream. While returning she overshoots her starting point by 2 km. This means she has travelled 70 + 2 = 72 km in downstream. In total for upstream and downstream she has taken 9 hours.
Then similar to $2^{nd}$ question, we can form the below equation.
70/U + 72 /D = 9 ....(2)
MULTIPLYING eq 2 by 3 on both sides, we get
210/U + 216/D = 27 ...(3)
MULTIPLYING eq 1 by 5 on both sides, we get
210/U + 450/D = 40 ...(4)

eq (4) - eq (3) gives :
210/U + 450/D - 210/U – 216/D = 40 - 27 = 13
234/D = 13
13D = 234
D = 18

Substituting D =18 in eq (1), we get,

42/U + 90/18 = 8

42/U = 8 -5 = 3

42= 3U

U = 14

Speed of boat can be found using the formula ( D + U) / 2

Speed of boat B = ( D + U) / 2 = (18 + 14 )/ 2 = 16 km/hour

**COMBINATIONS:**

**Question 1**

Mr. Krishnaraj Manickam, a final year student of B. Tech -Information Technology from a College in Kanpur appeared for a recruitment test conducted by a leading IT company in campus interview. The question consisted of two parts – Part A and Part B. There were six questions in each part. A candidate has to answer seven questions in all choosing not more than five from one part. In how many ways a candidate can attempt this paper assuming he answers six questions?

a) 684 b) 780 c)612 d) none of these.

**Answer :** b) 780

Solution :

Each section has six questions. Candidate has to answer totally seven questions, choosing not more than 5 from each part.
Possible options are:
4 questions from Part A **AND** 3 questions from Part B OR 3 questions from Part A **AND** 4 questions from Part B **OR** 5 questions from Part A **AND** 2 questions from Part B **OR** 2 questions from Part A **AND** 5 questions from Part B.

**Note :** i) Number of ways to choose r questions from among n questions can be obtained by the 'combinations' formula nCr. ii) To solve questions like those we are seeing currently, all the **ANDs** should be replaced by 'X' (multiplication symbol) and **ORs** should be replaced by '+' (addition symbol)

Based on above two points in 'Notes' , Applying the combinations formula, replacing ANDs with x and ORs with + we get
Total Possible Ways Of Choosing 6 Questions = 6C4 x 6C3 + 6C3 x 6C4 + 6 C5 x 6C2 + 6C2 x 6C5 = 300 + 300 + 90 + 90 = 780

**Question 2**

SSCT Consultancy Services wanted to select 78 candidates from the five engineering Colleges in Andhra Pradesh, Tamil Nadu, Kerala and Karnataka. They wanted only those candidates who have cleared all papers in semester exams to appear for their recruitment test. The test paper set by them consisted of two parts--- Part I and Part II. Each part consisted of 7 questions and the candidates are supposed to answer only six questions. Candidates were given the freedom to choose any 7 questions across Part I and Part II but with a simple condition that at least one question should be answered from part I. In how many ways a candidate can attempt this paper assuming he answers six questions?

a) 3295 b) 2996 c) 2955 d) none of these.

**Answer :** b) 2996

Solution :

Let us discuss possible ways for any given candidate to choose questions provided he answers at least one question from part A.
1 question from part A **AND** 5 questions from part B **OR** 2 questions from part A **AND** 4 questions from part B **OR** 3 questions from part A **AND** 3 questions from part B OR
4 questions from part A AND 2 questions from part B OR 5 questions from part A AND 1 question from part B OR 6 questions from part A AND none from part B

For above combinations possible ways of choosing questions
= 7C1 X 7C5 + 7C2 X 7C4 + 7C3 X 7C3 + 7C4 X 7C2 + 7C5 X 7C1 + 7C6 X 7C0
= 7 x 21 + 21 x 35 + 35 x 35 + 35 x 21 + 21 x 7 + 7
= 147 + 735 + 1225 + 735 + 147 + 7 = 2996

## Question 3

Raja Ganapathy, a final year student of Emperor Engineering College was aspiring to join a computer company as a software engineer had to attend a test. The test paper consisted of technical questions put in two parts A and part B. Each part consisted of 5 questions. Across Part A and Part B he has to answer 6 questions in total with a condition that he has to answer at least 2 questions from each of the sections. However, after reading the questions he realized he knew answers for 4 questions from Part A and 3 questions from Part B. In how many ways Raja Ganapathy can attend this technical test paper?

a) 100 b) 200 c) 50 d) none of these.

**Answer :** b) 200.

Solution :

He knew at most 4 questions from Part A and 3 from Part B. Also there is a condition that he has to answer at least 2 questions from each of the sections. Based on these constraints he can choose his 6 questions as below :
**Note :** He knews at most only 3 questions from Part B (as per question). Therefore, though rules permit he will be unable to answer 4 questions from Part B.

4 Questions from Part A AND 2 Questions from Part B OR 3 Questions from Part A AND 3 Questions from Part B
For above combinations possible ways of choosing questions
= 5C4 X 5C2 + 5C3 X 5C3
= 5 X 10 + 10 X 10 = 50 + 100 = 150

WORK:

## Question 1

In a Construction Company, due to the lack of labourers, the output of the company decreases by 44%. By what percentage the number of labourers that should be increased so that the production remains the same as earlier?

a) 72.5% b)56% c)78.5% d) none of these.

**Answer :** c) 78.5%

Solution :

In current conditions only 56% work only has been completed. (100% - 44%)
Let L number of labourers are present currently in the company. Then these L people are responsible for 56% of work.

```
Labourers    % of Work
   L              56
   ?             100
```

Number of Labourers required to complete 100% of work = 100L/56 = 1.7857L
Required Increase in the number of labourers = Number of Labourers Required To Complete 100% of work - Original Number of Labourers = 1.7857L - L = .7857L
Percentage increase in the number of labourers = Required Increase in the number of labourers / Original Number of Labourers x 100 = .7857L /L x 100 = 78.57%

## Question 2

An event management Company wanted to complete its pending work. 4 women and 12 men together can complete a piece of work in four days.. How many days will four men alone take to complete the piece of work if two women alone can complete the piece of work in 16 days?

a) 32 b) 24 c) 16 d) 12

**Answer :** b) 24 days.

Solution :

2 women can complete the work in 16 days.
Hence 4 women can complete the work in 8 days. But it is given that 4 women and 12 men complete the work in 4 days. This means that addition of 12 men to workforce has reduced the number of working days to 4 which is exactly half of 8 days that 4 women alone would had taken. Logically this is possible only when 12 men's work per day is equal to 4 women's work per day.

4 women's work = 12 men's work
Dividing by 4 on both sides,
1 woman's work = 3 men's work. -> eq 1
Now, as given, we know that 4 women + 12 men can complete the work in 4 days.

Applying eq 1 in the above statement we get,
4 x 3 men + 12 men can complete the work in 4 days
24 men can complete the work in 4 days.
If 24 men is replaced by just one man, he has to do all the work alone and he would take 24 times more number of days then that would had consumed by 24 men working together.

Therefore, 1 man can complete the work in 4 x 24 = 96 days.

Now, if this one man is replaced by 4 men working together, there will be four people to share the work and hence the time taken would be reduced by 4 times than it would had taken by one man working alone.

Therefore, four men can complete the work in 96 / 4 days = 24 days.

**Question 3**

In a media management company 6 men and 8 boys can do a piece of work in 10 days while 26 men and 48 boys can do the same in 2 days. Find the time taken by 15 men and 20 boys in doing the same type of work?

a)4 days b) 5 days c) 6 days d) 7 days

**Answer :** a) 4 days.

Solution :

Let one man's work for one day be x and
Let one boy's work for one day be y
Then 6x + 8 y = 1/10 -> eq 1
26x + 48 y = 1/2 -> eq 2
Multiply eq 1 by 6 on both sides :
36x + 48 y = 3/5 -> eq 3
eq 3 - eq 2 :
36x + 48y - 26x + 48y = 3/5 - 1/2
10x = 1/10 So x = 1/100 and y = 1/200
Amount of work that can be done by15 men and 20 boys in one day = (15/100 + 20/200) = 1/4
Therefore 15 men and 20 boys can do the work in 4 days.

**NUMBER SERIES:**

**Question 1**

A school boy participated in a physical exercise camp and did on the first day one jump, four steps on second day and nine steps on the third day. How many jumps he will be doing on 11th day?

a) 650 b) 506 c) 580 d) none of these.

**Answer :** b) 506.

Solution :

**Jumps Count :** On the first day 1,Second day - 4 jumps and third day – 9 jumps and so on upto 11th day
In other words, he does $1^2$ jump on I day, $2^2$ jumps on II day, $3^2$ jumps on third day and so on.
Putting this in the form of series and adding till $11^{th}$ day we get,
$1^2 + 2^2$………+ $11^2$
This is nothing but sum of squares of n natural numbers where n is 11. To calculate sum of squares of n natural numbers, we can use the formula, $n(n+1)(2n+1)$ /6
Substituting n = 11 in the above formula and calculating these sum, we get (11 x 12 x 23) / 6 = 506.

**Question 2**

A philanthropist decided to distribute sarees on the following pattern – On the first day 2 people, on the second day 4 people , on the third day 6 people and so on. Assume he starts this on 1st February, 2012. How many sarees he will be distributing in the month of February 2012?

a) 806 b) 870 c) 885 d) none of these.

**Answer :** b) 870

Solution :

Month of February 2012 has 29 days.
Formula for addition of even numbers starting from 2… upto m
= m(m+1)
Substituting m = 29, we get :
(29 x 30) = 870.

**Question 3**

An intelligent student of an Engineering College was asked to add a first few natural numbers (i.e. 1+2+3……) as long as he could. As the student stopped, he gave the answer as 786. But the

answer was not correct and the student has omitted to add a number. What is the number which the student omitted to add?

a) 31 b) 45 c) 56 d) 34

**Answer :** d) 34.

Solution :

Formula for addition of numbers from 1 to n -- [n(n+1)] divided by 2. (We will be using this formula often during the below solution.)
Calculating for 1 to 10, we get 55
Calculating for 1 to 20, we get 210
Calculating for 1 to 30, we get 465 -> (i)
Calculating for 1 to 40, we get 820 -> (ii)

Since the sum given by the student : 780 lies between 465 and 820, the number omitted by the student has to be within 31 to 40. (from (i) and (ii) )
Sum of numbers from 1 to 39 -780 and sum of numbers from 1 to 40 is 820. Since the student has said the sum to be greater than 780, logically he should had added upto 40
Though he has added upto 40, he gave an incorrect answer 786 rather than the correct answer of 800.
Therefore the omitted number = Correct sum - Incorrect sum = 820 – 786 = 34.

PIPES:

A contractor was engaged to construct a residential complex along with a water tank. The water tank can filled up by Pipe One in 6 hours and by Pipe Two in 8 hours. If the two pipes are opened one after the other each for one hour, how long will it take for the two pipes, pipe One and pipe Two to fill the water tank?

a) 8 hours 20 min b)7 hours 40 min c) 6 hours 45 min d) none of these.

**Answer :** c) 6 hours 45 min.

Solution :

Pipe one will fill 1/6 of the tank in one hour. Pipe two will fill 1/8 of the tank in one hour. These pipes are opened one after the other, each run for one hour.
In one turn – that is one hour of pipe one and one hour of pipe two, 1/6 + 1/8 = 7/24 of the tank will be filled in.
So in 6 hours 21/24 of the tank will be filled in and balance will be 3/24 = 1/8 of the tank.
Now in the seventh hour Pipe one will be run. Pipe one can fill 1/6 of the tank in 1 hour or 60 minutes. We can calculate the time taken by Pipe 1 to fill 1/8th of the tank as shown below :

```
Tank Filled        Time Taken
 1/6         –        60 min
 1/8         –         t min
```

t = 1/8 x 6/1 x 60 = 45 minutes.
So the tank will be filled in 6 hours 45 minutes.

**Question 2**

SivaChrist constructions constructed a community water tank for Pozhichalur village. The water tank can be filled by Karuna Pipe in 18 hours and Pandian pipe in 24 hours. Karuna Pipe will run for one hour and closed. Pandian pipe will run for the next one hour and closed. This process continues. Which pipe will be running when the tank is filled in fully? How many hours will it take for the tank to be filled in the above process?

a) Pandian, 30 hours 30 min b) Karuna ,10 hours 30 min c) Pandian,5 hours 30 min d) Karuna, 20 hours 30 min

**Answer :** d) Karuna, 20 hours 30 min

Solution :

Karuna Pipe can fill the tank in 18 hours.
In one hour Karuna Pipe will fill 1/18 of the tank
Pandian Pipe will fill 1/24 of the tank in one hour.
If both the pipes run one after the other once –

1/18 + 1/24 = 7/72 of the tank will be filled.
So, in 20 hours – that after 10 such running - 70/72 of the tank will be filled in and 1/36 of the tank need to be filled in.
Karuna Pipe can fill 1/18th of the tank in 60 minutes. Then the time taken to fill 1/36th of the tank can be calculated as below :

```
  Tank Filled        Time Taken
    1/18       -       60 min
    1/36       -        t min
```

t = 1/36 x 60 x 18 = 30 minutes
So Karuna pipe will be running when the tank is filled in and it will take 20 hours 30 min. for the tank to be filled in completely.

## Question 3

Two pipe manufacturers were asked to show demonstration about the performance of their pipes. Pipe X and Pipe Y can fill a tank in four hours. Had they been opened separately Pipe Y will take 6 hours more than Pipe X. How much time will Pipe X take to fill the tank separately?

a) 2 hours b) 1 hour c) 6 hours d) 8 hours

**Answer :** c) 6 hours.

Solution :

Let the tank be filled in completely by Pipe X in x hours. Therefore in 1 hour, Pipe X will fill 1/x of the tank
Then Pipe Y will take x + 6 hours. Therefore in 1 hour, Pipe Y will fill 1/(x + 6) of the tank.
When Pipe X and Pipe Y are opened together they will take 4 hours to fill the entire tank. In other words, if Pipe X and Pipe Y are opened together for 1 hour, they would had filled 1/4th of the tank. Putting this argument in equation form we get :

1/x + 1/ x+6 = 1/4
x + 6 + x divided by x(x+6) = 1/4
8x + 24 = $x^2$ + 6x
$x^2$ - 2x - 24 = 0
(x-6) (x+4) = 0
So x = 6 (neglecting the negative value of x)

Adhvaith can do a certain work in 30 days. Kashyap can do same work in 25 days. Adhvaith started the work and worked for 9 days. Kashyap came and joined to do the work from the 10th day. How many more days would they have taken together to complete the work?

a)10 3/11 days b)11 2/11 days c) 9 6/11 days d) 8 2/11 days

**Answer :** c) 9 6/11 days.

Solution:

Adhvaith can do 1/30 of the work in one day
In 9 days he would have completed - 9 x 1/30 = 3/10 of the work
Balance work = 1 - 3/10 = 7/10
Kashyap can do 1/25 of the work in one day
Work that can be done by Adhvaith and Kashyap in one day = (1/30 + 1/25) = 11/150 of the work.
So Adhvaith and Kashyap can complete 7/10 of the work in
7/10 x 150/11 = 105/11 = 9 6/11 days.

**Question 2**

A private limited company entrusts works to 20 men, working 12 hours a day. This group can complete the work in 24 days. The company now wants to entrust twice the work to 60 men working 4 hours a day. Assume that 2 men of the first group do as much work in one hour as 3 men of second group do in 1 ½ hours. How many number of days will the second group of men take to complete this work?

a) 108 days b)120 days c)124 days d)81 days

**Answer :** a)108 days

Solution :

Let efficiency of men in I group be E1 and that of second group be E2.

Ratios of efficiency of men in I group to that of II group can be found by using the formula,

E1/E2 = Time taken by men in II group to do certain amount of work / Time taken by men in I group to do the same amount of work as that of men in II goup

= (3 x 1.5) : (2 x 1)
= 4.5 : 2

Now, M1D1T1E1W2 = M2D2T2E2W1 --> 1

(where M1 = number of men in I group, M2 = number of men in II group. D1 = number of days required to complete work by group I, D2 = number of days required to complete work by group II. T1 = working hours per day by group I. T2 = working hours per day by group II. w2 = amount of work by group II, w1 = amount of work by group I.)

Since we are to calculate the time taken by group II to complete twice the amount of work as that of group I, W2 = 2 x W1.
We had earlier calculated E1/E2 = 4.5/2.
Also from the question we can infer that,
M1 = 20, M2 = 60.
T1 = 12, T2 = 4.
D1 = 24 and D2 is what we need to find.

Substituting all the values in eq 1, we can find D2 as follows.

D2 = (20 X 24 X 12 X 4.5 X 2)/(60 X 4 X 2 X 1)
= 108 days.

## Question 3

Three persons Manmohan, Anna And Sushma working together, can do a job in X hours. When working alone, Manmohan needs an additional six hours to do the job; Anna, working alone needs an additional hour and Sushma working along needs X additional hours. What is the value of X?

a)2/3 b)3/2 c)11/12 d)2

**Answer :** a)2/3

Solution :

In this type of problems where answers cannot be easily found out using equations, it is advisable to go from the given answer choices.
Based on information given one hour work done by all the three together =
1/ X+6 + 1/ X+1 + 1/2X = 1/X
X is not known.
Using the data given
1/ (2/3) +6 + 1/(2/3) +1 + 1/(4/3) = 1/ ( 2/3)
This comes out correctly. Whereas other values given in b), c) and d) do not get the result properly. Hence a) is correct.
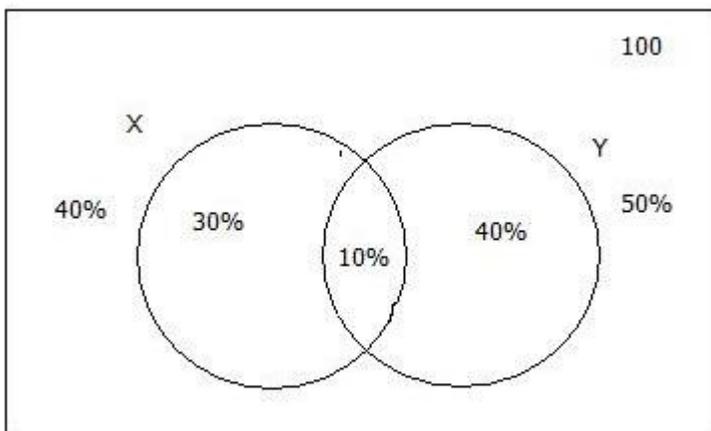
**VENN DIAGRAMS:**

**Question 1**

If 40% of the people read newspaper X, 50% read newspaper Y and 10% read both the papers. What percentage of the people read neither newspaper?

a) 10%. b) 15%. c) 20%. d) 25%.

**Answer :** c) 20%.

Reason :



40% read newspaper X

50% read newspaper Y and out of this 10% read both X and Y

That means X alone is read by 30%,

Y alone is read by 40%

Both are read by 10%

People who read X alone + People who read Y alone + People who read both X and Y = 30% + 40% + 10% = 80%

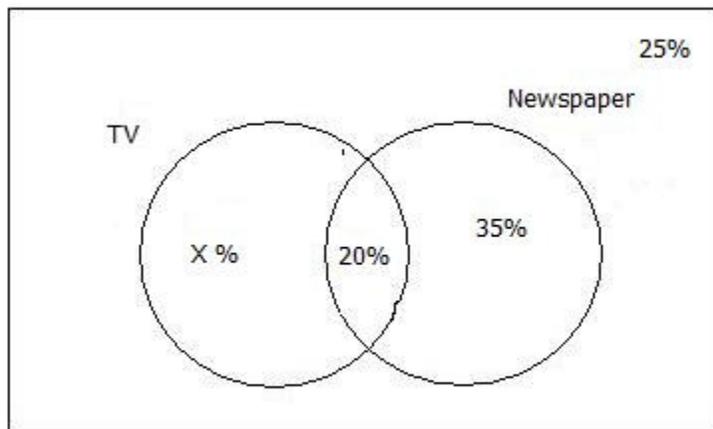This means the balance 20% don't read either of the newspapers.

**Question 2**

In a metropolitan city 25% neither watch TV news nor read newspaper, 35% read a newspaper and 20% read a newspaper and watch the news on television also. What percent of people watch Television?

a)55% b) 60% c) 50% d) 40%

**Answer :** b) 60%.

Reason :



Let X% of people watch television.

People who read Newspaper – 35%

People who watch TV as well as read newspaper – 20%

From Venn diagram, we can infer that people who watch Television alone = (X-20)%

People who read Newspaper alone = 35% - 20% = 15%

People who neither watch TV nor newspaper is given as 25%. This means, people who watch either TV or Newspaper or Both = 100 - 25 = 75%

Also this 75% will be equal to People who watch TV alone + People who read Newspaper alone + People who watch TV and read Newspaper

Or 75% = (X-20)% + 15% + 20%
Or X = 60%

**Question 3**

Out of the total of 200 musicians in Rehman Music club, 10% can play all the three instruments-guitar, violin and flute. The number of musicians who can play any two and only two of the above instruments is 70. The number of musicians who can play the guitar alone is 80. What is the total number of those who can play violin alone or flute alone?

a) 20 b) 30 c) 40 d) 50

**Answer :** b) 30

Reason :
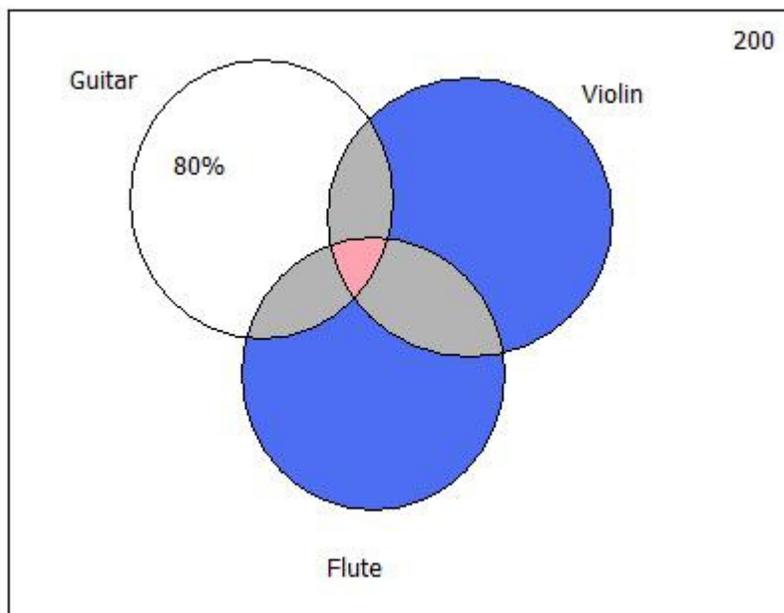


Number of people who can play all the three instruments = 10% of 200 = (10/100)200 = 20 (people in pink colored area)

Musicians who can play any two and only two of the three instruments - 70 (Sum of people in grey colored areas)

Number of musicians who can play Guitar alone = 80

Number of musicians who can play violin alone or flute alone = Sum of people in blue areas = 200 -170 = 30

TIME AND WORK:

Consider three people A,B and C. Let A and B can finish a job in 21 days, B and C in 14 days and A and C in 28 days. Who will take the least time when working independently ?

Options : 1) A 2) B 3) C 4) Can't be determined

**Answer 1**

Correct answer is B

Consider WA, WB and WC be the work done per day by A,B and C respectively. Then

WA + WB = 1/21 -- eq 1

WB + WC = 1/14 -- eq 2

WA + WC = 1/28 -- eq 3

Eq 2 - Eq 3 will give

WB - WA = 1/14 - 1/28 = 1/28 -- eq 4

Eq 1 + Eq 4 will give

2WB = 1/21 + 1/28 = 7/84

WB = 7/168

Sub value of WB in eq 1, we get

WA = 1/21 - 7/168 = 1/168.

Sub value of WA in eq 3, we get

wc = 1/28 - WA = 1/28 - 1/168 = 5/168

Since WB (work done by B per day) is greater when compared to WA and WB clearly B will be able to the maximum work on any given day and hence he should consume least amount of time when working independently.

**Question 2**

Consider two postmen A and B respectively. A is young and can deliver 20 parcels in 3 hours while B is older than A and can deliver only 15 parcels in 4 hours. If the total number of parcels to deliver is 60, how long they will take working together.

a. 121/12 hours b. 144/36 hours c. 144/25 hours d. 121/25 hours

**Answer 2**

Correct ans is option c. 144/25 hours.

A can deliver 20 parcels in 3 hours. Hence for 1 hour he can deliver 20/3 parcels.
B can deliver 15 parcel in 4 hours. Hence for 1 hour B needs 15/4 parcels.

When A and B work together, for 1 hour they can deliver, 20/3 + 15/4 parcles = 80 + 45 /12 = 125/12 parcels.
Hence to deliver 60 parcels they would require : 60 X 12/125 = 720/125 = 144/25 hours

**Question 3**

Consider a courier company A which can deliver 100 parcels in 5 days with 5 men working for 8 hours a day. Consider another courier company B where every employee is equally effecient as that of company B. Company B is short of one man when compared to A and has a policy of asking its workers to work only for 6 hours a day. How long (in days) company B will take to deliver 100 parcels.

Options : a. 8.3 b. 24 c. 12 d 6.6

**Answer**

Correct answer is a. 8.3 days

Total amount of work W = N x D X W

where N = number of men, D = number of days, W = amount of work per day

Applying the above formula for company A we get,

Work done by company A to deliver 100 parcels = 5 X 5 X 8 = 200 -- eq 1

Work done by company B to deliver 100 parcels = 4 X D x 6 = 24D -- eq 2

Since the work to be done is same in both the cases, eq 1 = eq2

or 200 = 24D or D = 8.3

APTITUDE:

A bacteria doubles itself each single day. It totally takes 15 days for the bacteria to fill a test tube. Find an approximate number of days for the bacteria to fill 1/3 of the jar.

Answer:
Though the question looks like a tough one, it is actually a simple question. If it takes 15 days for the bacteria to fill the entire test tube, on 14th day it would had filled half of the tube, on 13th day it would had filled a quarter of the tube and so on. Now 1/3th comes somewhere in middle between quarter and half filling of the tube. Hence the bacteria would need somewhere between 13 to 14 days to fill 1/3th of the jar.

## Placement Question II

Pick the odd man out from the following : a) elation b) frenzy c) enthusiasm d) despair

Answer:
"despair" would be the obvious answer. All the other options are synonyms with ecstasy while despair is a clear antonym of ecstasy.You should have reasonably good vocabulary to tackle any placement question of this kind.

## Placement Question III

Ram travels by car from city A to city B heading towards north in 4 hours. From there he travels west to City C in 3 hours. Say his average speed is same during both the courses. Now from C he travels back to A in shortest path possible. How much time he would had taken to reach A from C.

Answer:
Again this is a very simple question which appears difficult. The entire course of Ram takes the form of a right angled triangle. Hence the time taken for him to travel back to A would be $sqrt(3^2 + 4^2) = sqrt(25) = 5$ hours.

*Here are some solved questions from Wipro Placement Papers*

1) My friend collects antique stamps. She purchased two, but found that she needed to raise money urgently. So she sold them for Rs. 8000 each. On one she made 20% and on the other she lost 20%. How much did she gain or lose in the entire transaction?

*Answer*
*She lost Rs 666.67*

2) 12 members were present at a board meeting. Each member shook hands with all of the other members before & after the meeting.How many hand shakes were there?

*Answer*
*132*

3) An emergency vehicle travels 10 miles at a speed of 50 miles per hour.How fast must the vehicle travel on the return trip if the round-trip travel time is to be 20 minutes?

*Answer*
*75 miles per hour*

4) All of the students at a college are majoring in psychology, business, or both. 73% of the students are psychology majors, & 62% are business majors. If there are 200 students, how many of them are majoring in both psychology & business?

*Answer*
*70 students are majoring in both, psychology & business*