CAMPUS RECRUITMENT ENHANCEMENT ACHIEVEMENT MODULES (CREAM)

CONDUCTED BY

SEVENTH SENSE TALENT SOLUTIONS, BANGALORE.

WWW.SEVENTHSENSETALENT.COM

WWW.SEVENTHSENSETEST.COM

WWW.FACEBOOK.COM/SEVENTHSENSETALENT

Email: info@seventhsensetalent.com

AGES

"**Problems based on Ages**" is a very interesting topic which is there in most of the examinations. You can easily solve these problems as they are simple linear equations. Youhave to understand and comprehend the problems well to solve it.

The important formulae for solving Age problems

1. If the present age is A, then n times the age is nA.
2. If the present age is M, then age x years later /hence = M+x
3. If the current age is B, then age X years ago = B-X
4. Age in ratio X:Y will be XA and YA
5. If the present age is A, then 1/n of the ages is A/n.

Few examples:

1. The ratio of present age of X & Y is 2:3 the present age of X is 40 years. Find the age ofY after 5 years.
Solution:

- Step 1: Present age ratio X:Y =2:3 and X=40years.
- Step 2: Y's present age is 40x(3/2) = 60years.
- Step 3: Y's age after 5 years is 60+5 = 65 years.

2. Rajeev is as younger to Sanjeev as he is older to Dev. If the sum of the ages of Sanjeev& Dev is 58 years. What is Rajeev's age?
Solution:

- Step 1: S–R = R-D
- Step 2: S+D=2R
  - Step 3: 58=2R
  - Step 4: R= 58/2 = 29.

The problems on ages can be given in three situations, the situations are as follows:

- Present age.
- Years ago age.
- Hence year age or after some years age.

Problems based on Present:

1. Ratio of ages of P and Q 4 years ago was 3:5. If the sum of present ages of P and Qis 64. Find the present ages of P and Q.
Solution: Let the ages of P and Q be 3x and 5x.

Hence (3x+4) + (5x +4)= 64.
8x+8 =64 □ 8x= 56X=7.
So the age of P, 4 years ago = 3x7 = 21 yearsThe age of
Q, 4 years ago = 5x7 = 35 years Now present age of P =
21+4 =25 years Present age of Q = 35+4 = 39 years

2. The sum of ages of the Sita, Ram and Laxman is 96 years. 10 years ago the ratio oftheir ages was 2:4:5. What is the present age of Sita?
Solution: Let the ages of Sita, Ram and Laxman 10 years ago be 2x, 4x and 5xrespectively.
Then (2x+10)+(4x +10)+(5x+10) = 96
11x+30=96
11x=96-30
X=66/11=6

Problems based on years ago

1. Raju and Shamu are 50 and 70 years old respectively. How many years before wasthe ratio of their ages 3:5 ?
Solution: The ratio was 3:5, y years ago.So (50-y)/(70-y) = 3/5
5(50-y) = 3(70-y)
250-5y = 210–3y
2y=40 □ y=20.
Hence 20 years ago their ages were in the ratio 3:5

TRICK to solve "Problems on Ages"
The best way to solve Age questions is to assume fixed period with which further conditionswill be compared. For example: taking 2000 as fixed year.

Application of this rule

Example 1

Raman's age after 15 years will be 5 times his age 5 years back.
What is his present age ?
Solution - Let's assume right now it is year 2000
Solution:
Age of Raman in 1995 = x Age of
Raman in 2015 = 5x
Present age of Raman (in 2000) = x+5 or 5x-1we will
solve these two equation to find x.
X= 5. Then Raman's present age becomes = x +5 = 10

Example 2

Rahul was 4 times old as his son 8 years back and he will be 2 times old as his son after 8years. Calculate Rahul and his son's age.

Solution:

Assume that currently it is year 2000.

In 1992 Rahul's age = 4x, Age of Rahul's son = x

In 2008 Rahul's age = 2y and Age of Rahul's son = y

Now we get two equations 2y - 4x = 16 and y - x = 16

By solving this equation x = 8, so Rahul' son's current age = 16 years and Rahul's age = 40years.

QUESTIONS

1. The total age of A and B is 12 years more than the total age of B and C. Cis how many year younger than A?
   A. 11
   B. 12
   C. 13
   D. 14

2. The ratio between the present ages ofP and Q is 6:7. If Q is 4 years old than P, what will be the ratio of the ages ofP and Q after 4 years
   A. 7:8
   B. 7:9
   C. 3:8
   D. 5:8

3. Ages of two persons differ by 16 years.If 6 year ago, the elder one be 3 timesas old the younger one, find their present age
   A. 12,28
   B. 14,30
   C. 16,32
   D. 18,34

4. The sum of the ages of a father andson is 45 years. Five years ago, theproduct of their ages was four timesthe father's age at that time. The present age of father and son
   A. 34,11
   B. 35,10
   C. 36,9
   D. 40,5

5. A father is twice as old as his son. 20years ago, the age of the father was 12 times the age of the son. The present age of the father (in years) is
   A. 44
   B. 22
   C. 32
   D. 45

6. The ages of Ram and Mukta are in theratio of 3:5. After 9 years, the ratio oftheir ages will becomes 3 :4. The present age of Mukta (in years) is
   A. 9
   B. 18
   C. 15
   D. 24

7. Average age of A and B is 24 years and average age of B, C and D is 22 years. The sum of the ages of A, B, Cand D is:
   A. 90 years
   B. 114 years
   C. 96 years
   D. Data inadequate

8. Ten years ago, P was half of Q in age.If the ratio of their present ages is 3:4, what will be the total of their present ages
   A. 35
   B. 34
   C. 45
   D. 25

9. The sum of the ages of 5 children bornat the intervals of 3 years each is 50 years. What is the age of the youngestchild?
   A. 4
   B. 8
   C. 10
   D. None

10. The ages of Krish and Vaibhav are in the proportion of 3 : 5. After 9 years,the proportion of their ages will be 3 :
    4. Then the current age of Vaibhav is:
    A. 10
    B. 13
    C. 15
    D. 18

11. 0.1 decades ago, Vijaya was quadriceas old as her daughter Simran. 0.6 decades hence, Vijaya's age will beat her daughter's age by 0.9 decades. The proportion of the current ages of Vijaya and Simran is : [0.1 Decades =1 Year; quadrice = 4 times]
    A. 8:1
    B. 10:2
    C. 11:4
    D. 13:4

PARTNERSHIP

Partnership: When two or more than two persons run a business jointly, they arecalled partners and the deal is known as partnership.

There are two kinds of partnership:

1. Simple Partnership
2. Compound Partnership

Simple Partnership: If the capital of the partners is invested for the same period, thepartnership is called simple.

Example: Three partners A, B and C invest Rs.10,000 each for the same length of time at the end of the year they makea profit of 60,000. How much will all the three get?

Solution:

Since they all invested the same amount of money and timeThey all get equal share.
Therefore = 60,000/3 =Rs.20,000Each get
a share of Rs.20,000

Compound Partnership: If the capitals of the partners are invested for differentlengths of time, the partnership is called compound partnership.

Ratio of Divisions of Gains:

When investments of all the partners are for the same length of time, the gain or loss isdistributed among the partners in the ratio of their investments.

- Suppose A and B invest Rs. x and Rs. y respectively for a year in a business, then atthe end of the year:

  (A's share of profit):(B's share of profit) = x:y.

Example: Three partners X, Y and Z invest Rs. 1600, Rs. 1800 and Rs. 2300respectively in business. How do they divide a profit of rs.1938?
Solution: The profit should be divided in the ratios of the capitals, i.e. in the ratio16:18:23.
Now 16+18+23=57.
A's share = (16/57) x 1938 = 544 B's
share = (18/57) x 1938 = 612C's share =
(23/57) x 1938 = 782

When investments are for different time periods, then equivalent capitals are calculated for a unit of time by taking (capital x number of units of time). Now gain or loss is divided in the ratio of these capitals.

- Suppose A invests Rs. x for p months and B invests Rs. y for q months then,

(A's share of profit) :(B's share of profit) = xp:yq.

Example: Two partners Ram and Balaji invested in the Rs.15000 each but Ram invested 4 months after Balaji started the business. If they made an annual profit of Rs.7500.How much is Balaji's profit?

Solution: The ratio of their profit would be based on the time they invested.B: R= 12 :(12-4)

B: R =12:8

Therefore Balaji's profit is 7500 x (12/20) =Rs. 4500.

Working and Sleeping Partners:

A partner who manages the business is known as a working partner and the onewho simply invests the money is a sleeping partner.

QUESTIONS

1. Jayant opened a shop investing Rs. 30000. Madhu joined him 2 months later, investing Rs. 45000. They earned a profit of Rs. 54000 after completion of one year. What will be Madhu's share of profit?
   A. Rs. 27000
   B. Rs. 30000
   C. Rs. 24000
   D. Rs. 36000

2. Anand and Deepak started a business investing Rs. 22,500 and Rs. 35,000 respectively. Out of a total profit of Rs. 13,800, Deepak's share is
   A. 8400
   B. 8200
   C. 8100
   D. 8000

3. Yogesh started a business investing Rs. 45000. After 3 months, Pranab joined him with a capital of Rs. 60000. After another 6 months, Atul joined them with a capital of Rs. 90000. At the end of the year, they made a profit of Rs. 20000. What would be Atul's share in it?
   A. Rs. 4000
   B. Rs. 6000
   C. Rs. 4500
   D. Rs. 8000

4. A, B, C started a business with their investments in the ratio 1:3:5. After 4 months, A invested the same amount as before and B as well as C withdrew half of their investments. The ratio of their profits at the end ofthe year is :
   A. 1:2:3
   B. 3:4:15
   C. 3:5:10
   D. 5:6:10

5. A, B and C enter into a partnership. A initially invests Rs. 25 lakhs and adds another Rs. 10 lakhs after one year. B initially invests Rs. 35 lakhs and withdraws Rs. 10 lakhs after 2 years and C invests Rs. 30 lakhs. In what ratio should the profits be divided at the end of 3 years?
   A. 20:19:18
   B. 20:20:19
   C. 10:10:9
   D. 19:19:18

6. A and B invest in a business in the ratio 3:2. If 5% of the total profit goes to charity and A's share is Rs. 855, the total profit is :
   A. 500
   B. 1000
   C. 1500
   D. 2000

7. Mohinder and Surinder entered into a partnership investing Rs. 12000 and Rs. 9000 respectively. After 3 months, Sudhir joined them with an investment of Rs. 15000, what is theshare of Sudhir in a half yearly profit of Rs. 9500?
   A. Rs. 3500
   B. Rs. 2500
   C. Rs. 3000
   D. Rs. 4000

8. A and B enter in to a partnership andA invests Rs.10,000 in the partnership. At the end of 4 months he withdraws Rs.2000. At the end of another 5 months, he withdraws another Rs.3000. If B invests a certain sum in the partnership at the beginning of the year and leaves it intact and receives Rs.9600 as his share of the total profit of Rs.19,100 for the year, how much did B investin the company?
   A. Rs.12,000
   B. Rs.96,000
   C. Rs.8000
   D. Rs.6000

9. Nirmal and Kapil started a businessinvesting Rs. 9000 and Rs. 12000respectively. After 6 months, Kapilwithdrew half of his investment. Ifafter a year, the total profit was Rs.4600, what was Kapil's share in it? A. Rs. 2000
   B. Rs. 1900
   C. Rs. 2600
   D. Rs. 2300

10. A, B and C enter into a partnershipand their shares are in ratio

1/2:1/3:1/4, after 2 months, A withdraws half of his capital and after 10 months, a profit of Rs 378 is divided among them. What is B's share?

A. 120
B. 140
C. 144
D. 174

11. If 4 (A's capital) = 6 (B's capital) = 10 (C's capital), then out of a profitof Rs. 4650, C will receive _____

A. Rs.700
B. Rs.800
C. Rs.900
D. Rs.1000

12. Alok started a business investing Rs. 90000. After 3 months, Shabir joined him with a capital of Rs. 120000. If at the end of 2 years, the total profit made by them was Rs. 96000, what will be the difference between their shares?

A. Rs. 20000
B. Rs. 7384
C. Rs. 24000
D. none of these

13. Simran started a software business by investing Rs. 50,000. After six months, Nanda joined her with a capital of Rs. 80,000. After 3 years, they earned a profit of Rs. 24,500. What was Simran's share in the profit?

A. 10110
B. 10500
C. 12000
D. 13000

14. Rs. 700 is divided among A, B, C so that A receives half as much as B and B half as much as C. Then C's share is

A. Rs. 200
B. Rs. 400
C. Rs, 300
D. Rs, 600

15. A is a working and B is sleeping partners in a business. A puts in Rs. 5000 and B puts in Rs.6000. A receives 12.5 % of the profit for managing the business and the rest is divided in proportion to their capital. What does each get out of aprofit of Rs. 880?

A. 350, 400
B. 350, 420
C. 423, 543
D. 342, 720

16. A and B started a business jointly. A's investment was thrice the investment of B and the period of hisinvestment was two times the period of investment of B. If B received Rs. 4000 as profit, then their total profit is

A. 22000
B. 28000
C. 32000
D. 36000

17. Aman started a business investingRs. 70,000. Rakhi joined him after six months with an amount of Rs. 1,05,000 and Sagar joined them with Rs. 1.4 lakhs after another six months. The amount of profit earnedshould be distributed in what ratio among Aman, Rakhi and Sagar respectively, 3 years after Aman started the business?

A. 11:13:15
B. 11:13:17
C. 12:17:18
D. 12:15 :16

18. Manoj received Rs. 6000 as his share out of the total profit of Rs. 9000 which he and Ramesh earned at the end of one year. If Manoj invested Rs.120000 for 6 months, whereas Ramesh invested his amount for the whole year, what was the amountinvested by Ramesh?

A. Rs. 6000
B. Rs. 4000
C. Rs. 10000
D. Rs. 5000

19. A, B, C subscribe Rs. 50,000 for a business, A subscribes Rs. 4000 more than B and B Rs. 5000 more than C. Out of a total profit of Rs. 35,000, A receives :

A. 14700
B. 15000
C. 12000
D. 1350

PIPES AND CISTERNS

Cistern:
Cistern is a container for holding liquids.

Pipe:
Pipe is used for fluid motion control.
In pipes and cisterns we will come across the following terminologies:

Inlet: A pipe connected with a tank or reservoir for filling is called as inlet. A pipe can filla tank with water, at this time the nature of the pipe is positive.

Outlet: A pipe connected with a tank and used for emptying it is called outlet. A pipecan empty a tank, at this time the nature of the pipe is negative.

Rule: If a pipe can fill a tank in x hours, then the part filled in 1 hour = 1 / x.

Rule: If a pipe can fill/empty a tank in x hours and another pipe can fill/empty the fulltank in y hours, then the net part filled/emptied in 1 hour, when both the pipes are opened:

(1 / x) - (1 / y) – If X fills and Y empties
(1 / x) + (1 / y) – If both fills

Time taken to fill/empty the tank, when both the pipes are opened:

xy / (y - x) - If X fills and Y empties
xy / (y + x) - If both fills

Rule: Three pipes can fill (or empty) a cistern in x, y and z hours while working alone. Ifall the three pipes are opened together, the net part filled/emptied in 1 hr:

(1 / x) + (1 / y) + (1 / z) – If all three fill
(1 / x) - (1 / y) - (1 / z) - If X fills and Y, Z both empty

So the time taken to fill (or empty) the cistern is given by:

xyz / (xz + yz + xy) – If all three fill
xyz / (xz - yz - xy) - If X fills and Y, Z both empty

Rule: If a pipe fills a tank in x hrs and another fills the same tank in y hrs, but a third empties the full tank in z hrs and all of them are opened together, the net part filled in 1

hr:

(1 / x) + (1 / y) - (1 / z)

So time taken to fill the tank:

xyz / (yz + xz - xy)

Rule: 'A' pipe can fill a tank in 'x' hours & 'B' pipe can fill in ' y' hours. Both opened for'a' hours, then, A is shut-off. Alone 'B' pipe fill the remaining tank in:

y - [a*(x +y)]/x hours

Pipes and Cisterns problems are similar to time and work problems.

Examples

1. A tank is filled by three pipes A, B and C. The pipe C is twice as fast asB and B is twice as fast as A. If all three pipes are open, the tank is filled in 5 hours. How much time willpipe A alone take to fill the tank?

   Solution:

   Let Pipe A take x hours to fill the tank, then pipes B will take x / 2 hrsand pipe C will take x / 4 hours respectively.
   Then part to be filled by all threepipes in 1 hr will be:
   (1 / x) + (2 / x) + (4 / x) = 1/5x = 25 hrs

2. A cistern is normally filled in 8 hrs, but it takes four hrs longer to fill because of a leak in the bottom. If the cistern is full, how much time theleak will empty it?

   Solution:

   Let the leak empty the tank in x hrs.Then part of cistern filled in 1 hr:
   = (1 / 8) - (1 / x) = (x – 8) / 8x
   So cistern will completely filled in 8x /(x – 8)

   As given in the question, 8 hrs is thetime taken by the cistern to be filledand 4 hrs is the additional time needed because of the leakage

   8x / (x - 8) = 8 + 4 = 12
   x = 24 hrs

3. A tank can be filled by a tap in 20 minutes and by another tap in 60 minutes. Both the taps are kept openfor 10 minutes and then the first tap is shut off. After this, how much timerequired to fill the tank?

   Solution:

   The part of the tank filled when boththe taps are open per minute is:
   = (1/20) + (1/60) = (1/15)
   The part of the tank filled when boththe taps are open per 10 minutes is:
   = 10X (1/15) = 2/3
   Now as the first tap is turned off, remaining $1/3^{rd}$ of the tank should befilled by second tap:
   = (1/3) X60 = 20 minutes.

QUESTIONS

1. Two pipes A and B can fill a tank in 15 minutes and 20 minutes respectively. Both the pipes are opened together but after 4 minutes,pipe A is turned off. What is the total time required to fill the tank? This is the same as Example 4 above
   A. 10 min. 20 sec.
   B. 11 min. 45 sec.
   C. 12 min. 30 sec.
   D. 14 min. 40 sec.

2. Pipe A fills a tank of 700 litres capacity at the rate of 40 litres a minute. Another pipe B fills the sametank at the rate of 30 litres a minute. A pipe at the bottom of the tank drains the tank at the rate of 20 litres a minute. If pipe A is kept openfor a minute and then closed and pipe B is kept open for a minute and then closed and then pipe C is kept open for a minute and then closed and the cycle repeated, how long willit take for the empty tank to overflow?
   A. 42 minutes 20 seconds
   B. 14 minutes 18 seconds
   C. 39 minutes
   D. 40 minutes 20 seconds

3. 3 taps A and B can fill a bucket in 12 minutes and 15 minutes respectively.If both are opened and A is closed after 3 minutes, how much further time would it take for B to fill the bucket?
   A. 7 min. 45 sec.
   B. 8 mm. 5 sec.
   C. 7 mm. 15 sec.
   D. 8 mm. 15 sec.

4. A tank is fitted with 8 pipes, some ofthem that fill the tank and others that are waste pipes meant to emptythe tank. Each of the pipes that fill the tank can fill it in 8 hours, while each of those that empty the tank can empty it in 6 hours. If all the pipes are kept open when the tank isfull, it will take exactly 6 hours for the tank to empty. How many of these are fill pipes?
   A. 2
   B. 4
   C. 6
   D. 5

5. Pipe A usually fills a tank in 2 hours. On account of a leak at the bottom ofthe tank, it takes pipe A 30 more minutes to fill the tank. How long willthe leak take to empty a full tank if pipe A is shut?
   A. 2 hours 30 minutes
   B. 5 hours
   C. 4 hours
   D. 10 hours

6. A water tank is two-fifth full. Pipe A can fill a tank in 10 minutes and pipeB can empty in 6 minutes. If both the pipes are open, how long will it take to empty or fill the tank completely?
   A. 6 min to empty
   B. 7 min to full
   C. 6 min to full
   D. 7 min to empty

7. A tank can be filled by a tap in 20 minutes and by another tap in 60 minutes. Both the taps are kept openfor 10 minutes and then the first tap is shut off. After this, the tank will becompletely filled in what time?
   A. 10 mins
   B. 15 mins
   C. 20 mins
   D. 25 mins

8. A tank is filled by three pipes with uniform flow. The first two pipes operating simultaneously fill the tankin the same time during which the tank is filled by the third pipe alone.

The second pipe fills the tank 5 hoursfaster than the first pipe and 4 hoursslower than the third pipe. The time required by the first pipe is:

A. 30 hours
B. 15 hours
C. 10 hours
D. 6 hours

9. Two pipes A and B can fill a tank in 15 minutes and 40 minutes respectively. Both the pipes are opened together but after 4 minutes,pipe A is turned off. What is the total time required to fill the tank?

A. 10 min 10 sec
B. 25 min 20 sec
C. 14 min 40 sec
D. 20 min 10 sec

10. Two pipes A and B can fill a tank in 8hours. If only pipe A is open then it would take 4 hours longer to fill the tank. Find how much longer it wouldtake if only pipe B is open.

A. 6 hours
B. 8 hours
C. 16 hours
D. 12 hours

11. There are two inlets and one outlet to a cistern. One of the inlets takes 3hours to fill up the cistern and the other inlet takes twice as much time to fill up the same cistern. Both of the inlets are turned on at 9:00 AM with the cistern completely empty, and at 10:30AM, the outlet is turned on and it takes 1 more hour to fill thecistern completely. How much time does the outlet working alone take to empty the cistern when the cistern isfull?

A. 2.5 hours
B. 3 hours
C. 3.5 hours
D. 4 hours

12. Pipe P can drain the liquid from a tank in $3/4^{th}$ the time that it takes pipe Q to drain it and in $2/3^{rd}$ the time that it takes pipe R to do it. If all 3 pipes operating simultaneously but independently are used to drain liquid from the tank, then pipe Q drains what portion of the liquid fromthe tank?

A. 9/29
B. 8/23
C. 3/8
D. 17/29

13. A tank is filled in 10 hours by three pipes A, B and C. The pipe C is twiceas fast as B and B is twice as fast as

A. How much time will pipe A alonetake to fill the tank?

A. 70 hours
B. 30 hours
C. 35 hours
D. 50 hours

14. Pipe A, B and C are kept open and together fill a tank in t minutes. Pipe A is kept open throughout, pipe B is kept open for the first 10 minutes and then closed. Two minutes after pipe B is closed, pipe C is opened and is kept open till the tank is full. Each pipe fills an equal share of the tank. Furthermore, it is known that ifpipe A and B are kept open continuously, the tank would be filled completely in t minutes. Find t?

A. 18
B. 36
C. 27
D. 24

15. Three pipes A, B and C can fill a tankin 6 hours. After working at it together for 2 hours, C is closed andA and B can fill the remaining part in7 hours. The number of hours taken by C alone to fill the tank is

A. 10
B. 12
C. 14
D. 16

16. A leak in the bottom of a tank can empty the full tank in 6 hours. An inlet pipe fills water at the rate of 4 liters a minute. When the tank is full,the inlet is opened and due to the leak, the tank is empty in 24 hours. How many liters does the cistern hold?
    A. 4010 litre
    B. 2220 litre
    C. 1920 litre
    D. 2020 litre

17. Srivari Mansion is a big housing complex in Tirupathi. Giant tanks areplaced in every complex building to cater to the needs of the residents. In a block named Annapurna, three taps P, Q and R can fill a tank in 12, 15 and 30 hours respectively. The caretaker of the complex has instructions to keep tap P open all the time and Q and R are to be opened for one hour alternately. When will the tank in Annapurna become full?
    A. 5 hrs
    B. 6 hrs
    C. 7 hrs
    D. 8 hrs

18. Sri Poojitha Enclave has 20 flats. Water from three different sources are fed into the cistern. Three taps can fill the cistern in 10mins, 15minsand 18mins respectively. The cisternbeing empty, all the three taps are kept open by the watchman of the enclave. After 3 mins, the watchmancloses the third tap. After third tap isclosed, how many minutes would be required by the first two taps to fill the cistern completely.
    A. 1 min
    B. 2 min
    C. 3 min
    D. 4 min

19. Fountain Square is one of the largesthousing projects in Bangalore. It has over 300 flats, a swimming pool, play area, community hall, walking lawns etc. In one of the blocks named Arjun, there are two water tanks A and B. A is much smaller than B. Water fills at the rate of one litre every hour in A. At the end of first hour, tank B gets filled with 10 litres of water. At the end of second hour, the capacity raises to 20 litres. At the end of third hour the capacityraises to 40 litres and so on. If 1/16th of the total capacity of tank Bis filled after 24 hours, what is the total time required for tank B to get completely filled?
    A. 26 hours
    B. 27 hours
    C. 29 hours
    D. 28 hours

PROFIT AND LOSS

Concepts:

Cost Price: The price at which an article is purchased, is called cost price, abbreviated asC.P.

Selling Price: The price at which an article is sold, is called its selling price,abbreviated as S.P.

Profit or Gain: If S.P. is greater than C.P., the seller is said to have **profit** or**gain.**

Loss: S.P. is less than C.P., the seller issaid to have incurred a **loss.**

Profit percent (P %): Profit percent is always computed over C.P.

P% = [(Profit / C.P.) X 100] %

Loss Percent (L %): Loss percent is always computed over C.P., it is:

L% = [(Loss / C.P.) X 100] %

Successive profits:

If P buys a product for Rs.X and sells it to Q at a profit R1%, Q sells that item to R at aprofit of R2%, R sells that item to S at a profit of R3%, then,

C.P. of S = (C.P. of P) X [1+ (R1/100)] X [1+ (R2/100)] X [1+ (R3/100)]

Example:

Karan bought a bike for Rs. 1000, he sells a bike to Karim at a profit of 20%, Karim sells itto Kishore at 10% profit, Kishore sells the bike to Karna at 30%. Find the cost price of Karna

Answer:

C.P. of Karan = 1000X [1 + 20/100] X [1 + 10/100] X [1 + 30/100]

= 1000 X 120/100 X 110/100 X 130/100

= 2x6x11x13

= 1716

Successive loss:

If P buys a product for Rs.X and sells it to Q at a loss R1%, Q sells that item to R at a lossof R2%, R sells that item to S at a loss of R3%, then,

C.P. of S = (C.P. of P) X [1- (R1/100)] X [1- (R2/100)] X [1- (R3/100)]

Example:

Karan bought a bike for Rs. 1000, he sells a bike to Karim at a loss of 20%, Karim sells it toKishore at 10% loss, Kishore sells the bike to Karna at 30%. Find the cost price of Karna **Answer:**

C.P. of Karan = 1000X [1 - 20/100] X [1 - 10/100] X [1 - 30/100]

= 1000 X 80/100 X 90/100 X 70/100

= 8x9x7
= 504

Marked Price: This is the price of the product as displayed on the label.
Discount: This is the reduction given on the marked price before selling it to a customer.
Mark-up: This is the increment on the cost price before being sold to a customer.

Formulae:

- Gain = (S.P.) - (C.P.)
- Loss = (C.P.) - (S.P.)
- Gain Percentage: (Gain %)=(Gain X 100) / C.P.
- Loss Percentage: (Loss %)=(Loss X 100) / C.P.
  Loss or gain is always reckoned on C.P.

- Selling Price: (S.P.) = [(100 + Gain %) / 100] X C.P.
- Selling Price: (S.P.) = [(100 - Loss %) / 100] X C.P.
- Cost Price: (C.P.) = [100/ (100 + Gain %)] X S.P.
- Cost Price: (C.P.) = [100/ (100 - Loss %)] X S.P.

- If an article is sold at a gain of say 35%, then S.P. = 135% of C.P.
- If an article is sold at a loss of say, 35% then S.P. = 65% of C.P.
- When a person sells two similar items, one at a gain of say x%, and the other at aloss of x%, then the seller always incurs a loss given by:
  Loss % = [(Common Loss and Gain %) / (10)] ^{2} = $(x/10)^2$
- If a trader professes to sell his goods at cost price, but uses false weights, thenGain % = [Error/ (True Value - Error)] X 100 %

- If there are 2 successive profits of R1% and R2% then,
  Total profit % = [R1+R2+ (R1XR2)/100
- If there are 2 successive loss of R1% and R2% then,
  Total profit % = [R1-R2- (R1XR2)/100

Problems

1. Find S.P., when C.P. = Rs. 56.25, Gain = 20%.
   A. 68.34
   B. 58.75
   C. 67.50
   D. 34.80

2. A person incurs 5% loss by selling awatch for Rs. 1140. At what price should the watch be sold to earn 5%profit?
   A. 1390
   B. 1260
   C. 2750
   D. 2150

3. By selling 33 metres of cloth, one gainsthe selling price of 11 metres. Find the gain percent.
   A. 50%
   B. 70%
   C. 55%
   D. 65%

4. A dishonest dealer professes to sell his goods at cost price but uses a weight of960 gms for a kg weight. Find his gain percent.
   A. 5 1/6%
   B. 3 1/4%
   C. 4 1/6%
   D. 8 1/4%

5. A man bought a horse and a carriage for Rs. 3000. He sold the horse at a gain of 20% and the carriage at a lossof 10%, thereby gaining 2% on the whole. Find the cost of the horse.
   A. Rs. 1500
   B. Rs. 1300
   C. Rs. 1600
   D. Rs. 1200

6. 100 oranges are bought at the rate of Rs. 350 and sold at the rate of Rs. 48 per dozen. The percentage of profit orloss is:
   A. 14 2/7% gain
   B. 15% gain
   C. 14 2/7% loss
   D. 15% loss

7. At what percentage above the C.P. must an article be marked so as to gain33% after allowing a customer a discount of 5%?
   A. 60%
   B. 40%
   C. 35%
   D. 75%

8. A sells an article which costs him Rs. 400 to B at a profit of 20%. B then sellsit to C, making a profit of 10% on the price he paid to A. How much does C pay B?
   A. Rs. 472
   B. Rs. 476
   C. Rs. 528
   D. Rs. 532

9. A fruit seller has 24 kg of apples. He sells a part of these at a gain of 20% and the balance at a loss of 5%. If on the whole he earns a profit of 10%, theamount of apples sold at a loss is:
   A. 4.6 kg
   B. 6 kg
   C. 9.8 kg
   D. 11.4 kg

10. If a merchant makes a profit of 20%after giving a 20% discount, what should be his mark-up?
    A. 20
    B. 30
    C. 50
    D. 66.67

11. A property dealer sells a house for Rs. 6, 30,000 and in bargain makes a profitof 5%. Had he sold it for Rs. 5, 00,000,then what percentage of loss or gain hewould have made?
    A. 2 1/4% gain
    B. 10% loss
    C. 12 1/2% loss
    D. 16 2/3% loss

12. The ratio between the sale price and the cost price of an article is 7: 5. What

is the ratio between the profit and thecost price of that article?

A. 2: 7
B. 5: 2
C. Data inadequate
D. None of these

13. A woman goes to market with Rs. 500 to buy oranges. The price of the oranges has decreased by 10% so shecould buy 2 kg more with the amount she had. What was the original price of the oranges?
A. Rs. 26.48
B. Rs. 27.66
C. Rs. 27.77
D. Rs. 28.65

14. Two merchants sell, each an article forRs.1000. If Merchant A computes his profit on cost price, while Merchant B computes his profit on selling price, they end up making profits of 25% respectively. By how much is the profitmade by Merchant B greater than thatof Merchant A?
A. Rs.66.67
B. Rs. 50
C. Rs.125
D. None of these

15. A man buys 2 dozens bananas at Rs. 16 per dozen. After selling 18 bananasat the rate of Rs. 12 per dozen, the shopkeeper reduced the rate to Rs. 4 per dozen. The percent loss is:
A. 25.2%
B. 32.4%
C. 36.5%
D. 37.5%

16. A trader mixes three varieties of groundnuts costing Rs. 50, Rs. 20 and Rs. 30 per kg in the ratio 2 : 4 : 3 in terms of weight, and sells the mixtureat Rs. 33 per kg. What percentage of profit or loss does he make?
A. 8%
B. 9%
C. 10%
D. None of these

17. A dishonest dealer professes to sell his goods at cost price. But he uses a false weight and thus gains 6 18/47%. For akg, he uses a weight of:
A. 940 gms
B. 947 gms
C. 953 gms
D. 960 gms

18. A shopkeeper sells an article at a lossof 12 1/2%. Had he sold it for Rs. 51.80 more, he would have earned aprofit of 6%? The cost price of the article is:
A. Rs. 280
B. Rs. 300
C. Rs. 380
D. Rs. 400

19. An article was sold for Rs. y after givinga discount of x%. Then, its list price is: A. 100y / (100-x)
B. 100y / (1-x)
C. 100y / [1 - (x / 100)
D. None of these

20. Find the selling price of an article if a shopkeeper allows two successive discounts of 5% each on the market price of Rs. 80
A. Rs. 70.10
B. Rs. 70.20
C. Rs. 72
D. Rs. 72.20

RATIOS AND PROPORTIONS

The concept of ratio and proportion is an important one for the aptitude examinations. Beside, this concept is very important in the area of Data interpretation, where ratio changes and ratio comparisons are very popular question types.

Ratio: Gives the relation between two quantities of the same kind.

Ratio of oranges that Rina has to that of Tina is 3:4 or $\frac{3}{4}$

Proportion: Equality of two ratios. Two ratios a:b and c:d are said to be in proportion if a:b = c:d and is represented as a:b::c:d.
If a:b::c:d then ad = bc.

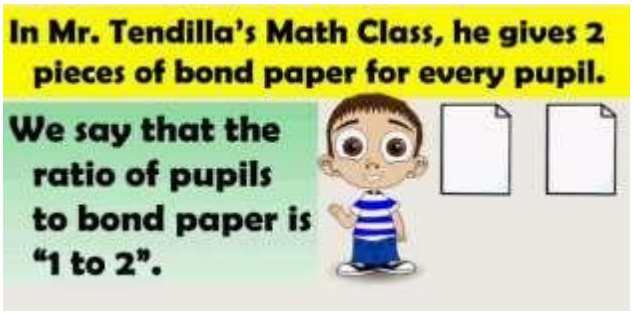
The ratio of oranges to all fruits that Rina has is proportional to the ratio of oranges to all fruits that Tina has
3:6 :: 4:8, We have $3 \times 8 = 6 \times 4$.

Ratio

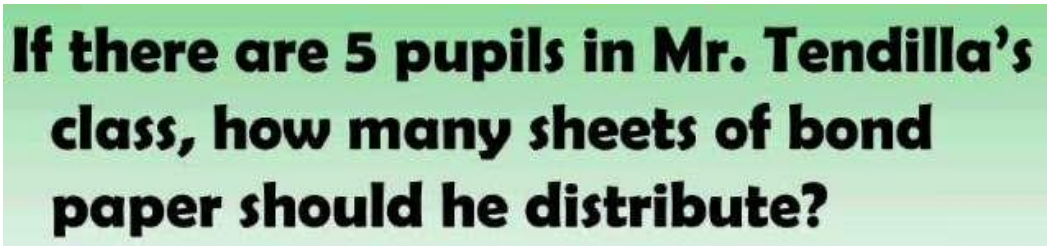
When comparing any two numbers, sometimes, it is necessary to find out how many times one number is greater (or less) than the other, in other words, we often need to express one number as a fraction of the other.

In general, the ratio of a number x to a number y is defined as the quotient of the numbers x and y.

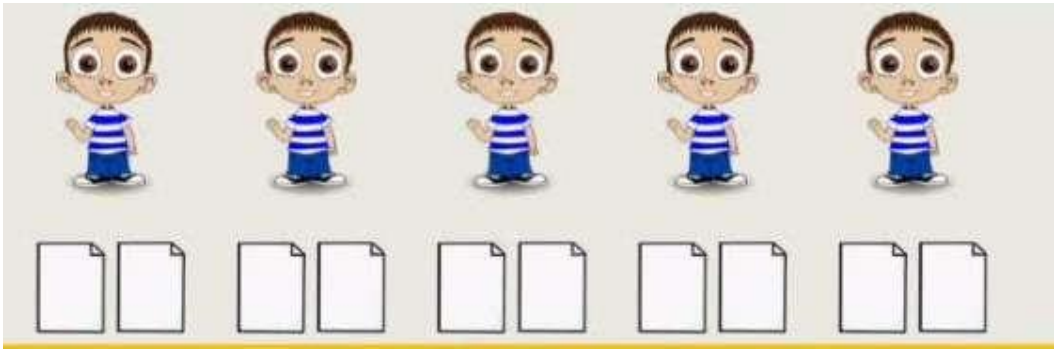
The numbers that form the ratio are called the terms of the ratio. The numerator of the ratio is called "antecedent" and the denominator is called the "consequent" of the ratio.
The ratio may be taken for homogenous quantities or for heterogeneous quantities. In the first case, the ratio has no unit (or unit less), while in the second case, the unit of the ratio is based on the units of the numerator and that of denominator.



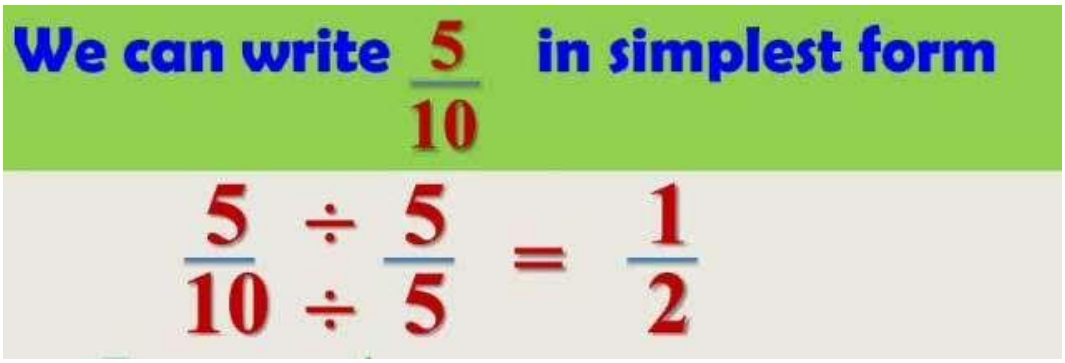
So the ratio is of Pupil : Bond paper =1:2 and the ratio of Bond paper to pupil = 2:1. Now what if it is the below case?



In this case there are 5 pupil and the number of bond paper needed is 10. So the ratio becomes



Now the ratio of Pupil : Bond paper is = 5:10.



So from this we know that 1:2 is same as 5:10.

Hence, now if you get a fraction it means it might have had a common multiple that was removed. Let us say 4:5 is the ratio of blue paint to be mixed with yellow paint to get green paint of a particular shade, it might not be the original number of paint buckets used. They might have used 4x2 : 5x2 =8:10. i.e 8 buckets of blue paint and 10 buckets of yellow paint or 4x3 : 5x3 =12:15 or 4x4:5x4 = 16:20 and so on.

Ratios can be expressed as percentages. To express the value of ratio as a percentage, we multiply the ratio by 100.

Thus 4/5=0.8=80%.

The calculation of a ratio: Percentage and decimal values

NOTE:

1. *If we multiply the numerator and the denominator of a ratio by the same number, the ratio remains unchanged. That is, a/b=ma/mb*

2. *If we divide the numerator and the denominator of a ratio by the same number, the ratio remains unchanged. Thus*

The calculation of ratio is principally on the same line as the calculation of apercentage value. Hence, you should see it as:

The ratio 2/4 has a percentage value of 50% and it has a decimal value of 0.5.

It should be pretty obvious to you that in order to find out the decimal value of any ratio, calculate the percentage value using the percentage rule method illustrated in the chapter of percentage and then shift the decimal point 2 places to the left.

Thus a ratio which has a percentage value 62.47% will have a decimal value of 0.6247.

Some Important Properties of Ratios

1. If we multiply the numerator and the denominator of a ratio by the same number,the ratio remains unchanged.

That is, a/b=ma/mb

2. If we divide the numerator and the denominator of a ratio by the same number,the ratio remains unchanged. Thus

a/b=(a/d)/(b/d).

3. Denominator equation method:

The magnitudes of two ratios can be compared by equating the denominators of the two ratios and then checking for the value of thenumerator. Thus if we have check for 8/3 vs. 11/4

We compare (8*1.33)/(3*1.33) vs. 11/4 i.e.

10.66/4<11/4

In fact, the value of a ratio has a direct relationship with the value of numerator of the ratio. At the same time, it has an inverse relationship with the denominator of the ratio. Since the denominator has an inverse relationship with the ratio's value, it involves an unnecessary inversion in theminds of reader. Hence, in my opinion, we should look at maintainingconstancy in the denominator and work all the requisite calculations on the numerator's basis.

The reader should recall here the product Constancy table (or the denominator change to the ratio change table)

Product XY is Constant	*X increases (%)*	*Y Decreases (%)*
A→B→A	*A → B % increase*	*B → A% decrease*
X is inversely proportional to Y	*X increases (%)*	*Y decreases (%)*
Ratio change effect of Denominator change	*Denominator increases (%)*	*(Ratio decreases (%)*
Denominator change effect of Ratio change	*Ratio increases (%)*	*As Denominator decreases (%)*
Standard Value 1	9.09	8.33
Standard Value 2	10	9.09
Standard Value 3	11.11	10
Standard Value 4	12.5	11.11
Standard Value 5	14.28	12.5
Standard Value 6	16.66	14.28
Standard Value 7	20	16.66
Standard Value 8	25	20
Standard Value 9	33.33	25
Standard Value 10	50	33.33
Standard Value 11	60	37.5
Standard Value 12	66.66	40
Standard Value 13	75	42.85
Standard Value 14	100	50

The value shows,

1) If we have two numbers X and Y. The value of XY will remain unchanged if X value is increased by 50% and Y value is decreased by 33.33% (Standard Value 10 in the above table)
   Eg. Let the no. X and Y be 100 and 100 which gives the product to be 10000. The value will remain same if X value is increased by 50 i.e. to 150 and Y valueis reduced by 33.333 i.e. 66.666
2) The ratio obtain the same initial value only if there is an increment of 50 anddecrement by 33.33.
   Eg. Let the no. be 100 if there is an increment by 50 percent which gives new no. tends to be 150. We obtain the same value when we reduce 150 by 33.33 percent.

4. The ratio of two fractions can be expressed as a ratio of two integers. Thus theratio: a/b:c/d=(a/b)/(c/d)=ad/bc

5. If either or both the terms of a ratio are a surd quantity, then the ratio will never evolve into integral numbers unless the surd quantities are equal. Use this principle to spot options in questions having surds.

   Example:√3/√2 can never be represented by integers.
   This principle can also be understood in other words as follows:
   Suppose while solving a question, you come across a situation where √3 appearsas a part of the process. In such case, it would be safe to assume that √3 will also

be part of the answer. Since the only way the √3 can be removed from the answer is by multiplying or dividing the expression by √3.Thus for instance, the formula for the area of an equilateral triangle is (√3/4)a^2.

Hence, you can safely assume that the area of any equilateral triangle will have √3 in its answer. The only case when this gets negated would be when the value of the side has a component which the fourth root of three.

6. The multiplication of the ratios a/b and c/d yields.
   a/b*c/d=ac/bd

7. When, the ratio a/b is compounded with itself, the resulting ratio is a^2/b^2 and is called the duplicate ratio. Similarly, a^3/b^3 is he triplicate ratio and a^0.5/b^0.5 is the sub-duplicate ratio of a/b.

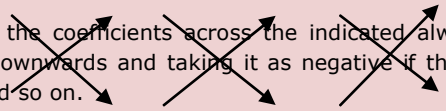
8. If a/b=c/d=e/f=g/h=k then K=(a+c+e+g)/(b+d+f+h)

9. If a1/b1,a2/b2,a3,b3….an/bn are unequal fractions. Then the ratio:
   (a1+a2+a3+…+an)/(b1+b2+b3+….+bn) lies between the lowest and the highest of these fractions.

10. If we have two equations containing three unknowns as
    a1x+b1y+c1z=0 (1)
    a2x+b2y+c2z=0 (2)
    Then, the value of x, y and z cannot be resolved without having a third equation. However, in the absence of a third equation, we can find the proportion x:y:z.Thiswill be given by b1c2-b2c1:c1a1-c2a1:a1b2-a2b1.
    This can be remembered by writing as follows:

B_1 C_1 A_1 B_1

B_2 C_2 A_2 B_2



Multiply the coefficients across the indicated always taking a multiplication as positive if the arrow points downwards and taking it as negative if the arrow point upwards. Thus x corresponds to b1c2-b2c1 and so on.

11. If the ratio a/b > 1 (called a ratio of grater inequality) and if k is a positivenumber:
    (a+k)/(b+k)<a/b and (a-k)/(b-k)> a/b

12. Maintenance of equality when numbers are added in both the numerator and thedenominators. This it is best illustrated through an example: 20/30=(20+2)/(30+3)
    i.e. a/b=(a+c)/(b+d) if and only if c/d=a/b.
    In other words, the ratio of the additions should be equal to original ratio maintain equality of ratios when two different numbers are added in the numerator and denominator.
    Consequently, if c/d >a/b then (a+c)/ (b+d)>a/b and

if c/d <a/b then (a+c)/(b+d)<a/b

The practical applications of (11) and (12) is of immense importance for all aptitude exams.

PROPORTION

When two ratios are equal, the four quantities composing them are said to be proportional. Thus if a/b=c/d, then a, b, c, d are proportional. This is expressed by saving that a is to b as c is to d, and the proportion is written as

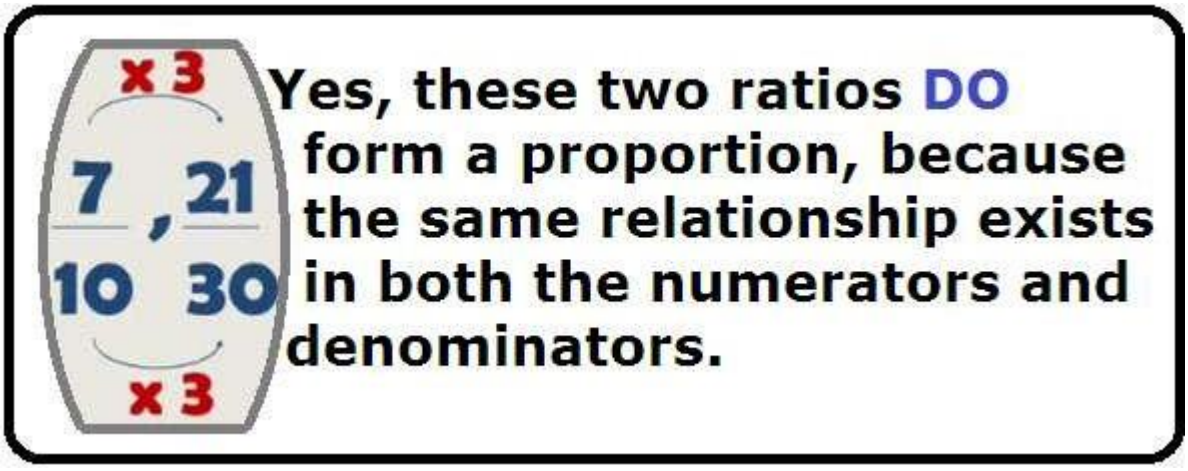
a:b::c:d or a:b=c:d

The terms a and d are called the extremes while the term b and c are called the means. If four quantities are in proportions, the product of the extremes is equal to the productof the means.

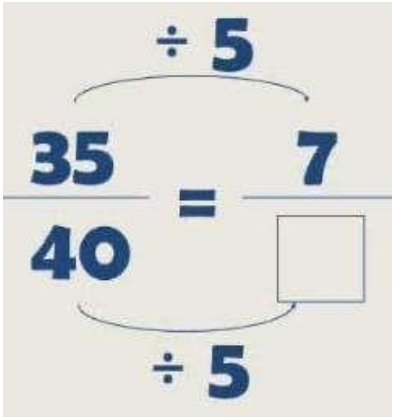
Let a, b, c, d be the proportional.

Then by definitions a/b=c/d

ad=bc



Hence if any three terms of proportion are given, the fourth may be found. Thus if a, c, dare given then b=ad/c.



If three quantities a, b and c are in continued proportion, then a:b=b:c

ac=b^2

In this case, b is said to be a mean proportional between a and c; and c is said to be a third proportional to a and b.

If three quantities are proportional the first to the second, that is for a:b::b:c

a: c=a^2:b^2

If four quantities a, b, c and d form a proportion, many other proportions may be deduced by the properties of fractions. The result of these operations is very useful. These operations are:

1. **Invertendo**: If a/b = c/d then b/a = d/c
2. **Alternendo**: If a/b = c/d then a/c = b/d
3. **Componendo**: If a/b = c/d, then (a+b/b)=(c+d/d)
4. **Dividendo**: If a/b = c/d, then (a-b/b)=(c-d/d)
5. **Componendo and Dividendo**: If a/b = c/d, then (a+b)/(a-b) = (c+d)/(c-d)

QUESTIONS

1. Jo's collection contains US, Indian andBritish stamps. If the ratio of US to Indian stamps is 5 to 2 and the ratio of Indian to British stamps is 5 to 1, what is the ratio of US to British stamps?
   A. 10:5
   B. 15:2
   C. 20:2
   D. 25:2

2. A bag contains 50 paise, 25 paise and 10 paise coins in the ratio 5: 9:4, amounting to Rs. 206. Find the number of coins of each type respectively.
   A. 360,160,200
   B. 160,360,200
   C. 200,360,160
   D. 200,160,300

3. Salaries of Ravi and Sumit are in theratio 2:3. If the salary of each is increased by Rs. 4000, the new ratiobecomes 40:57. What is Sumit's salary?
   A. 38000
   B. 46800
   C. 36700
   D. 50000

4. A cubical block of metal weighs 6 pounds. How much will another cubeof the same metal weigh if its sides are twice as long?
   A. 48
   B. 12
   C. 36
   D. 6

5. A mixture contains alcohol and waterin the ratio 4 : 3. If 5 liters of water is added to the mixture, the ratio becomes 4: 5. Find the quantity of alcohol in the given mixture.
   A. 10
   B. 12
   C. 15
   D. 18

6. Seats for Mathematics, Physics andBiology in a school are in the ratio 5:7:8. There is a proposal to increase these seats by 40%, 50%and 75% respectively. What will bethe ratio of increased seats?
   A. 1:2:3
   B. 2:3:4
   C. 3:4:5
   D. 4:5:6

7. A dog takes 3 leaps for every 5 leapsof a hare. If one leap of the dog is equal to 3 leaps of the hare, the ratioof the speed of the dog to that of thehare is :
   A. 9:5
   B. 2:3
   C. 4:7
   D. 5:6

8. In a zoo, there are rabbits and pigeons. If heads are counted, thereare 340 heads and if legs are counted there are 1060 legs.How many pigeons are there?
   A. 120
   B. 150
   C. 170
   D. 180

9. If 20 men or 24 women or 40 boys can do a job in 12 days working for 8hours a day, how many men workingwith 6 women and 2 boys take to do a job four times as big working for 5 hours a day for 12 days?
   A. 8 men
   B. 12 men
   C. 2 men
   D. 24 men

10. If 76 is divided into four parts proportional to 7, 5, 3, 4, then thesmallest part is:
    A. 12
    B. 15

C. 16
D. 19

11. The ratio of water and milk in a 30 liter mixture is 7:3. Find the quantityof water to be added to the mixture in order to make this ratio 6:1.
A. 30
B. 2
C. 33
D. 35

12. If 10 persons can clean 10 floors by10 mops in 10 days, in how many days 8 persons can clean 8 floors by8 mops?
A. 12.5 days
B. 8 days
C. 10 days
D. 8.33 days

13. Rs.432 is divided amongst three workers A, B and C such that 8 timesA's share is equal to 12 times B's share which is equal to 6 times C's share. How much did A get?
A. Rs.192
B. Rs.133
C. Rs.144
D. Rs.128

14. The students in three batches at Mindworkzz are in the ratio 2:3:5. If20 students are increased in each batch, the ratio changes to 4:5:7. The total numbers of students in thethree batches before the increase were.
A. 10
B. 100
C. 90
D. 150

15. If work done by (x-1) men in (x+1)days is to the work done by (x+2) men in (x-1) days is in the ratio 9:10, then the value of x is
A. 10
B. 12
C. 8
D. 15

16. In the famous Bhojpur Island, there are four men for every three women and five children for every three men. How many children there in theisland if it has 531 women?
A. 454
B. 1180
C. 1070
D. 389

17. Rs 3000 is distributed among A, B and C such that A gets 2/3rd of what B and C together get and C gets ½ ofwhat A and B together get. Find C's share.
A. 750
B. 1000
C. 800
D. 1200

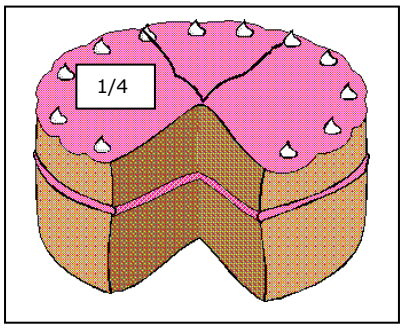
TIME AND WORK

Work:

Technically speaking, work is the quantity of energy transferred from one system toanother but for questions based on this topic, work is defined as the amount of job assigned or the amount of job actually done.

Rule of Flip:

Let's suppose you eat a cake in 4 days



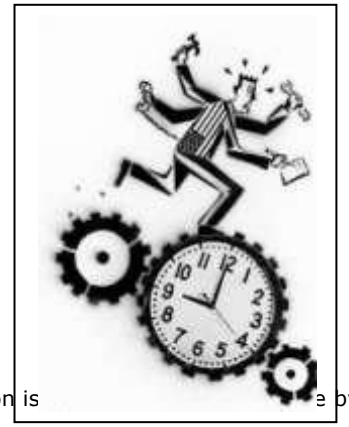
As shown in the image above, you will be able to eat 1/4th of the cake every day.Days 4
Per day – ¼

"n" days To finish a task	⟷	Every day you finish "1/n" of it

Example:

A takes 2 1/3 days to finish a task whereas, B can do the same in 5 2/3 days.Calculate how much work is done by A & B individually per day.

Answer:



A = 2 1/3 daysB =
5 2/3 days
First let us convert the mixed fractions into improperfractions
A = 2 1/3 = [(3x2) +1] / 3 = 5/3 days B = 5 2/3
= [(3x5) +2] / 3 = 17/3 days
Therefore the work done by A and B per day isA = 5/3
days = 3/5th per day
B = 17/3 days = 3/17th per day
We simply reciprocate the no. of days in order to getwork done per day.

Efficiency Method:

Efficiency and work done are directly proportional. If efficiency of a person is e by him is also more and vice-versa

Example:

If A can do a job in 10 days and B can do the same job in 5 days. In how many daysthey can complete the job working together?

Answer:

Let the total efficiency be 100A =
100/10 = 10% per day
B = 100/5 = 20% per day
Combined efficiency (A+B) = 10+20 = 30%
If they are working together their efficiency is 30%
Working together they will finish the work in 100/30 days= **3 1/3 days**

Example 2:

If A & B can do a job in 8 days and B & C can do the same job in 12 days. If A, B & Cwork together they can finish the job in 6 days. In how many days can A & C finish the job?

Answer:

Efficiency of A & B = 100/8 = 12.5% Efficiency of
B & C = 100/12 = 8.33% Efficiency of A, B & C =
100/6 = 16.66%
Efficiency of C = Efficiency of (A+B+C) – (Efficiency of A+B)C = 16.66% -
12.5 % = 4.16%
Efficiency of A = Efficiency of (A+B+C) – (Efficiency of B+C)A = 16.66 –
8.33 = 8.33%
Efficiency of A & C = 8.33% + 4.16% = 12.5%Days =
100/12.5 = 8 days

More examples:

1. Four men and three women can do a job in 6 days. When five men and six womenwork on the same job, the work gets completed in 4 days. How many days will a woman take to do the job, if she works alone on it?

   Answer:

   Let the amount of work done by a man in a day be 'm' and the amount of work doneby a woman in a day be 'w'.

   Therefore, 4 men and 3 women will do 4m+3w amount of work in a day. If 4 men and 3 women complete the entire work in 6 days, they will complete $(1/6)^{th}$ of thework in a day.

   Hence, 4m+3w= 1/6 ----------(1)

   And from statement (2), 5m+6w= 1/4 ----------(2)

   Solving eqn (1) and eqn (2), we get 3m= 1/12 or m=1/36. i.e., a man does $(1/ 36)^{th}$of the work in a day. Hence he will take 36 days to do the work.

   Substituting the value of m in eqn (1), we get 4 X 1 / 36 +3w= 1/6

   $\Rightarrow$ 3w = 1/6 − 1/9 = 3 − 2/18 = 1 / 18 or w = 1/ 54.

   i.e., a woman does $(1 / 54)^{th}$ of the work in a day. Hence she will take 54 days to dothe entire work.

2. Anil does a work in 90 days, Bittu in 40 days and Chintu in 12 days. They work one after another for a day each, starting with Anil followed by Bittu and then by Chintu.If the total wages received are Rs 360 and Anil, Bittu, Chintu share them in the ratioof the work done, find their respective individual wages.

   Answer:

   Assume there are 360 units of work (LCM of 40, 90 and 12)

   Hence, A,B and C can do 4,9 and 30 units per day or together 43 units every 3 days.So in 24 days, 43×8=344 units of work is completed. In the next 2 days, 13 units

are completed and on 27th day, C takes (1 / 10) th of a day to finish the rest.So, A and B worked for 9 days each and have hence put in 36 and 81 units respectively, and the rest of the 243 units is put in by C.

The wages shall also be distributed in the same ratio as: Rs 36, Rs 81 and Rs 243.

Important Formulae:

Work from Days:

- If A can do a piece of work in n days, then A's 1 day's work = 1/n.

Days from Work:

- If A's 1 day's work = 1/n, then A can finish the work in n days.

Ratio:

- If A is thrice as good a workman as B, then:
- Ratio of work done by A and B =3:1.
- Ratio of times taken by A and B to finish a work =1:3
- If A is 'x' times as good a workman as B, then he will take (1 / x)th of the time by Bto do the same work.
- A and B can do a piece of work in 'a' days and 'b' days respectively, then workingtogether, they will take xy / (x + y) days to finish the work and in one day, they will finish [(x + y) / xy]th part of work.
- No. of days = total work / work done in 1 day.

Relationship between Men and Work

- More men ------- can do -------> More work
- Less men ------- can do -------> Less work

Relationship between Work and Time

- More work -------- takes------> More Time
- Less work -------- takes------> Less Time

Relationship between Men and Time

- More men ------- can do in -------> Less Time
- Less men ------- can do in -------> More Time

- If M_1 persons can do W_1 work in D_1 days and M_2 persons can do W_2 work in D_2days, then
  $M_1D_1/W_1 = M_2D_2/W_2$
- If M_1 persons can do W_1 work in D_1 days for h_1 hours and M_2 persons can do W_2work in D_2 days for h_2 hours, then
  $M_1D_1h_1/W_1 = M_2D_2h_2/W_2$
- If A can do a work in 'x' days and B can do the same work in 'y' days, then thenumber of days required to complete the work if A and B work together is
  (x X y) / (x + y)
- If A can do a work in 'x' days and A + B can do the same work in 'y' days, then thenumber of days required to complete the work if B works alone is
  (x X y) / (x - y)

QUESTIONS

1. Rakul and Keerthi are working on an assignment. Rakul takes 6 hours to type 32 pages on a computer, while Keerthi takes 5 hours to type 40 pages. How much time will they take, working together on two different computers to type an assignment of 110 pages?
   A. 7 hours 30 minutes
   B. 8 hours
   C. 8 hours 15 minutes
   D. 8 hours 25 minutes

2. Amitabh takes twice as much time asHrithik or thrice as much time asSalman to finish a piece of work. Working together, they can finish the work in 2 days. Hrithik can do the work alone in:
   A. 4 days
   B. 6 days
   C. 8 days
   D. 12 days

3. Twenty boys can do a work in sixteen days. Sixteen girls can complete the same work in fifteen days. What is the ratio between the capacity of a girls and boys?
   A. 3: 4
   B. 4: 3
   C. 5: 3
   D. Data inadequate

4. Prabhas takes 8 hours to do a job. Mahesh takes 10 hours to do a job. How long should it take for both Prabhas and Mahesh, working together to do same job.
   A. 4/9
   B. 22/9
   C. 31/9
   D. 40/9

5. Mr. Ram is on tour and he has Rs 360 for his expenses. If he exceedshis tour by 4 days he must cut down daily expenses by Rs 3. The numberof days of Mr. Ram's tour program is
   A. 28 Days
   B. 24 Days
   C. 22 Days
   D. 20 Days

6. A contractor employed a certain number of workers to finish constructing a road in a certain scheduled time. Sometime later, when a part of work had been completed, he realized that the work would get delayed by three-fourth of the scheduled time, so he at once doubled the no of workers and thus he managed to finish the road on the scheduled time. How much work had been completed, before increasing the number of workers?
   A. 10 %
   B. 14 2/7 %
   C. 20 %
   D. Can't be determined

7. Neha is able to do a piece of work in 15 days and Rakia can do the same work in 20 days. If they can work together for 4 days, what is the fraction of work left?
   A. 8/15
   B. 7/15
   C. 11/15
   D. 2/11

8. 39 girls can repair a road in 12 days, working 5 hours a day. In how many days will 30 girls, working 6 hours a day, complete the work?
   A. A. 10
   B. B. 13
   C. C. 14
   D. D. 15

9. Praveen can lay railway track between two stations in 16 days. Ankitha can do the same job in 12 days. With the help of Ramya, they

complete the job in 4 days. How much days does it take for Ramya alone to complete the work?

A. 9(3/5) days
B. 9(1/5) days
C. 9(2/5) days
D. 10 days

10. A tyre has two punctures. The first puncture alone would have made the tyre flat in 9 minutes and the second alone would have done it in 6 minutes. If air leaks out at a constant rate, how long does it take both the punctures together to make it flat?

A. 3 1/5 min
B. 3 2/5 min
C. 3 3/5 min
D. 3 4/5 min

11. A work is done by three persons A,B and C. A alone takes 10 hours tocomplete a single product but B andC working together takes 4 hours, forthe completion of the same product. If all of them worked together and completed 14 products, then how many hours have they worked?

A. 20 hrs.
B. 28 hrs.
C. 40 hrs.
D. 54 hrs.

12. P can complete a work in 12 days working 8 hours a day. Q can complete the same work in 8 days working 10 hours a day. If both P and Q work together, working 8 hours a day, in how many days can they complete the work?

A. 60/11
B. 61/11
C. 71/11
D. 72/11

13. A is twice as good as workman as B and together they finish a piece of work in 18 days. In how many days will be alone finish the work?

A. 27 days
B. 54 days
C. 56 days
D. 68 days

14. A and B can separately do a piece of work in 20 and 15 days respectively. They worked together for 6 days, after which B was replaced by C. If the work was finished in next 4 days, then the number of days in which C alone could do the work will be:

A. 60
B. 35
C. 40
D. 30

15. Priya does half as much work as Riyain three-fourth of the time. If together they take 18 days to complete the work, how much time shall Riya take to do it?

A. 40 days
B. 35 days
C. 30 days
D. 25 days

16. A can do piece of work in 30 days while B alone can do it in 40 days. Inhow many days can A and B workingtogether do it?

A. 16 1/7
B. 17 1/7
C. 18 1/7
D. 19 1/7

17. A and B can do a piece of work in 45days and 40 days respectively. Theybegan to do the work together but Aleaves after some days and then B completed the remaining work in 23days. The number of days after which A left the work was

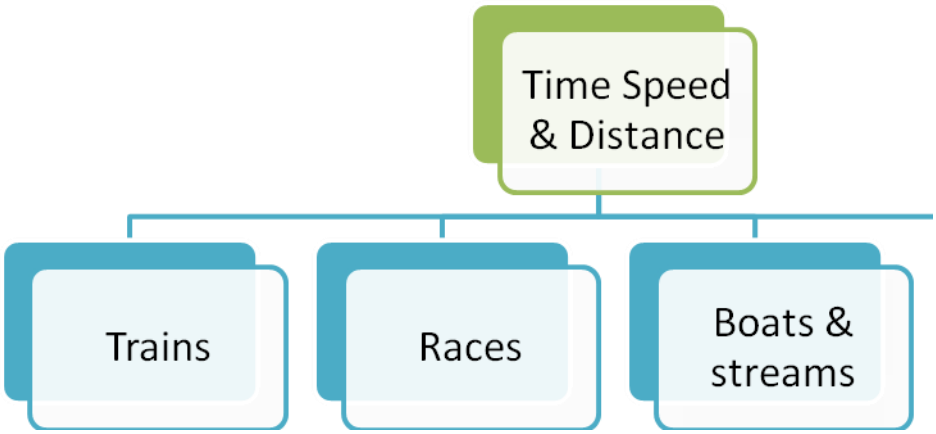
A. 12
B. 11
C. 10
D. 9

TIME, SPEED & DISTANCE

Time: Time is a measure in which events can be ordered from the past through the present into the future, and also the measure of durations of events and the intervalsbetween them.

Speed: speed of an object is the magnitude of the rate of change of its position fromone place to another.

Distance: Distance is a numerical description of how far apart objects are. In physics oreveryday usage, distance may refer to a physical length, or estimation based on other criteria.



Relative Speed:
Case1: Two bodies are moving in opposite directions at speed V_1 & V_2 respectively. Therelative speed is defined as $V_R = V_1 + V_2$
Case2: Two bodies are moving in same directions at speed V_1 & V_2 respectively. Therelative speed is defined as $V_R = |V_1 - V_2|$

Example: Two athletes are running from the same place at the speed of 6 km/hr and 4km/hr. find the distance between them after 10 minutes if they move in the same direction.
Answer: When they move in same direction, Their relative
speed = (6 – 4) km/hr = 2 km/hrTime taken = 10 minutes
Distance covered = speed × time
= (2 × 10/60) km
= 1/3 km
= 1/3 × 1000 m
= 333.3 m

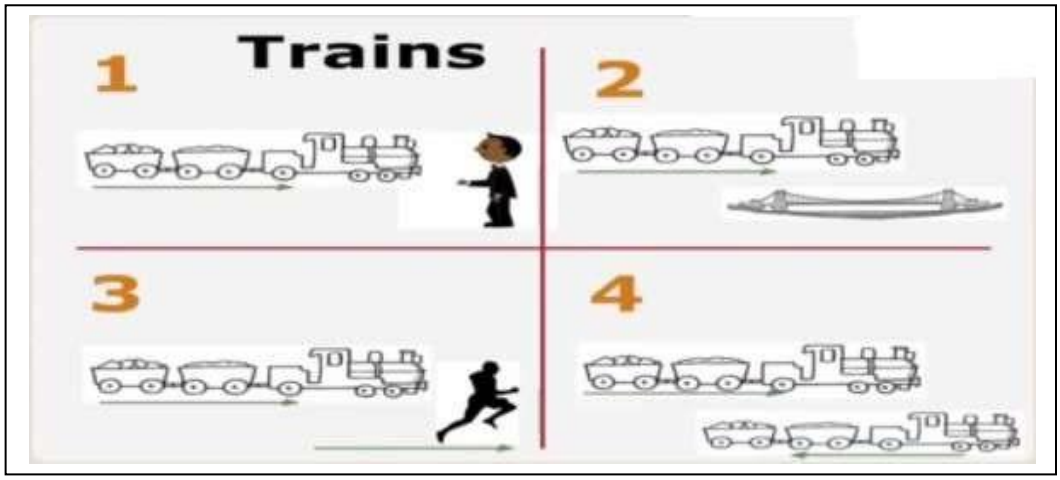
Trains:
The basic equation in train problem is the same **Speed = Distance/Time**
Speed = Distance/TimeTime
= Distance/Speed

Distance = Speed X time

Unit Conversion:
1 km/hr = 5/18 m/s1 m/s
= 18/5 Km/hr

There are 4 major concepts in Trains:

1) Train crossing a man/pole standing on the platform
2) Train crossing a bridge/platform
3) Train crossing a man in motion
4) 2 trains crossing each other



1) Train crossing a man/pole standing on the platform:
When the train is crossing any stationary object then, we will use the basic formula: S= DxT
Example: A man is standing on the platform waiting for the train. A train 60mts longcrosses the man in 12 seconds. What is the speed of the train?
Answer: S = DxT
The distance to be covered when crossing an object, whenever trains cross an objectwill be equal to: Length of the train + Length of the object.

Distance covered by the train while crossing an object = Length of the train + Length of the object.

Length of the object (man) = negligible
Therefore, Distance covered by the train = length of the trainNow by applying the formula we get,
S = 60 x 12
S = 720 mts

2) Train crossing a bridge:
When the train is crossing the bridge, the distance covered by the train becomes,Distance covered by the train = Length of the train + Length of the bridge

Example: The length of the bridge, which a train 130 metres long and travelling at45 km/hr can cross in 30 seconds, is:
Answer:

Speed = 45 x (5/18)m/sec = 25/2 m/sec.Time = 30 sec.
Let the length of bridge be x metres.Then,
D/T = S
$(L_1+L_2)/30 = S$
L_1 = Length of the train L_2 = Length of the bridge(130 + x)/30 = 25/2 2(130 + x) = 750
x = 245 m.

3) Train crossing a man in motion:

Example:

A train 150 m long passes a man, running at 8 km/hr in the same direction in whichthe train is going, in 12 seconds. The speed of the train is:

Answer:

Speed of the train relative to man = (150/12) = 25/2 m/s
= (25/2) x (18/5) km/hr = 45 km/hr
Let the speed of the train be x km/hr. Then, relative speed = (x – 8) km/hrx - 8 = 45 => **x = 53 km/hr**

4) 2 trains crossing each other:

Master Formula:
$T = (L_1 + L_2) / (S_1 + S_2)$ – Same Direction
$T = (L_1 + L_2) / (S_1 - S_2)$ – Opposite Direction
Where,
L_1 = Length of the train
L_2 = Length of the bridge

Example:

Two trains having length of 140 m and 160 m long run at the speed of 60 km/hr and 40 km/hr respectively in opposite directions (on parallel tracks). The time which theytake to cross each other, is

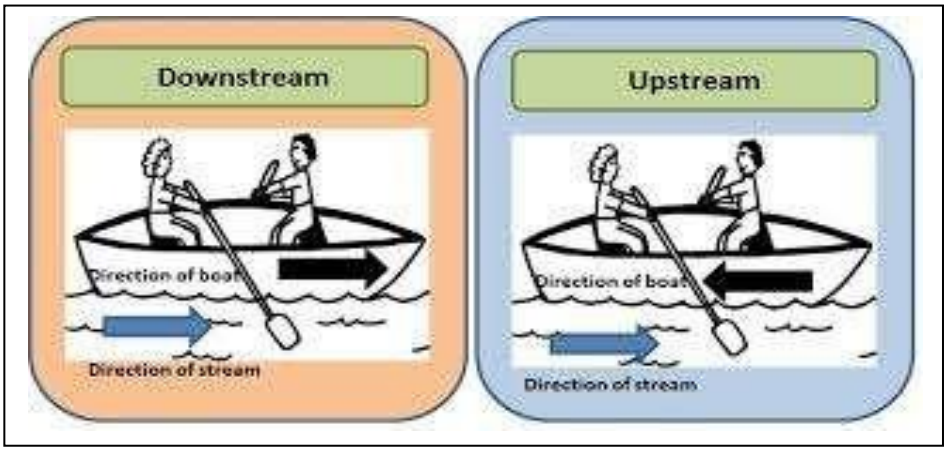
Answer:

L1 = 140 mL2 = 160 m
S1 = 60 km/hr = 60x (5/18) = 50/3 m/s S2 = 40 Km/hr = 40x (5/18) = 100/9 m/sT =?
T = (140+160) / [(50/3) + (100/9)]T = 300 / [(150+100)/9)]
T = 300/ (250/9) T = (300x9)/250 T = 54/5
= 10.8 s

Boats & Streams:

To understand the concepts of boats and streams, we need to understand thefollowing:

U = Speed of the boat in still waterV =
Speed of the stream.
Down Stream = U + V ⟶ 'a' km/hr
Up Stream = U – V ⟶ 'b' km/hr
Stream speed = ½ (a-b)
Boat Speed = ½ (a+b)



Concept 1: Down stream
In case of downstream, the direction of boat and stream are the same

Distance covered, S = (U + V) T

Concept: Up stream
In case of upstream, the direction of boat and stream are the opposite

Distance covered, S = (U – V) T

Example 1:
A man can row upstream at 7 km/hr and downstream at 10 km/hr. Find the man'srate in still water and rate of the current?
Answer:
Downstream 'a' = 10 km/hr
Upstream 'b' = 7 km/hr
Speed in still water (Boat speed) =1/2 (a+b)
= ½ (10+7) = 17/2 = 8.5 km/hrStream
speed = ½ (a-b)
= ½ (10-7) = 3/2 = 1.5 km/hr

Example 2:
A boat covers 32 kms downstream and 14 kms upstream in 6 hrs each. What is thevelocity of the current?
Answer:
Downstream = 32km ⟶ 'a'
Upstream = 14 km ⟶ 'b'
Time = 6 hrs
Speed of stream =?D =
S x T

Downstream	Upstream
$D_a = S_a \times T_a$	$D_b = S_b \times T_b$

$S_a = D_a/T_a$ $S_b = D_b/T_b$

$S_a = 32/6 - a$ $S_b = 14/6 - b$

Speed of Stream = ½ (a-b)

= ½ [(32/6) – (14/6)

= ½ (32-14) / 6]

= ½ (18/6)

= 3/2 or 1.5 km/hr

Races

Race

A race is a contest of speed in running, riding, driving, sailing, rowing etc over aparticular distance.

Starting Point

Starting Point is the point from which a race starts.

Winning Point (or Goal)

Winning Point (or Goal) is the point where a race finishes.

Dead-heat Race

A race is said to be a dead-heat race if all the persons contesting the race reach thewinning point (goal) exactly at the same time.

Important Formula:

- If A is n times as fast as B and A gives B a start of x meters, then the length of the race course , so that A and B reaches the winning post at the same time **=x[n/(n−1)] metres**
- If A can run x metre race in t_1 seconds and B in t_2 seconds, where $t_1 < t_2$, then A beats B by a distance = $x/t_2(t_2-t_1)$ metres

Concepts:

Example:

In a 100 m race, A can give B 10 m and C 28 m. In the same race B can give C?Answer:

Method 1:

"A can give B 10 m".

In a 100 m race, while A starts from the starting point, B starts 10 meters aheadfrom the same starting point at the same time.

"A can give C 28 m"

In a 100 m race, while A starts from the starting point, C starts 28 meters aheadfrom the same starting point at the same time.

i.e., in a 100-10=90 m race, B can give C 28-10=18 mIn a 100 m race, B can give C ☐ (18/90) ×100 = 20 m**Method 2:**

"A can give B 10 m".

In a 100 m race, A will have to cover 100 m while B will have to cover only 100-10=90 m.

Similarly, "A can give C 28 m"

In a 100 m race, A will have to cover 100 m while C will have to cover only 100-28 =72 m.

When B covers 90 metre, C covers 72 mWhen B covers 100 metre, C covers (72×100) / 90= 80 metre

i.e.,in a 100 m race, B can give C 100-80=20 metre

Important Formulae:

- If the ratio of the speed of A and B is a:b,then the ratio of the time taken by them to cover the same distance is 1/a : 1/b or b:a
- Suppose a man covers a distance at x kmph and an equal distance at y kmph, then the AVERAGE SPEED during the whole journey is **(2xy / (x + y)) kmph**

PROBLEMS

1. Walking at the rate of 4 kmph a mancovers certain distance in 2 hr 45 min. Running at a speed of 16.5 kmph the man will cover the same distance in.
   A. 12 min
   B. 25 min
   C. 40 min
   D. 60 min

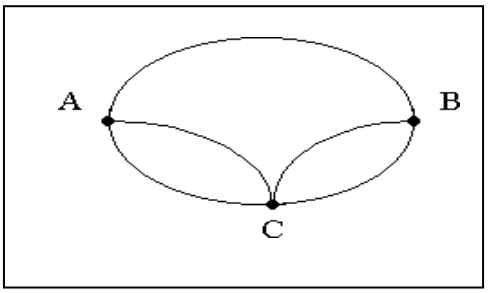
2. How many minutes does Aditya taketo cover a distance of 400 m, if he runs at a speed of 20 km/hr
   A. 1 1/5min
   B. 2 1/5min
   C. 3 1/5min
   D. 4 1/5min

3. A man walking at the rate of 5 km/hr crosses a bridge in 15 minutes. The length of the bridge (inmetres) is
   A. 600
   B. 750
   C. 1000
   D. 1250

4. The speed of a BMW car increases by 2 kms after every one hour. If the distance travelling in the first one hour was 35 kms. What was thetotal distance travelled in 12 hours?
   A. 456 kms
   B. 482 kms
   C. 552 kms
   D. 556 kms

5. The distance between two cities Secundrabad (A) and Guntur (B) is330 Km. A train starts from A at 8 a.m. and travel towards B at 60 km/hr. Another train starts from Bat 9 a.m and travels towards A at 75 Km/hr. At what time do they meet?
   A. 10 a.m
   B. 10.30 am
   C. 11 am
   D. 11.30 am

6. Amy has to visit towns B and C in any order. The roads connecting these towns with her home are shown on the diagram. How many different routes can she take starting from A and returning to A, going through both B and C (but notmore than once through each) and not travelling any road twice on the same trip?



   A. 10
   B. 8
   C. 6
   D. 4

7. A man in a train notices that he cancount 41 telephone posts in one minute. If they are known to be 50 meters apart, then at what speed isthe train travelling?
   A. 60 km/hr.
   B. 100 km/hr
   C. 110 km/hr
   D. 120 km/hr

8. Steve traveled the first 2 hours of his journey at 40 mph and the remaining 3 hours of his journey at80 mph. What is his average speedfor the entire journey?
   A. 60 mph
   B. 56.67 mph
   C. 53.33 mph
   D. 64 mph

9. A train traveling at 72 kmph crosses a platform in 30 seconds and a man standing on the platform in 18

seconds. What is the length of theplatform in meters?

A. 240 meters
B. 360 meters
C. 420 meters
D. 600 meters

10. By walking at (¾)th of his usual speed, a man reaches office 20 minutes later than usual. What ishis usual time?

A. 30 min
B. 60 min
C. 70 min
D. 50 min

11. Ram covers a part of the journey at20 kmph and the balance at 70 kmph taking total of 8 hours to cover the distance of 400 km. How many hours has been driving at 20 kmph?

A. 2 hours
B. 3 hours 20 minutes
C. 4 hours 40 minutes
D. 3 hours 12 minutes

12. A train traveling at 100 kmph overtakes a motorbike traveling at 64 kmph in 40 seconds. What is thelength of the train in meters?

A. 1777 meters
B. 1822 meters
C. 400 meters
D. 1400 meters

13. Mahesh and Rana leave points x andy towards y and x respectively simultaneously and travel in the same route. After meeting each other on the way, Mahesh takes 4 hours to reach his destination, whileRana takes 9 hours to reach his destination. If the speed of Mahesh is 48 km/hr, what is the speed of Rana?

A. 72 kmph
B. 32 mph
C. 20 mph
D. 40 mph

14. Two boys begin together to write outa booklet containing 535 lines. The first boy starts with the first line, writing at the rate of 100 lines an hour; and the second starts with thelast line then writes line 534 and so on, backward proceeding at the rate of 50 lines an hour. At what line will they meet?

A. 356
B. 277
C. 357
D. 267

15. Karan and Arjun run a 100-meter race, where Karan beats Arjun by 10metres. To do a favour to Arjun, Karan starts 10 metres behind the starting line in a second 100 metre race. They both run at their earlier speeds. Which of the following is true in connection with the second race?

A. Karan and Arjun reach the finishing line simultaneously
B. Arjun beats Karan by 1 metre
C. Arjun beats Karan by 11 metres
D. Karan beats Arjun by 1 metre

16. Two boats, traveling at 5 and 10 kms per hour, head directly towards each other. They begin ata distance of 20 kms from each other. How far apart are they (in kms) one minute before they collide?

A. 1/12
B. 1/6
C. 1/4
D. 1/3

BLOOD RELATIONS

Names of Relationships

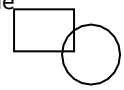
Mother's or Father's son – Brother Mother's or
Father's Daughter – SisterSon's wife - Daughter
in law Daughter's husband - Son in law
Husband's father or Wife's father - Father in law Husband's
mother or Wife's mother - Mother in law
Mother's father or Father's father – Grandfather (Maternal or Paternal respectively) Mother's mother or
Father's mother – Grandmother (Maternal or Paternal respectively)Mother's brother - Maternal Uncle
Father's Brother - Paternal uncle
Mother's sister or Father's sister – Aunt (Maternal or Paternal respectively)Husband's brother
or Wife's brother - Brother in law
Husband's sister or Wife's sister or brother's wife - Sister in lawSister's
husband - Brother in law
Brother's son or Sister's son – Nephew Brother's daughter
or Sister's daughter – Niece

Please note, always read carefully, whose relation is being asked. Some times in a hurry, we get the correct relation from the statement but we do not note which relationis being asked.

For example:
Pointing to a girl in photograph. Amir said, "Her mother's brother is the only son of mymother's father." How is the girl's mother related to Amir?
Here the actual relation is asked "How is the girl's mother related to Amir" but in hurrywe can give the answer how the girl is related to Amir.

Consider the following:
If A's mother is B and B's only brother is C, thenA's relation
to C is niece.
C's relation to A is maternal uncle.
Therefore, it is important to check whose relation with whom is asked.

Trick for solving Blood relations:
We can use the following symbols instead of using words. This will help in solving thequestions faster.
Male can be represented as Female

can be represented as 

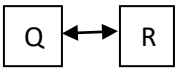
Relation between parents and children can be represented asRelation

between siblings can be represented as

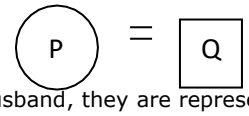
Finally, the relation between husband and wife can be represented as =

For example,
i) Q and R are brothers.
ii) P is the wife of Q.
iii) T is the brother of S.
iv) S is the daughter of R.How
is P related to S?

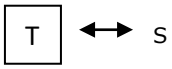
Solution:

(i) can be represented as 

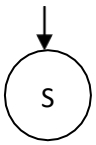
Since Q and R are males, it is represented in squares.

(ii) can be represented as 

Since, P is the wife and Q is the husband, they are represented in a circle and squarerespectively.

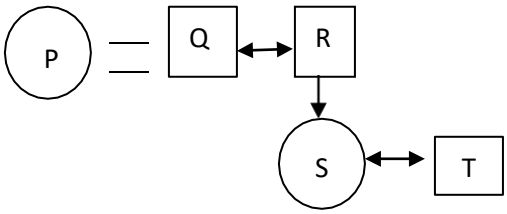
(iii) can be represented as 

T is in a square since T is a male. The gender of S is not known. Therefore, norepresentation.

(iv) can be represented as R 

We know S is the daughter of R. Therefore S is in a circle.Now, combining

all the four statements we have,



From the above figure, we can get the relation between P and S. i.e., S is P's husband's brother's daughter. Therefore, P is S's aunt.

QUESTIONS

1. Pointing to a photograph, Vipul said, "She is the daughter of my paternal grandfather's only son." How is Vipul related to the girl in the photograph?
   A. Father
   B. Brother
   C. Cousin
   D. Uncle
   E. Grandson

2. Looking at a portrait of a man, Harshsaid, "His mother is the wife of my father's son. Brothers and sisters I have none." At whose portrait was Harsh looking?
   A. His son
   B. His cousin
   C. His uncle
   D. His nephew
   E. None of these

3. If Neena says, "Anita`s father Raman is the only son of my father- in-law Mahipal", then how is Bindu, who is the sister of Anita, related to Mahipal?
   A. Niece
   B. Daughter
   C. Wife
   D. Daughter-in-law
   E. None of these

4. Pointing to a girl in the photograph, Amar said, "Her mother`s brother is the only son of my mother's father." How is the girl`s mother related to Amar?
   A. Mother
   B. Sister
   C. Aunt
   D. Grandmother
   E. None of these

5. A is the son of B.
   C, B's sister has a son D and a daughter E.
   F is the maternal uncle of D.How is E related to F?
   A. Sister
   B. Daughter
   C. Niece
   D. Wife

6. (i) In a family of six persons A, B, C,D, E and F, there are two married couples.
   (ii) D is grandmother of A and mother of B
   (iii) C is wife of B and mother of F.
   (iv) F is the granddaughter of E.What is C to A?
   A. Daughter
   B. Grandmother
   C. Mother
   D. Cannot be determined
   E. None of these

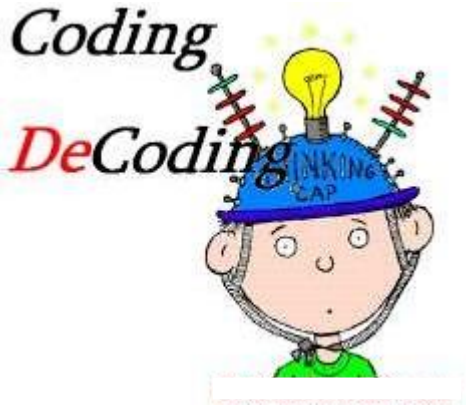
7. Pointing to a man on the stage, Rita said, "He is the brother of the daughter of the wife of my husband."How is the man on the stage related to Rita?
   A. Son
   B. Husband
   C. Cousin
   D. Nephew
   E. Brother-in-law

8. Pointing to a photograph, a person tells his friend, "She is the granddaughter of the elder brother ofmy father."
   How is the girl in the photographrelated to his man?
   A. Niece
   B. Sister
   C. Aunt
   D. Sister-in-law
   E. Maternal aunt

9. P's father's sister's father is Q. Howis Q related to P?
   A. Father
   B. Uncle
   C. Grandfather
   D. Son
   E. None of these

10. E is the son of A. D is the son of B. E is married to C. C is B's daughter.
    How is D related to E?
    A. Brother
    B. Uncle
    C. Father-in-law

CODING AND DECODING



For solving coding and decoding questions, you have to learn a few basics.Coding and decoding

1. Letter position (A=1, B=2, C=3, D=4…….Y=25, Z=26)
2. Opposite position of letters (A=26, B=25….Z=1)
3. Opposite of each letter (A is opposite to Z and B is opposite to Y and C is opposite toX…..learn all alphabets opposite)

TRICKS for solving Coding and Decoding.

Type-1- Letter: In a certain code, CODING is written as DPEJOH. How will DECODING bewritten in that code?
Answer: The simple formula or the shortcut trick to solve this type of question is to comparethe first pair of words (CODING and DPEJOH). The number of steps that are used to increase each letter in first conversion, the same formula should be applied to the second set that has to be converted. Just like in CODING and DPEJOH, 1 point step is added (C+1=D, O+1=P as per alphabet).
Now compare each letter one to another like compare each letter of CODING and DPEJOH.Comparing 1st letter of CODING to 1st of DPEJOH.

- C is converted to D.
- You know C's next letter in alphabets is D.
- O's next letter is P.
- D's next letter is E.
- I's next letter is J.
- N's next- O
- G's next- H

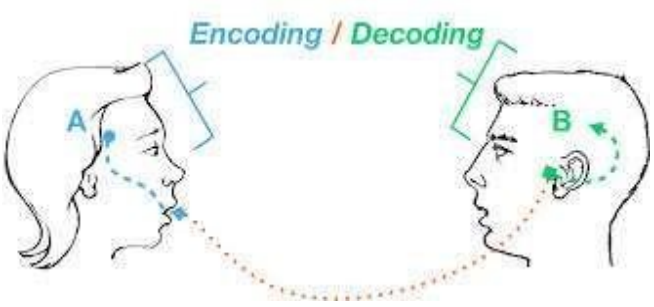
This was how CODING was converted to DPEJOH. Now the same way you have to convertDECODING.
So

- D- Is converted to -E.
- E-F
- C-D
- O-P
- D-E

- I-J
- N-O
- G-H

So DECODING should be converted to EFDPEJOH.
Note: in the shown conversion of a question, there might be letters in which +2, +3, +4etc. positions are added. In that case, add the same position to the asked word.

Type 2-Number: Position of letter is added or remains constant.



The Main idea to solve these questions is to apply the conversion that is shown like in abovequestion "CODING is written as DPEJOH". You have to apply the same conversion to DECODING word. Same trick you have to apply to Number coding. For converting letters to numbers, you have to remember the conversion basic given above.
Like FEAR can be converted to 65118 as shown below

- F=6
- E=5
- A=1
- R=18

Or it can also be converted to the addition of these means 6+5+1+18=30. The same wayshould be applied for the asked CODE.

Number-Symbol coding
In these types of questions, letters and numbers are made related to each other. These areof two types
When numerical/symbol codes are assigned to words
Example: If REQUEST is written as S2R52TU, then how will ACID be written?
Sol. In this question, alternate letters are moved to next letter in alphabet series and vowelsare written as their position in their own series.

- R-S
- E-2 (A-1, E-2, I-3, O-4, U-5)
- Q-R
- U-5
- E-2
- S-T
- T-U

Similarly

- A-1
- C-D
- I-3

- D-E

Means ACID will be coded as 1D3E

When alphabetical codes are assigned to numbers

In this type of questions, different words are coded in a certain symbol. We have to encode them as per the conditions given in the questions. So read the conditions very carefully and then try to solve these types of questions.

Substitution based questions: In substitution based questions, three types of questionsare basically asked.
In the first type of questions, the letters are directly coded in the same pattern as per thegiven examples and we have to form the letters as per those given letters changes.
Example: If EARTH is coded as QPMZS, then how would HEART be coded?
The main detection point of these questions is that the word that is asked to be coded will contain those same alphabets as given in the first sentence. So in this example, the lettersof EARTH and HEART are same, so HEART will be coded as SQPMZ

In the second type of questions, each letter is moved certain steps forward to obtain thecorresponding letter of the code.
Example: In a certain code, VICTORY is written as YLFWRUB, then how will SUCCESS bewritten in that language?
Solution: In this question, every letter is moved three step forward in their position in thealphabetical series to obtain the corresponding letter of the code.

In the third type of questions, the letters are arranged opposite to the position of them inthe alphabetical series.
The rule is as under
A-Z, B-Y, C-X, D-W, E-V, F-U, G-T, H-S, I-R, J-Q, K-P, L-O, M-N, N-M, O-L, P-K, Q-J, R-I, S-H, T-G, U-F, V-E, W-D, X-C, Y-B, Z-A

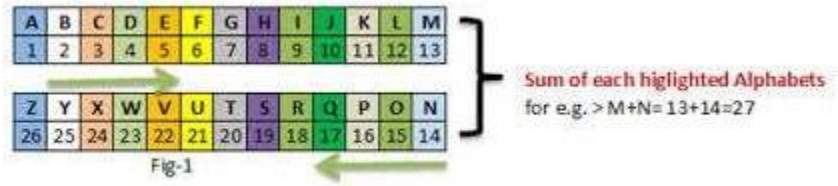


Fig-1

Memorize this series on your fingertips for easy solution of the problems.
Example: In a certain language, MILK is written as NROP, how will DEAF be written **Solution:** First you have to find out the question type. Now MILK is written as NROP. You can understand if you have memorized the series given above that N is opposite to M, R is opposite to I, O is opposite to L and P is opposite to K. Now as per the rule given above thisquestion, D is opposite to W, E is opposite to V, A is opposite to Z and F is opposite to U. so DEAF will be coded as WVZU.

Deciphering number and symbol codes in a message

These types of questions are mostly asked in coding and decoding type of reasoning questions. In this type of question, a few groups of numbers or symbols which are codes aregiven. The candidate is required to find the number or symbol code for each code or you have to formulate all the codes of the message. You can do that through the process ofcomparison of the given coded message taking at least two at a time.

For example, look at the given question below-
In a certain language, 'come now' is written as 'ha na', ' now and then' is written as 'pa dona' and 'go then' is written as 'sa pa'. how is 'and' written in that language.
Solution:
Now there are three statements given

1. Come now-ha na
2. Now and then- pa do na
3. Go then-sa pa

The shortcut trick for these questions is trying to find out the common words among the given statements. Try to find out the common word among the 1st and 2nd statements. Thecommon word is 'now'. As you see, the corresponding coded conversion is 'na'. Similarly, tryto find out the common word in 2nd and 3rd statement. Again you see the common word is 'then'. So the corresponding coded word (among 'pa do na' and 'sa pa') is 'pa'.

Now you have found out two conversions…Now-na

Then-pa

So from the 2nd statement, 'pa' and 'na' correspond to 'then' and 'now' respectively. Sofrom 2nd statement, the remaining word 'and' will correspond to 'do'.

So 'and' will be coded as 'do'.

QUESTIONS

1. In a certain code, MONKEY is written as XDJMNL. How is TIGER written in that code?
   A. QDFHS
   B. SDFHS
   C. SHFDQ
   D. UJHFS
   E. None of these

2. In a certain code, COMPUTER is written as RFUVQNPC. How is MEDICINE written in the same code?
   A. EOJDJEFM
   B. EOJDEJFM
   C. MFEJDJOE
   D. MFEDJJOE
   E. None of these

3. If GIVE is coded as 5137 and BAT is coded as 924, how is GATE coded?
   A. 5427
   B. 5724
   C. 5247
   D. 2547

4. In as a certain code, 15789 is written as EGKPT and 2346 is written ALUR. How is 23549 written in that code?
   A. ALEUT
   B. ALGTU
   C. ALGUT
   D. ALGRT
   E. None of these

5. If white is called blue, blue is called red, red is called yellow, yellow is called green, green is called black, black is called violet and violet is called orange, what would be the colour of human blood?
   A. Red
   B. Green
   C. Yellow
   D. Violet
   E. Orange

6. If the animals which can walk are called swimmers, animals who crawl are called flying, those living in water are called snakes and those which fly in the sky are called hunters, then what will a lizard be called?
   A. Swimmers
   B. Snakes
   C. Flying
   D. Hunters
   E. None of these

7. In a certain code language,
   (A) 'pit na som' means 'bring mewater'
   (B) 'na ja tod' means 'water is life'
   (C) 'tub od pit' means 'give me toy'
   (D) 'jo lin kot' means 'life and death' To find out the answer to the code'bring me is life', which of the followingstatements can be dispensed with ?
   A. A only
   B. C only
   C. B or C only
   D. D only
   E. None of these

8. In a certain code, '37' means 'which class' and '583' means 'caste and class'. What is the code for 'caste'?
   A. 3
   B. 7
   C. 8
   D. Either 5 or 3
   E. Either 5 or 8

9. In a certain code, '289' means 'read from paper'; '276' means 'tea fromfield' and '85' means 'wall paper'. Which of the following is the code for 'tea'?
   A. 2
   B. 6
   C. Either 2 or 6
   D. Either 2 or 7

E. Either 7 or 6

10. If FRAGRANCE is written as SBHSBODFG, how can IMPOSING be written?
A. NQPTJHOJ
B. NQPTJOHI
C. NQTPJOHJ
D. NQPTJOHJ
E. None of these

11. If 'nso ptr kli chn' stands for 'Sharma gets marriage gift', 'ptr lnm wop chn' stands for 'wife gives marriage gift', 'tti wop nhi' stands for 'he gives nothing', what would mean 'gives' ?
A. chn
B. nhi
C. ptr
D. wop

12. If 'tee see pee' means 'Drink fruit juice', 'see kee lee' means 'Juice is sweet' and 'lee ree mee' means 'He is intelligent', which word in thatlanguage means 'sweet' ?
A. see
B. kee
C. lee
D. pee
E. tee

13. In a certain code, SIKKIM is written as THLJJL.
How is TRAINING written in that code?
A. SQBHOHOH
B. UQBHOHOF
C. UQBJOHHO
D. UQBJOHOH
E. None of these

14. If in a code, ALTERED is written as ZOGVIVW, then in the same code, RELATED would be written as
A. IVOZGVW
B. IVOZGWV
C. IVOGZVW
D. VIOZGVW

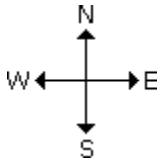
15. In a certain code, 'ile be pee' means 'roses are blue'; 'sik hee' means 'red flowers' and 'pee mit hee' means 'flowers are vegetables'.
How is 'vegetables are red flowers'written in this code?
A. pee sik mit hee
B. sik pee hee be
C. il sik mit hee
D. Cannot be determined
E. None of these

16. If in a certain language MYSTIFY iscoded as NZTUJGZ, how is NEMESIS coded in that language?
A. MDLHRDR
B. OFNFTJT
C. ODNHTDR
D. PGOKUGU

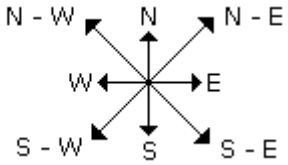
17. In a certain code language, 743 means 'Mangoes are good', 657 means 'Eat good food' and 943 means 'Mangoes are ripe'.
Which digit means 'ripe' in that language?
A. 5
B. 4
C. 9
D. 7
E. None of these

DIRECTIONS

There are four main directions - East, West, North and South as shown below:



There are four cardinal directions - North-East (N-E), North-West (N-W), South-East (S-E), and South-West (S-W) as shown below:



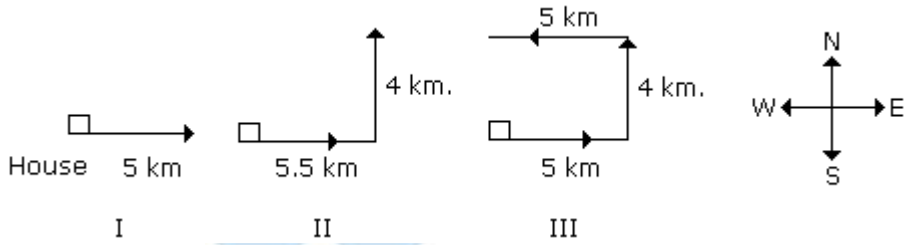
1. At the time of sunrise, if a man stands facing the east, his shadow will be towards west.
2. At the time of sunset the shadow of an object is always in the east.
3. If a man stands facing the North, at the time of sunrise his shadow will be towards his left and at the time of sunset it will be towards his right.
4. At 12:00 noon, the rays of the sun are vertically downward hence there will be no shadow.

Main types of questions are given below:

Type 1:

Siva starting from his house, goes 5 km in the East, then he turns to his left and goes 4 km. Finally he turns to his left and goes 5 km. Now how far is he from his house and in what direction?

Solution:

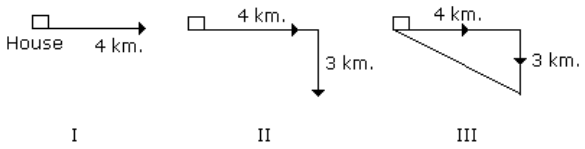


From third position it is clear he is 4 km from his house and is in North direction.

Type 2:

Suresh starting from his house, goes 4 km in the East, then he turns to his right and goes 3km. What minimum distance will be covered by him to come back to his house?

Solution:



Minimum distance $= \sqrt{(4)^2 + (3)^2}$

$= \sqrt{16 + 9}$

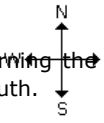
$= \sqrt{25}$

$= 5$ km.

Type 3:

One morning after sunrise Juhi while going to school met Lalli at Boring road crossing. Lalli'sshadow was exactly to the right of Juhi. If they were face to face, which direction was Juhi facing?

Solution: In the morning sunrises in the east.

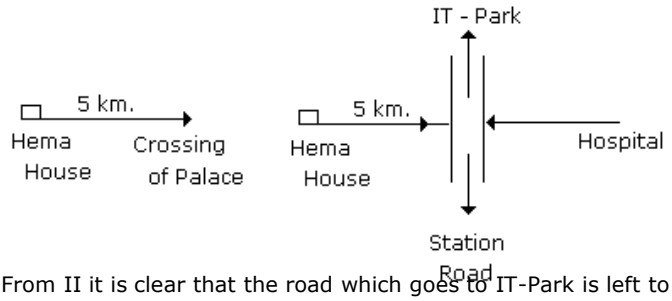


So in morning the shadow falls towards the west. Now Lalli's shadow falls to the right of the Juhi. Hence Juhi is facing South.

Type 4:

Hema starting from her house walked 5 km to reach the crossing of Palace. In which direction she was going, a road opposite to this direction goes to Hospital. The road to the right goes to station. If the road which goes to station is just opposite to the road whichgoes to IT-Park, then in which direction to Hema is the road which goes to IT-Park?

Solution:



From II it is clear that the road which goes to IT-Park is left to Hema.

QUESTIONS:

1. From his house, Lokesh went 15 km tothe North. Then he turned west and covered 10 km. Then he turned south and covered 5 km. Finally turning to the east, he covered 10 km. In which direction is he from his house?
   A. East
   B. West
   C. North
   D. South

2. A child went 90 m in the East to look for his father, and then he turned rightand went 20 m. After this he turned right and after going 30 m he reached his uncle's house. His father was not there. From there he went 100 m tohis north and met his father. How far did he meet his father from the starting point?
   A. 80 m
   B. 100 m
   C. 140 m
   D. 260 m

3. Shyam walks 5 km towards East and then turns left and walks 6 km. Again he turns right and walks 9 km. Finally he turns to his right and walks 6 km. How far is he from the starting point?
   A. 26 km
   B. 21 km
   C. 14 km
   D. 9 km

4. One morning after sunrise, Suresh wasstanding facing a pole. The shadow of the pole fell exactly to his right. To which direction was he facing?
   A. East
   B. South
   C. West
   D. Data is inadequate

5. If the minute hand of a clock points towards west direction at 6 pm then in which direction does the hour handpoints at 4.30 am?
   A. North-East
   B. South-West
   C. South
   D. North

6. Umesh directly went from P, to Q which is 9 feet distant. Then he turns to the right and walked 4 feet. After this he turned to the right and walkeda distance which is equal from P to Q. Finally he turned to the right and walked 3 feet. How far is he now from P?
   A. 6 feet
   B. 5 feet
   C. 1 feet
   D. 0 feet

7. A man walks 2 km towards North. Then he turns to East and walks 10km. After this he turns to North and walks 3 km. Again he turns towards East and walks 2 km. How far is he from the starting point?
   A. 10 km
   B. 13 km
   C. 15 km
   D. None of these

8. Some boys are sitting in three rows all facing North such that A is in the middle row. P is just to the right of A but in the same row. Q is just behindof P while R is in the North of A. In which direction of R is Q?
   A. South
   B. South-West
   C. North-East
   D. South-East

9. From his house, Lokesh went 15 kms to the North. Then he turned west and covered 10 kms. Then he turned Southand covered 5 kms. Finally, turning to East, he covered 10 kms. In whichdirection is he from his house?
   A. East
   B. North
   C. West
   D. South

10. I am facing South. I turn right and walk 20 metre. Then I turn right again and walk 10 metre. Then I turn left

and walk 10 metre and then turning right walk 20 metre. Then I turn right again and walk 60 metre. In which direction am I from the starting point?

A. North-East
B. North-West
C. North
D. West

11. Meeru lost her way to home and was standing 25 meters away from her house in the south-west direction. She walks 20 metres north and reaches point A. How far and in which direction would she have to walk to reach her house?

A. 20 metres, East
B. 15 metres, East
C. 15 metres, West
D. 20 metres, West

12. A person is walking from particular point A. he walks south 100km from point a and turns right and walk 40 km. Then he turns right and walk 70 km. how far that person from starting point?

A. 25
B. 45
C. 50
D. 70

13. Starting from a point P, Sachin walked 20 metres towards South. He turned left and walked 30 metres. He then turned left and walked 20 metres. He again turned left and walked 40 metres and reached a point Q. How far and in which direction is the point Q from the point P?

A. 30 metres, West
B. 10 metres, West
C. 30 metres, North
D. 10 metres, North

14. Rohit walked 25 metres towards South. Then he turned to his left and walked 20 metres. He then turned to his left and walked 25 metres. He again turned to his right and walked 15 metres. At what distance is he from the starting point and in which direction?

A. 35 metre, North
B. 30 metre, South
C. 35 metre, East
D. 30 metre, North

15. A boy rode his bicycle Northward, then turned left and rode 1 km and again turned left and rode 2 km. He found himself 1 km west of his starting point. How far did he ride northward initially?

A. 1 km
B. 2 km
C. 3 km
D. 5 km

16. A dog runs 20 metre towards East and turns Right, runs 10 metre and turns to right, runs 9 metre and again turns to left, runs 5 metre and then turns to left, runs 12 metre and finally turns to left and runs 6 metre. Now which direction dog is facing?

A. East
B. North
C. West
D. South

17. A man is facing north. He turns 45 degree in the clockwise direction and then another 180 degree in the same direction and then 45 degree in the anticlockwise direction. Find which direction he is facing now?

A. North
B. East
C. West
D. South

18. Ashok started walking towards South. After walking 50 metre, he took a right turn and walked 30 metre. He then took a right turn and walked 100 metre. He again took a right turn and walked 30 metre and stopped. How far and in which direction was he from starting point?

A. 50 metre South
B. 150 metre North
C. 180 metre East
D. 50 metre North

LETTER SERIES

Letter Series Completion problems (LSC-problems) are common tasks to measure peoples' ability in problem solving.
Every letter has a specific relation to its neighbour or other letters. For example, the simplesequence "abcd" can be characterised by the relation between two adjacent letters "is nextin alphabet" (IN)

Alphabet series tricks

Introduction:

Almost every test on reasoning contains questions on alphabetical series. In such a question, if it consists of a single series of alphabets/combination, the alphabets/combinations are arranged in a particular manner and each alphabet/combinationis related to the earlier and the following alphabets in a particular way. The examinees is supposed to decode the logic involved in the sequence and then fill in the space containing the question mark with a suitable choice out of those given. But before we proceed to discuss the various types of questions related to alphabetical series, we will talk of some basic facts which are essential to an understanding of these types of questions.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

I. THE ALPHABET: The normal English alphabet contains 26 letters in all, as shown above.(Usually, questions on alphabet are accompanied by this normal alphabet). From A to M, thealphabet completes its first half, while the other half starts from N and ends at Z.

A-M – 1-13 (First Alphabetical Half)
N-Z –14-26 (Second Alphabetical Half)

II. EJOTY: For purpose of convenience, it is helpful to remember this simple formula called EJOTY, with the help of which you can easily find the position of any letter without much effort. But for practical purposes, you need to learn by heart the positions of different lettersin the alphabet.

E	**J**	**O**	**T**	**Y**
5	**10**	**15**	**20**	**25**

Now, for instance, we wish to find the position of, say, the 17th letter from the left side. Youalready know that the 15th letter from the left side is O, therefore, the only thing you have to do is to find a letter which is two positions ahead of O, which is Q (The Answer). Using this simple formula, you can quickly find the position of any letter from the left side withoutmuch brain-rattling. Remembering the positions of different alphabets is basic to solving any question on alphabetical series. One of the best ways to achieve it is to practice EJOTY.Simply write down the full names of any 200 people you can imagine and do as follows: **For example,** let's say the name of the person imagined is ZUBINA. Now from EJOTY, we know that Z stands for 26, U stands for 21, B stands for 2, I stands for 9, N stands for 14 and A stands for 1. Now add up all these positions (26+21+2+9+14+1). What you get on addition does not have any significance, but it can be a very good way to try to make out and remember the individual positions of letters in the alphabet.

REVERSING:

Many questions concerning reversing of the alphabet are a part of reasoning tests.

A B C D E1
2 3 4 5 **F G**
H I
6 7 8 9
J K L M N 10 11

12 13 14**O P Q R**
15 16 17 18
S T U V
19 20 21 22 **W**
X Y Z
23 24 25 26

Just memorise all the numbers related with alphabet like when I say K you must quicklycount it as 11. So you must memorise every number associated with the alphabet.
So I will explain with the below example of alphabet series

- AD::GJ::MP:: ?
  So now we have to solve the question part. So if you have memorised the numbersyou can replace the alphabets as

- AD :: GJ :: MP :: ? 1,4 ::
  7,10 :: 13,16 ::

- So now we have to only play with numbers like there is difference between 4 & 7 i.e. is3 again if you see 10 & 13 its 3
  So now we know that we have to add 3 in 16 so its 19 and 19 is "S".

- AD :: GJ :: MP :: S
  1,4 :: 7,10 :: 13,16 :: 19

- Now we need to find second number again if you see between 1 & 4the gap is 3 . So
  add in 19 so its 19 + 3= 22 and 22 is "V"

- So now answer is "SV"
  AD :: GJ :: MP :: SV
  1,4 :: 7,10 :: 13,16 :: 19,22

TYPES OF ALPHABET SERIES COMPLETION IN REASONING ABILITY

TYPE-1: Alphabet series

1. Increasing by a definite number
   Example:
   i. IJKL? (each letter increases by 1)
   ii. AGMSY? (each letter increases by 6 place to its right position)

2. Decreasing by a definite number.
   Example:
   i. ZXVTRP ? (each letter decreases by 2 places to its left)

3. Increasing successively
   Example:
   i. DEGJNS? (+1,+2,+3,+4,+5)

4. Decreasing successively
   Example:
   i. ZYWTP (-1,-2,-3,-4 ..)
   ii. ZTOKHFE (-6,-5,-4,-3,-2,-1)

5. Decreasing and Increasing by a constant value.
   Example:
   i. DFCEBDACZ (+2,-3,+2,-3,…)

TYPE-II :- ALPHANUMERIC SERIES

Example-1: ZA, XD, VG, T1J, RM, PP,?
First letter: ZXVTRP (-2,-2,-2,…..) Second letter:
ADGJMP (+3, +3,+3,…)

Example-2: 2Z5, 7Y7, 14X9, 23W11, 34V13,? First numeral-
2, 7, 14, 23, 34 (+5,+7,+9,+11..)
Second letter- ZYXWV (decreases by 1 each time) Third numeral-
5,7,9,11,13 (increases by 2 each time)Thus the next term would be
47U15.

Example-3: W-144 , U-121, S-100, Q-81,?
First letter- decreases by 2 each time Second
numeral- square of 12,11,10,9,8.Thus the solution
is O64.

Type-III :- Continuous patterns series

Example-1: ab_ _ baa_ _ ab_.
Options i) aaaaa ii) aabaa iii) caabab iv) baabb
Solution: our answer is ii) . Here series aba is repeated

Example-2: _bc_ca_aba_c_ca
Options i)abcbb ii)bbbcc iii)bacba iv)abbcc
Solution: our answer is i) . The series is abc/bca/cab/abc/bca. Thus the letters change incyclic order.

Example-4: _c_bd_cbcda_a_db_a
Options i) adabcd ii) bdbcba iii) cdbbca iv)daabbc
Solution: our answer is i). The series is acdb/dacb/cdab/acdb/da. Each group of four letterscontains the letters of the previous group in the order – third, first , second and fourth.

Example-5: a_bb_baa_bbb_aa_
Options i) aabba ii) bbaab iii)abaaa iv)baabb
Solution: our answer is iii). The series is aabbbb/aaabbb/aaaa. At each step, the number ofa increases by one while the number of b's decrease by one.

Example-6: _aba_cabc_dcba_bab _a Options i) abdca
ii) bcadc iii) abcdb iv) cbdaa
Solution: Our answer is i) . The series is aababcabcd/dcbacbabaa. The letters equidistantfrom the beginning and the end of the series is same

Example-7: mnonopqopqrs_ _ _ _ _
Options- i) mnopq ii)oqrst iii)pqrst iv) qrstu
Solution: our answer is iii) . The series is mno/nopq/opqrs

Some important methods to solve Letter Series.
We can divide the given series into any number of parts according to the situation:For this, we have to:
Step 1: Find the total number of letters in the series.
Step 2: Then find the factors of the number.
Step 3: Split the series into as many parts as any of the factors. Generally, the parts will beequal.
Step 4: If the number of letters in the series is a prime number, then divide the series intoany random number of parts (equal or unequal), then using trial and error method we can trace the solution.

QUESTIONS

1. _bca_ca_c_b_
   A. aabbc
   B. aabcc
   C. abbbc
   D. abbac.

2. a_bbc_aab_cca_bbcc
   A. bacb
   B. abba
   C. acba
   D. caba

3. babbb_b_b_bb
   A. bba
   B. aba
   C. bab
   D. aaa

4. cc_ccdd_d_cc_ccdd_dd
   A. dcdcc
   B. dccdd
   C. dcddc
   D. ddddd

5. ab_dda__cda__cda.
   A. bacdc
   B. cbcbb
   C. cdabc
   D. cccbb

6. abxyzbx_zyx_ _y_ _ _ _ _ _
   A. baxyz
   B. abxzy
   C. abyxz
   D. abzyx

7. a b c _ e a b c d _ _ b c d e a _ c d e ab _ d e.
   A. cbade
   B. deabc
   C. edacb
   D. edcba

8. Find the next letter in the series:A, B, D, H, _
   A. L
   B. R
   C. N
   D. P

9. _ _ aba _ _ ba _ ab
   A. abbba
   B. abbab
   C. baabb
   D. bbaba

10. SCD, TEF, UGH, _ _ _, WKL
    A. CMN
    B. UJI
    C. VIJ
    D. IJT

11. DEF, DEF2, DE2F2,_____, D2E2F3
    A. DEF3
    B. D3EF3
    C. D2E3F
    D. D2E2F2

12. ZA5, Y4B, XC6, W3D, _____
    A. E7V
    B. V2E
    C. VE5
    D. VE7

13. a b_ _ t t a b x y y _ a b x x y t _ _.
    A. xyabt
    B. xybat
    C. xytab
    D. xtaby

14. gfe _ ig _ eii _ fei _ gf _ ii.
    A. eifgi
    B. figie
    C. ifgie
    D. ifige

15. E H, I M, N S, _ _
    A. U Y
    B. U Z
    C. T Y
    D. T Z
    E. None of these

16. P5QR, P4QS, P3QT,_____, P1QV
    A. PQW
    B. PQV2
    C. P2QU
    D. PQ3U

17. DEF, DEF2, DE2F2,_____, D2E2F3
    A. DEF3
    B. D2E3F

C. D3EF3
D. D2E2F2

18. n _ m n p _ _ p m n p _ n _ m.
A. pmnpm
B. pmnpp
C. pmnmp
D. pnpmn

19. In alphabet series, some alphabets aremissing which are given in that order as one of the alternatives below it. Choose the correct alternative.
abca _ bcaab _ ca _ bbc _ a
A. ccaa
B. bbaa
C. abac
D. abba

20. In alphabet series, some alphabets aremissing which are given in that order as one of the alternatives below it. Choose the correct alternative.
_ bcc _ ac _ aabb _ ab _ cc
A. aabca
B. abaca
C. bacab
D. bcaca

21. In alphabet series, some alphabets aremissing which are given in that order as one of the alternatives below it. Choose the correct alternative.
_ b c d e/ a _ c d d/a _ c c c/ a b _ _.
A. bbaa
B. bbab
C. abbb
D. baba

22. E, I, M, Q, U _____
A. X
B. T
C. V
D. Y

23. L, N, Q, U,_____, F, M
A. X
B. Z
C. T
D. Y

24. DEF, QRS, HIJ, UVW, LMN, _____
A. DAZ
B. CAT
C. YZA
D. BZV

25. C(1)L, F(4)O, I(9)R, L(16)U, _____
A. O(20)X
B. N(25)X
C. O(25)X
D. N(20)Y
E. None of these

26. ACH, FAI, JYK, MWN, _____
A. PVS
B. OUR
C. PTQ
D. OTS
E. None of these

27. If the second half of the English alphabet is written in reverse order, which letter will be ninth of the right ofthe eighth letter from the left end.
A. X
B. Q
C. W
D. D
E. None of these

28. If the first half of the alphabet is written in reverse order, then which letter will be the middle letter betweenthe 9th letter from left end and 10th letter from the right end.
A. Be
B. A
C. N
D. D
E. None of these

29. If the first and second letters of English alphabet interchange their positions, also the third and fourth letters, the fifth and the sixth letters and so on; Which one of the following letters would be 17th letter from yourright?
A. H
B. I
C. F
D. J
E. None of these.

NUMBER SERIES

Define Number.

A number is a mathematical object used to count, measure, and label. The original examples are the natural numbers 1, 2, 3, and so forth. A notational symbol that represents a numberis called a numeral.

Main Number Systems:

N	0, 1, 2, 3, 4… or 1, 2, 3, 4…	Natural
Z	…, -5, -4, -3, -2, -1, 0, 1, 2, 3	Integer
Q	a/b where a and b are integers and b is not 0	Rational
R	The limit of a join sequence of rational numbers	Real
C	a +bi where a and b are real numbers and i is the square root of -1.	Complex

Series:

A series is a sequence of numbers obtained by some particular predefined rule andapplying that predefined rule it is possible to find out the next term of the series.

A series can be created in many ways. Some of these are discussed below:

- **Arithmetic Series:** An arithmetic series is one in which successive numbers areobtained by adding (or subtracting) a fixed number to the previous number.
  For example,
  a. 3, 5, 7, 9, 11…..
  b. 10, 8, 6, 4, 2..... etc.
  These are arithmetic series because in each of them the next number can be obtained by adding or subtracting a fixed number. (For example, in 3, 5, 7, 9, 11…… every successive number is obtained by adding 2 to the previous number).

- **Geometric Series:**
  A geometrical series is one in which each successive number is obtained bymultiplying (or dividing) a fixed number by the previous number.
  For example:
  a. 4, 8, 16, 32, 64….
  b. 15, -30, 60, -120, 240….
  These are geometric series because, in each of them, the next number can be obtained by multiplying (or dividing) the previous number by a fixed number. (For example, in: 3125, -625, 125, -25, 5… every successive number is obtained by dividing the previous number by -5.)

- **Series of cubes, squares, etc.:**
  These series can be formed by squaring or cubing every successive number.For example:
  a. 2, 4, 16, 256
  b. 3, 9, 81, 6561
  These are such series. (In the first, every number is squared to get the next numberwhile in the second it is cubed.)

- **Two Stage Type Series:**

  A two tier Arithmetic series is the one in which the differences of successive numbersthemselves from an arithmetic series.

  Example:

  a. 3, 9, 18, 35, 58……

  b. 6, 9, 17, 23…….

- **Arithmetico-Geometric Series:**
  As the name suggests, in this series, each successive term should be found by first adding a fixed number to the previous term and then multiplying it by another fixed number.
  For example
  1, 6, 21, 66, 201… is an arithmetic-geometric series. (Each successive term isobtained by first adding 1 to the previous term and then multiplying it by 3.)
  Note: The difference of successive differences should be in Geometric Progression.In this case, the successive differences are 5, 15, 45, 135… which are in GP

- **Geometrico- Arithmetic Series:**
  As the name suggest, a geometrico-arithmetic series should be the one in which each successive term is found by first multiplying (or dividing) the previous term by a fixed number and then adding (or deducting) another fixed number.
  For example
  3, 4, 7, 16, 43, 124… is a geometrico-arithmetic series. (Each successive term is obtained by first multiplying the previous number by 3 and then subtracting 5 from it.)

- **Suggested steps for solving series questions:Step I:**

  Preliminary Screening:

  First check the series by having a look at it. It may be that the series is very simpleand just a first look may be enough and you may know the next term.

  For example:

  4, -8, 16, -32, 64.....

  Answer: Each term is multiplied by -2.Next

  Term: -132

  Step II: Check trend: Increasing/ decreasing/ alternating

  By this we mean that you should check whether the series increases continuously or decreases continuously or whether it alternates, i.e. increases and decreases continuously.

  For example: the series a. and b. in the following examples are increasing, the series c. is decreasing.For

  example:

  a. 3, 10, 21, 36, 55, 78.

  b. 5, 10, 13, 26, 29, 58.

  c. 125, 123, 120, 115, 108, 97.

  Step III (to be employed ONLY if the series is increasing or decreasing) Feelthe rate of increase or decrease

  i. If the rise of a series is slow or gradual, the series is likely to have an addition-based increase; successive numbers are obtained by adding some numbers.
  Example: Consider the series: 4, 5, 7, 10, 14, 19, 25.
  Here, the series increases and the increase is slow. A gradual, slow increase. So, you should try to test for an arithmetic type of increase. Indeed, it turns out to be a two-tier arithmetic series, the differences 1, 2, 3, 4, 5 forming a simple series.

  ii. If the rise of a series is very sharp initially but slows down later on, the series is likely to be formed by adding squared or cubed numbers.
  Example: 1, 2, 6, 15, 31, 56.
  Here, you may immediately "feel" that the series rises very sharply. So, you should try to test for a geometric type of increase. On trial you may see the series is not formed by successive multiplications. So, you should check for addition of squared numbers, cubed numbers etc. Indeed the series turns out to be 1, 1+1^2, 1+1^2, 1+1^2+2^2, 1+1^2+2^2+3^2 etc.

  iii. If the rise of a series is throughout equally sharp, the series is likely to be multiplication-based; successive terms are obtained by multiplying some terms.

Fibonacci Series:

In mathematics, the Fibonacci numbers sequence are the numbers in the followinginteger sequence.

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144…..

Or

0, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144……

QUESTIONS

1. 2, 6, 18, 54…
   A. 244
   B. 162
   C. 324
   D. 124

2. 7, 10, 8, 11, 9, 12….
   A. 16
   B. 14
   C. 20
   D. 10

3. 5, 17, 37, 65….
   A. 95
   B. 97
   C. 99
   D. 101

4. 3, 5, 8, 13, 21…
   A. 24
   B. 44
   C. 34
   D. 54

5. 40, 15, 30, 25, 20, 35, _
   A. 10
   B. 20
   C. 30
   D. 15

6. 2, 15, 41, 80….
   A. 111
   B. 120
   C. 121
   D. 132

7. 3, 12, 27, 48, 75, 108…..
   A. 147
   B. 183
   C. 162
   D. 192

8. Look at the series: 2, 8, 13, 24, 41,(?)
   A. 70
   B. 75
   C. 80
   D. 85

9. 80, 10, 70, 15, 60….
   A. 20
   B. 25
   C. 30
   D. 50

10. 5, 16, 49, 104….
    A. 115
    B. 148
    C. 170
    D. 181

11. 21, 9, 21, 11, 21, 13, 21….
    A. 14
    B. 15
    C. 21
    D. 23

12. 10, 20, 60, 300, 2100…..
    A. 23100
    B. 33100
    C. 22100
    D. 32100

13. 9, 10, 22, 69, 280…
    A. 1405
    B. 1305
    C. 1205
    D. 505

14. 1, 4, 27, 4, 25, 216….
    A. 49
    B. 7
    C. 343
    D. 21

15. 0, 5, 30, 155, 780….
    A. 2905
    B. 4905
    C. 3905
    D. 1105

16. 8, 10, 14, 18 …. , 34, 50, 66.
    A. 24
    B. 26
    C. 25
    D. 27

Directions: Find out the wrong number in series

17. 888, 440, 216, 104, 48, 22, 6
    A. 440
    B. 216
    C. 104
    D. 48
    E. 22

18. 4, 5, 15, 49, 201, 1011, 6073
    A. 5
    B. 15
    C. 49
    D. 201
    E. 1011

19. 5, 8, 20, 42, 124, 246, 736
    A. 8
    B. 20
    C. 42
    D. 124
    E. 246

20. 8, 6, 24, 7, 3, 21, 5, 4, 20….. 9, 18
    A. 1
    B. 3
    C. 4
    D. 5
    E. 6

21. 8, 4, 4, 7, 8, 1, 3, 9, 3, 2, 1…..
    A. 1
    B. 2
    C. 3
    D. 5
    E. None of these

22. 14, 19, 29, 40, 44, 51, 59, 73
    A. 14
    B. 19
    C. 29
    D. 51
    E. 59

23. 5 6 11 28 71 160
    2 3 a b c d e
    What is the value of e? A.
    112
    B. 245
    C. 318
    D. 220

ODD MAN OUT

Odd Man Out means a person or thing differing from all other members of a particular groupor set in some way.
It is one of the most important topics under Reasoning.
It contains both **Verbal** and **Non-Verbal sections** under it.

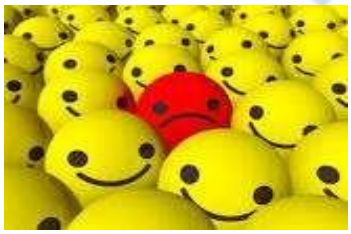
- **Odd man out.**

1. A way of selecting or eliminating a person from a group, especially in a game, as bytossing coins.
2. The person so selected or eliminated in the above game will be the odd one out.

Suppose there were four men in a group and each has an Indian 1 rupee coin with them.

Each of them tosses the coin. If three men get tail part of the coin as shown in the first four figures on top and the fourth man gets head part of the coin on tossing as shown in the last figure then the latter would be the odd-man out in the group.

- **Odd Man Out** means a person or thing differing from all other members of aparticular group or set in some way.



In this particular group of pictures, all the pictures (here: SMILEYS') are "happy" and are "yellow" in colour except for one smiley which is "sad" and is "red" in colour. It is located at the centre among the remaining yellow balls and can be clearly pointed out as the ODD-ONE out.

It is one of the most important topics under Reasoning.
It contains both **Verbal** and **Non-Verbal sections** under it.It can be of the following kinds:

Single Alphabets:

Example: a, e, i, s, o=> Here a, e, i, o are vowels. "s" is a consonant so "s" is odd manout.

Multiple Alphabets:

Example: ADF, CFH, EHJ, GJM=>Here "GJM" is odd one out becauseA+2=C; C+2=E; E+2=G
D+2=F; F+2=H; H+2=J
F+2=H; H+2=J; J+2=L but M is given instead of L so the entire term "GJM" becomes theodd one out. It should be GJL instead.

Words-Meanings:

Example: Commencement, terminate, start, beginning.
Here "terminate" is odd-man out because all the others mean the same-"to start or begin"but terminate means "to end".

Numbers:

Example: 1, 4, 8, 10, 13.
Here 8 is odd man out because 1+3=4, 4+3=7 but 8 is given so it is the odd one out here.7+3=10 and 10+3=13.

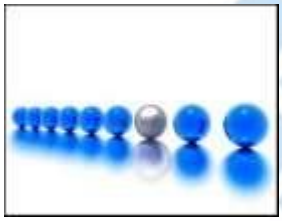
Symbols/Shapes:

Example:

Here the last figure (D) is the odd man out because the other figures are made of straightlines but last figure-circle does not consist of lines.

Figures (Visual representations):

For e.g. in the following figure:



In this figure there is one silver ball among blue balls.

The silver ball is the odd man out. It is third from the right.

From the adjacent figure, which seems like a professional scenario, we observe that there is one lady away from a group of people who are together and discussing with each other about something. That particular woman is the odd one out here.

QUESTIONS

DIRECTIONS Find out the odd man out in the following problems

1. 4, 5, 15, 49, 201, 1011, 6073.
   A. 5
   B. 15
   C. 49
   D. 201
   E. 6073

2. 196, 169, 144, 121, 100, 80, 64.
   A. 169
   B. 144
   C. 121
   D. 80
   E. 64

3.
   A. Jumping
   B. Jogging
   C. Brisk walking
   D. Running

4. 10, 14, 16, 18, 21, 24, 26.
   A. 26
   B. 24
   C. 21
   D. 18

5. 2, 6, 12, 20, 30, 42, 54.
   A. 12
   B. 30
   C. 54
   D. 20

6. 15, 31, 63, 127, 255, 512.
   A. 63
   B. 512
   C. 31
   D. 127

7. 5, 16, 6, 16, 7, 16, 9.
   A. 9
   B. 7
   C. 6
   D. 16
   E. None of these

8. 36, 54, 18, 27, 9, 18.5, 4.5.
   A. 4.5
   B. 18.5
   C. 54
   D. 18

9. 8, 7, 11, 12, 14, 17, 17, 22, 21.
   A. 11
   B. 21
   C. 22
   D. 14

10. 19, 26, 33, 46, 59, 74, 91.
   A. 26
   B. 33
   C. 46
   D. 59

11. 13, 17, 23, 63, 71.
   A. 17
   B. 23
   C. 71
   D. 63.

12. (64, 83); (100, 121); (225, 256); (144, 169).
   A. (64, 83)
   B. (100, 121)
   C. (144, 169)
   D. (225, 256)

13. (11, -101);(12, -48);(2, -16);(15, 75)
   A. (12, -48)
   B. (11, -101)
   C. (2, -16)
   D. (15, 75)

14. Jeevan Raksha Padak, Param VirChakra, Padma Bhushan, BharatRatna.
   A. Jeevan Raksha Padak
   B. Padma Bhushan
   C. Param Vir Chakra
   D. Bharat Ratna.

15. Which word among these will appearfourth in the dictionary?
   A. Solitaire
   B. Soliloquy
   C. Solitary
   D. Solitude

16. 7, 8, 12, 17, 27, 40.
   A. 7
   B. 27
   C. 40
   D. 8

17. Select the one which is different fromthe other three alternatives.
   A. (41, -72).
   B. (12, -30)
   C. (51, -42)
   D. (11, -20).

18. Select the odd-one out: 28, 65, 125,217.
   A. 28
   B. 65
   C. 125
   D. 217

19. Select the odd-one out: 72, 90, 110,133.
   A. 110
   B. 133
   C. 90
   D. 72.

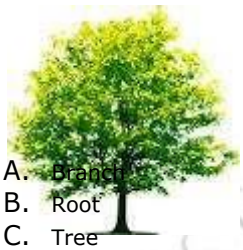
20. 10, 12, 22, 34, 58.
   A. 58
   B. 10
   C. 12
   D. 22
   E. 34

21. 892, 444, 220, 112, 52, 24.
   A. 52
   B. 112
   C. 220
   D. 444
   E. 892

22. Find the odd one out: Sofa, Chair,Dining-table, Furniture.
   A. Furniture
   B. Dining table
   C. Sofa
   D. Chair.

23. Find the odd one out: Lizard, Chameleon, Snake, Fish, Turtle.
   A. Lizard
   B. Chameleon
   C. Snake
   D. Fish
   E. Turtle

24. Find the odd one out: Tree, Branch,Root, Leaf



   A. Branch
   B. Root
   C. Tree
   D. Leaf

25. Find the odd figure among the belowfigures:

   A.

   B.

   C. 

   D. 

26. Which is the odd one out here: Anxiety, worried, nervous, depressed.
   A. depressed
   B. worried
   C. Anxiety
   D. nervous

SEATING ARRANGEMENTS

The process of making a group of people to sit as per a prefixed manner is called "seating arrangement". In these questions, some conditions are given, on the basis of which students are required to arrange objects, either in a row or in a circular order. While making arrangements, it should be noted that all the conditions given are complied with.

In order to solve seating arrangement questions, first of all, the correct diagram should be made. By doing so, questions are easily and quickly solved.

Here are a few guidelines to be followed to solve seating arrangement problems:

1) First of all take a quick glance at the given information. After performing this step, you would get an idea of the situation of people or objects.
2) Next, determine the usefulness of the given information and classify them accordingly into 'definite information', 'comparative information' and 'negative information'.
3) When the place of any object or person is definitely mentioned, then we can say that it is **definite information**. E.g.) A is sitting on the right end of the bench.
4) When the place of any person or object is not mentioned definitely but mentioned only in comparison of another person or object, then we can say it is **comparative information**. E.g.) A is sitting second to the right of E. This type of information can be helpful when we get the definite information about E.
5) A part of definite information may consist of **negative information**. Negative information does not tell us anything definitely but it gives an idea to eliminate a possibility. E.g.) C is not sitting on the immediate left of A.

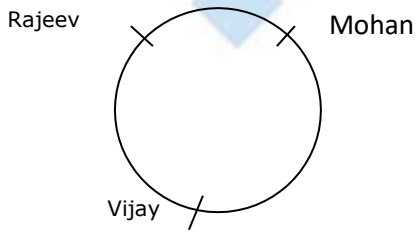
Example 1:

1. 6 Boys are sitting in a circle and facing towards the centre of the circle.
2. Rajeev is sitting to the right of Mohan but he is not just at the left of Vijay.
3. Suresh is between Babu and Vijay.
4. Ajay is sitting to the left of Vijay. Who is sitting to the left of Mohan?

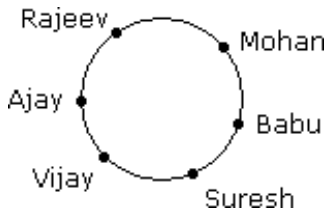
Solution:

Here people are sitting in a circle facing towards the centre, so we arrange the boys in such a way that when we move from the person's left to right side, we will be in the anti-clockwise direction. If the boys were arranged facing away from the centre, then when we move from the person's left to right side, we will be in the clockwise direction.

From the given statement (2) above, we can fix the position of Mohan. Rajeev is somewhere to the right of Mohan. It is given that Rajeev is not just at the left of Vijay but somewhere to the left.



From statements (3) and (4), we have Suresh sitting between Babu and Vijay and Ajaysitting to the left of Vijay.



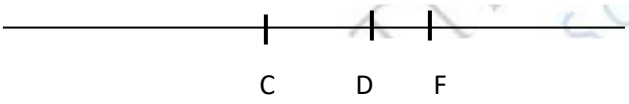
Hence, Babu is sitting to the left of Mohan.

Example 2:

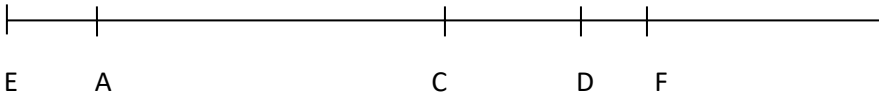
1. Eleven students A, B, C, D, E, F, G, H, I, J and K are sitting in first line facing to theteacher.
2. D, who is just to the left of F, is to the right of C at second place.
3. A is second to the right of E who is at one end.
4. J is the nearest neighbor of A and B and is third to the left of G.
5. H is next to D to its left and is at the third place to the right of I.Who is just in the middle?

Solution:

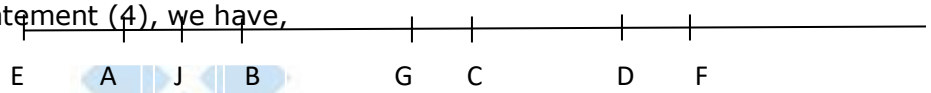
We suppose the students are facing the teacher in the North direction. From statement(2), we have,



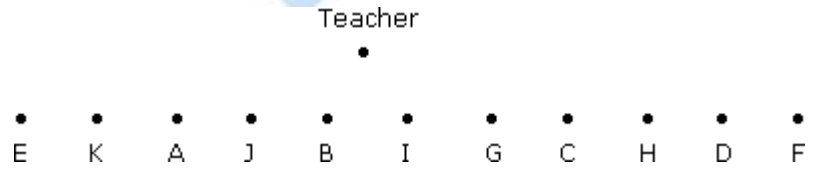
Since A is to the right of E and E is at one of the ends, clearly E cannot be at the right end.



From statement (4), we have,



From statement (5), we get the positions of the remaining boys.

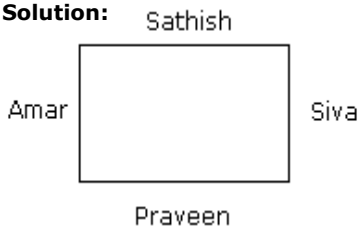


Hence, I is just in the middle.

Example 3:

Siva, Sathish, Amar and Praveen are playing cards. Amar is to the right of Sathish, whois to the right of Siva. Who is to the right of Amar?

Solution:



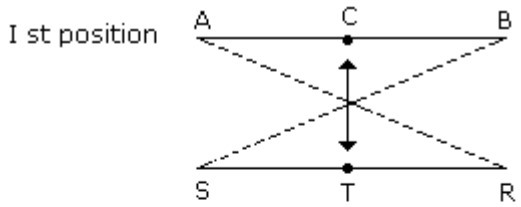
Hence Praveen is to the right of Amar.

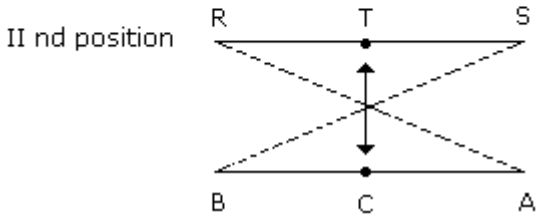
Example 4:

1. A, B and C are three boys while R, S and T are three girls. They are sitting such thatthe boys are facing the girls.
2. A and R are diagonally opposite to each other.
3. C is not sitting at any of the ends.
4. T is left to R but opposite to C.

(A) Who is sitting opposite to B?

(B) Who is sitting diagonally opposite to B?





Solution:

(A) Hence, R is sitting opposite to B.

(B) Hence, S is sitting diagonally opposite to B.

QUESTIONS

SAMPLE: Six girls are sitting in a circle facing to the centre of the circle. They are P, Q, R, S, T and V. T is not between Qand S but some other one. P is next to the left of V. R is 4th to the right of P. Which

A. E is to the immediate left of D
B. A is at one of the ends
C. G is to the immediate left of B
D. F is second to the right of D

of the following statement is not true?

A. S is just next to the right to R
B. T is just next to the right of V
C. R is second to the left of T
D. P is second to the right of R

1. If P and R interchange their positions then which of the following pair will sit together?
   A. RT
   B. PV
   C. VT
   D. QV

2. What is the position of T?
   A. Just next to the right of Q
   B. Second to the left of P
   C. Between Q and R
   D. To the immediate right of V

3. Which one is sitting just right to the V?
   A. P
   B. T
   C. R
   D. S/Q

A, B, C, D, E, F and G are sitting in a row facing North:
F is to the immediate right of E.E is 4th to the right of G.
C is the neighbour of B and D.
Person who is third to the left of D is atone of ends.

4. Who are to the left of C?
   A. Only B
   B. G, B and D
   C. G and B
   D. D, E, F and A

5. Which of the following statement is nottrue?

6. Who are the neighbours of B?
   A. C and D
   B. C and G
   C. G and F
   D. C and E

7. What is the position of A?
   A. Between E and D
   B. Extreme left
   C. Centre
   D. Extreme right

In an Exhibition, seven cars of different companies - Cadillac, Ambassador, Fiat, Maruti, Mercedes, Bedford and Fargo are standing facing to east in the followingorder:

i) Cadillac is next to right of Fargo.
ii) Fargo is fourth to the right of Fiat.
iii) Maruti car is between Ambassadorand Bedford.
iv) Fiat which is third to the left ofAmbassador is at one end.

8. Which of the cars are on both the sidesof Cadillac car?
   A. Ambassador and Maruti
   B. Maruti and Fiat
   C. Fargo and Mercedes
   D. Ambassador and Fargo

9. Which of the following statement iscorrect?
   A. Maruti is next left of Ambassador.
   B. Bedford is next left of Fiat.
   C. Bedford is at one end.
   D. Fiat is next second to the right ofMaruti.

10. Which one of the following statementsis correct?
    A. Fargo car is in between Ambassador and Fiat.
    B. Cadillac is next left to Mercedescar.
    C. Fargo is next right of Cadillac.
    D. Maruti is fourth right of Mercedes.

11. Which of the following groups of carsis to the right of Ambassador?
    A. Cadillac, Fargo and Maruti
    B. Mercedes, Cadillac and Fargo
    C. Maruti, Bedford and Fiat
    D. Bedford, Cadillac and Fargo

12. Which one of the following is thecorrect position of Mercedes?
    A. Next to the left of Cadillac
    B. Next to the left of Bedford

C. Between Bedford and Fargo
D. Fourth to the right of Maruti.

13. There are five different houses, A to Ein a row. A is to the right of B and E isto the left of C and right of A. B is to the right of D.
Which of the houses is in the middle?
A. A
B. B
C. D
D. E

14. Four girls are sitting on a bench to be photographed. Shikha is to the left of Reena. Manju is to the right of Reena. Rita is between Reena and Manju.
Who would be second from the left inthe photograph?
A. Reena
B. Shikha
C. Manju
D. Rita

15. Five children are sitting in a row. S is sitting next to P but not T. K is sitting next to R who is sitting on extreme leftand T is not sitting next to K. Who are sitting adjacent to S?
A. K and P
B. R and P
C. only C
D. P and T
E. Insufficient

A, B, C, D, E, F and G are sitting on awall and all of them are facing east.

- C is on the immediate right to D.
- B is at an extreme end and has Eas his neighbour.
- G is between E and F.
- D is sitting third from the southend.

16. Who is sitting to the right of E?
A. A
B. C
C. D
D. F
E. None of these

17. Which of the following pairs of people are sitting at the two extreme ends?
A. AB
B. AE
C. CB
D. FB
E. Cannot be determined

18. Name the person who is sitting third from the North end?
A. E
B. F
C. C
D. G

19. Which among the following pairs have the persons sitting adjacent to each other?
A. AC
B. AF
C. CE
D. CF
E. None of these

IDIOMS AND PHRASES

Important points to remember while answering the Idioms and Phrases section

An **idiom** (Latin: idioma, "special property") is a combination of words that have a figurative meaning owing to its common usage. An idiom's figurative meaning is separatefrom the literal meaning. There are thousands of idioms and they occur frequently in all languages. They are usually used in spoken English, and much lesser in written form, with some exceptions.

To make sure that the time you spend learning idioms and phrases is not time wasted,follow these steps and instructions:

- Choose 5 to 8 idioms that may be easily grouped - Most idioms fall into simple categories, like idioms with animals or parts of the body. Choose 5 to 8 from any category, for example idioms with time. If you choose more than 10, you'll only succeed in overwhelming yourself, and you won't remember any of the idioms. So, learn idioms with time.
- Introduce idioms in context, never in isolation - Some students simply go over a list of English idioms and their definitions or explanations. However, to ensure that you notonly understand them, but also learn to use them, learn idiom examples in context, for example, in simple conversations where the meaning of the idiom is clear. To introduce the idiom to give someone a hard time, imagine a conversation like this one:

  - Juan: Hey Sarah, you look sad. What's up?

  - Sarah: Well, I didn't play very well today during volleyball practice and my teammates were not very understanding. They said a 5-year old girl played better than me.

  - Juan: Oh! I'm so sorry they gave you such a hard time.

Try to guess or figure out the meaning of the idiom. Correct as necessary. Try to generate other examples of what it means to give someone a hard time. Then, move on to another conversation for another idiom.

- Use idioms in your conversations - Remember that the goal is to not only understand idioms, but also learn how to use them effectively. Use it as much as possible in your everyday communication in English so that it permanently stays with you.
- Try to identify in real life, authentic material – Try to see how some of these idioms are used in the media, in newspaper and magazine articles, and in songs, cartoons, videos, advertisements, etc…Thanks to the Internet, all you have to do is Google an idiom, and you'll find plenty of sources! If you Google, "gave him a hard time", you'll run across an article that states voters gave a British politician a hard time. You don't have to read the entire article, just the headline to see how this idiom is used in a newspaper headline.

The following sentences contain idioms. The fixed words constituting the idiom in each caseare bolded:

- She is **pulling** my **leg**. - to pull someone's leg means to trick them by telling themsomething untrue.
- When will you **drop** them **a line**? - to drop someone a line means to send a note to orcall someone.
- You should **keep an eye out for** that. - To keep an eye out for something means tomaintain awareness of it.
- I can't **keep** my **head above water**. - To keep one's head above water means tomanage a situation.

It's **raining cats and dogs**. - To rain cats and dogs means to rain very heavily (adownpour).

- Oh no! You **spilled the beans!** - To spill the beans means to let out a secret.
- Why are you **feeling blue**? - To feel blue means to feel sad.
- That jacket costs **an arm and a leg**. – An arm and a leg means something is veryexpensive.

Directions: In each of the following questions, an Idiom and/ or Phrase have been given. Out of the four alternatives suggested select the one which best expresses the meaning of the given Idiom and/ or Phrase.

1. All In The Same Boat
   a) Something good that isn't recognized at first.
   b) Being upset for something that happened in the past.
   c) When everyone is facing the same challenges
   d) Anything that is common and easyto get.

2. An Arm And A Leg
   a) Very expensive.
   b) Avery mild punishment.
   c) When you are mistreated the sameway you mistreat others.
   d) A result that is still unclear and cango either way.

3. An Axe To Grind
   a) The way you want it to.
   b) When you complain about a lossfrom the

past.

c) The hottest days of the summerseason.
d) To have a dispute with someone

4. At The Drop Of A Hat
   a) When you complain about a lossfrom the past.
   b) Willing to do something immediately.
   c) A large number of people eitherfalling ill or dying.
   d) The show has come to an end.

5. Crack Someone Up
   a) To make someone laugh.
   b) To fight with someone.
   c) To make someone cry.
   d) To make someone smile.

6. Yeoman Service
   a) Service that can only be done bymen
   b) Service designed to hurt others
   c) Service of great value
   d) Service done by politicians

7. Don't Look A Gift Horse In The Mouth
   a) To be enraged and show it
   b) When someone gives you a gift,don't be ungrateful.
   c) Not willing or wanting to changefrom your normal way of doing something.
   d) To become serious about something.

8. Every Cloud Has A Silver Lining
   a) Someone who is having a horribleday.
   b) Get fired from a job.
   c) To get away from.
   d) Be optimistic, even difficult timeswill lead to better days.

9. Get Up On The Wrong Side Of The Bed
   a) A mistake made in something youare trying to achieve.
   b) To force an issue that has alreadyended.
   c) Someone who is having a horribleday
   d) Not willing or wanting to changefrom your normal way of doing something

10. Get Your Pink Slip
    a) A mistake made in something youare trying to achieve.

b) Get fired from a job.
c) Get Hired for a job.
d) Get rejected for a job.

11. Go Out On A Limb
a) Put yourself in a tough position inorder to support someone/something.
b) Stuck between two very bad options.
c) To take on a task that is way toobig.
d) To avoid talking.

12. He Lost His Head
a) Chirpy and overcome by Love.
b) Angry and overcome by emotions.
c) Sad and shadowed by failures.
d) Joyful and overcome by success.

13. Head Over Heels
a) Failed and Devastated.
b) Very much annoyed.
c) Very much angry and/or irritated.
d) Very excited and/or joyful.

14. Hit The Sack
a) A task that can be accomplishedvery easily.
b) Avery mild punishment.
c) Go to bed or go to sleep.
d) Rushed and short on time.

15. Keep Your Chin Up
a) To force an issue that has alreadyended.
b) Do whatever it takes to help.
c) Stuck between two very bad options.
d) To remain joyful in a tough situation.

16. Let Sleeping Dogs Lie
a) To avoid restarting a conflict.
b) To start a conflict.
c) To avoid restarting a discussion.
d) To starting a discussion.

17. Long in the Tooth
a) Long lasting relationship.
b) Avery old house.
c) Old Logs and Scraps.
d) Old people (or horses).

18. New Kid on the Block
a) Someone new to the arena)
b) Someone new to the group orarea)
c) Someone new to the house.
d) Someone new to the community.

19. No Room to Swing a Cat
a) A large empty space.
b) An open space.
c) An unusually small or confinedspace.
d) An unusual place where cats are forbidden

QUESTIONS: PART 2

1. Fallout with Someone
   a) Tripping someone
   b) Being thrown out of the house
   c) Have a disagreement and no longerbe friends.
   d) Fighting with someone

2. Chomp Down
   a) To play.
   b) To sleep.
   c) To eat.
   d) To drink.

3. Roll-out the Red Carpet
   a) Buy and sell expensive carpets
   b) Killing someone violently
   c) Welcoming someone
   d) Avoiding dust in the house

4. Hold Your Horses
   a) Be careful.
   b) Be slow.
   c) Be calm.
   d) Be patient.

5. In The Bag
   a) To have something secured
   b) To have a dispute with someone.
   c) Someone who is cherished aboveall others.
   d) Anything that is high up in the sky.

6. Kick The Bucket
   a) Unconscious.
   b) Born.
   a) Die.
   b) Invisible.

7. Know the Ropes
   a) To become serious about something.
   b) To understand the details.
   c) Stuck between two very bad options.
   d) To take on a task that is way to big

8. Mumbo Jumbo
   a) The way you want it to.
   b) When you complain about a lossfrom the past
   c) Verbally scold someone
   d) Meaningless speech.

9. Mum's the Word
   a) To irritate and/or annoy very much
   b) Something outstanding.
   c) To say nothing
   d) Avery tasty food or meal

10. Nest Egg
    a) A mistake made in something youare trying to achieve.
    b) Saving asset aside for future use.
    c) Do not put all your resources inone possibility.
    d) Don't rely on it until you're sure ofit.

11. No Dice
    a) To not agree.
    b) Stuck between two very bad options.
    c) To take on a task that is way toobig.
    d) To agree.

12. Out Of The Blue
    a) Something that suddenly occurs.
    b) Something that unexpectedlyoccurs.
    c) Something that suddenly but expectedly occurs.
    d) Something that suddenly and unexpectedly occurs.

13. Over the Top
    a) Very new.
    b) Very interesting.
    c) Very excessive.
    d) Very excited.

14. Pull the plug
    a) To stop something
    b) Go to bed or go to sleep.
    c) Rushed and short on time.
    d) To initiate something.

15. Queer the pitch
    a) To force an issue that has alreadyended.
    b) Destroy or ruin a plan
    c) Do whatever it takes to help.
    d) To remain joyful in a tough situation.

16. Run out of Steam
    a) To be completely out of energy.
    b) To be completely out of fuel.
    c) To be completely out of power.
    d) To be completely out of discussion.

17. Saved By The Bell
    a) Initiated at the last minute.
    b) Rushed at the last moment.
    c) Started at the last moment.
    d) Saved at the last possible moment.

18. Southpaw
    a) Someone who is hard hitter.
    b) Someone who is right-handed.
    c) Someone who is left-handed.
    d) Someone who is powerful in clearing the fences.

19. The Whole Nine Yards
    a) An open space.
    b) A usual way of measurement.
    c) Everything.
    d) Quite a few things.

20. Till the Cows come Home
    a) A long time.
    b) A long wait.
    c) A long journey.
    d) A long story.

QUESTIONS – TYPE

JUMBLED SENTENCES

Important points to remember while answering the Ordering of Statements/Paragraphs/Words section (tips given here are similar for both thesections)

Ordering of Statements/Jumbled Paragraph may be termed as a group of the sentencesnot arranged in a proper sequence. The candidate is expected to arrange all the sentences in logical & sequential order. In another words it is the test of the student's versatile reading, understanding of language, writing ability based on deep stock of vocabulary, grammar and correct use of tenses.

Score more – it is less difficult. This section provides you the opportunity of scoring better on account of solving 3-4 Para jumbles. So, try to have fun while solving jumbledparagraphs instead of finding them a burden.

Strategy to solve:
Step-1 – Mark the idea and tone of the sentences. This will enable you to identify theOpening and/or closing sentence making the task easier. You may opt for elimination method
Step-2 – Search for connectors to sentences e.g. conjunctions, personal (He/she/it/they/their etc.), relative (Who, whose, that, which etc.), Demonstrative (These, those, this, that etc.) pronouns as they indicate that they must have been usedin place of some noun-proper/common etc. So find the link between the sentences.
Step-3- A few paragraphs have time factors in it-indicating that the events mentionedfor the earlier time should come first and could help you to put them in chronological order-
Example:

A. First war of independence took place in 1857
B. East India Company came to India in 1600 with business motive
C. hence, Quit India Movement of 1942 was mobilized to push back the Britishers
D. It spread its wings all over the country despite declaring its business intentions
E. Giving a serious thought on global situation our leaders found it the right moment tostart nation-wide movement.
F. Second world war, that began in 1939 started to show its impact globally

You can very well decode it – 'BDAFEC'
Step-4 – You may find certain words which may be leading towards next Para or concluding part – like, Summing up, in a nutshell, Nevertheless, therefore, However, hence, So, Simultaneously, Apart from etc. They denote change of thought process andtransform sentence to next stage. Such words may be noted.
Step-5- Please practice more and improve the reading skills and accuracy.

Practicing various types of jumbled paragraphs
The jumbled paragraph could be any of the following types. Sample exercises to practicethe same will definitely improve your confidence level and will boost your morale –
Type -1-Random – You may be offered sentences in random order and you would berequired to arrange them in such a sequence to form a coherent paragraph-

Direction-In the following question sentences of a paragraph are jumbled up and given. Each sentence is labeled A, B, C & D. Find out the order in which the

sentences are to be arranged to form a logically coherent paragraph

A. they disclosed that the full consignment was in fact for 52 steel tubes
B. yesterday succeeded only in compounding the puzzle.
C. Subbu Gun Works, at the center of the Iraqi supergun affair,
D. The number seized by customs and Excise had been a mere eight.

1. ABCD 2. BDAC 3.CBAD 4. DCBA

Ans. 3. CBAD
Explanation- Action started with C when the company at the center of affairs compounded the puzzle –B, what they disclosed (A) was different than what was seized(D).

Type-2- Opening sentence is given- You are given the opening sentence and the other sentences are jumbled. You have to rearrange the remaining jumbled sentencesbeginning with the given opening sentence. The task is slightly easier as you know where to start from.

Direction- in the Following paragraph opening sentence is given followed by agroup of sentences, which if placed in correct sequence will form a coherent paragraph. You have to select the most

QUESTIONS – TYPE

appropriate option out of the given ones that follow the paragraph.

Opening sentence – ***Mohammed Sohail started his career when only sixteen years old,***

A. two and a half years with the highly successful Bilko series

B. With the advent of television he progressed to shows like The Ed Sulli van programmeand, in particular,

C. which is still showing throughout the world.

D. writing with his brother Abraham, scripts for radio.

A. DBAC B. BACD C. ABCD D. DACB

Ans. A. DBAC

Explanation- Think & try to put the sentences in chronological order. Opening sentencestarts the story the character started his career when radio was there (Time factor as radio came before TV) so D; then progressed for Television programs when the same started (B); a part of achievement BILKO series (A) still showing (C).

Recap of the tips

- Try to find out the first sentence. If you can see any chronological order in the givenparagraph, then it is easy to solve that question. You should try to find out the linkage how the events occur in the paragraph. If you are able to find out the last sentence then it will also help you in coming to the right sequence of paragraph.
- Questions where first and the last sentence are given can be solved quite easily. Justtry to find out the sentence which has the linkage to the first sentence's event. Eliminate all those options of whom you have found the order.
- Practice as much as you can of these questions to make yourself more familiar with these types of questions. Never think that these questions are easy but you can dothem with a bit of practice if you have a little command over English.
- Read all the parts to make the paragraph more meaningful. Try to find out the logicalsequence and then arrange these parts in correct and meaningful sequence. So practice more and more of paragraph with jumbled words.
- Finding linkage between parts is more important in these questions in order to makethe paragraph meaningful. The things that are going to help you in these type of questions is only your command over vocabulary, your knowledge of English grammar, preposition, conjunctions etc. overall your command over English and practice of these questions

Ordering Of Words into Sentences:

1. A month after schools reopened
   A. 84% seats reserved under RTE
   B. remain vacant
   C. in private schools
   D. for the new academic year
   a) ABCD c) ACBD
   b) CABD d) DABC

2. Panic gripped the residents
   A. of the area
   B. in the heart of the city
   C. on Wednesday
   D. after a leopard escaped from thecage in forest department
   a) ABCD b) CDAB
   c) CBDA d) DABC

3. The four passengers who
   A. after their MUV fell into the river
   B. were feared to have been sweptaway
   C. are still untraceable
   D. by the water of river
   a) CABD c) BDCA
   b) CDBA d) BACD

4. The taps will run dry
   A. on Thursday evening
   B. as the water supply department
   C. in the city
   D. will undertake repair works
   a) ABCD c) BCDA
   b) CBDA d) CABD

5. In a late night decision
   A. the district collector
   B. the royal fort
   C. on Tuesday
   D. revoked the auction of
   a) ADBC c) CADB
   b) CDBA d) CBDA

6. These degrees
   A. are generally one-year long and **QUESTIONS – TYPE**
   B. teach students everything relatedto the subject
   C. that specific subject
   D. making them a master in
   a) BADC c) ADCB
   b) BDAC d) ABDC

7. Not only is software
   A. fun
   B. but having
   C. fun in software is a
   D. catalyst for a successful career
   a) ABCD c) DBCA
   b) CBAC d) CABD

8. The higher up the
   A. pole of technology you climb
   B. the more freedom you can
   C. have in what you work on.
   D. totem
   a) ADBC c) DABC
   b) ABCD d) ABDC

9. The least pleasant
   A. lower-skilled
   B. tasks are delegated to the
   C. junior employees
   D. and
   a) DABC c) BADC
   b) DCBA d) ADBC

10. Although the most successful people
    A. their career success is determined more by
    B. what they do than by how muchof it
    C. work hard
    D. long hours
    a) BACD c) DCAB
    b) CDAB d) BADC

QUESTIONS – TYPE

Ordering of Statements:

1. S1: The earliest reference to' theplaying card has been found in China, as long ago, as the tenth century.
P: They appeared in Italy around1320.
Q: Long before that the Chinese usedpaper money which was similar in design to the playing cards.
R: It is believed that perhaps travelling gypsies introduced them toEurope.
S: In olden days cards were used both for telling fortune and playinggames.
S6: The current pack of 52 cards wasonly regulated in the seventeenth century.
The Proper sequence should be:
a) QRSP c) QSRP
b) RQSP d) RSQP

2. S1: Sir Humphry Davy invented thesafety lamp for miners.
P: He was a leading chemist.
Q: In early 19th century, mine disasters occurred due to the ignitionof methane gas.
R: The invention of safety lamps in1815 cut down such risks.
S: Davy began his scientific career in1797.
S6: Davy enclosed the flame of an oillamp with a wall of wire gauze.
The Proper sequence should be:
a) PRSQ c) SRPQ
b) QSPR d) SPQR

3. S1: Once a clever merchant was travelling to Delhi by train.
P: He soon made friends.
Q: It was a journey of 3 days.
R: He introduced himself as a diamond merchant from the southwho was going to Delhi.
S: To pass the time the diamond merchant started talking to others inthe compartment.
S6: Among his fellow travelers therewas a teacher, an Ayurvedic doctor and a young man.
The Proper sequence should be:
a) QPRS c) QSRP
b) PRSQ d) SQRP

4. S1: The old man lifted his head andnoticed the king.
P: He bowed before him.
Q: "What I produce is enough for meand my family. What more do I need."
R: "Till God gives me strength I shallcontinue to work on it."
S: He said, "Maharaj, I am a poorfarmer. My ancestors have left me this piece of land."
S6: The King was very happy to hearthe old man's words.
The Proper sequence should be:
a) PQSR c) SRQP
b) PSRQ d) SRQP

5. S1: An ideal student is intelligent andsimple.
P: Next, must be fearless and bold toface the trials of life.
Q: In order to become an ideal student one must follow certainprinciples in life.
R: He should have the quality of 'Simple living and High thinking.' S: Further, he should be caring andsympathetic to the problems of others.
S6: Therefore, he must try to live in accordance with the strict rules of conduct and discipline.
The Proper sequence should be:
a) QSRP c) SRPQ
b) QRPS d) PSRQ

6. S1: Jawaharlal Nehru was born in Allahabad on 14 Nov 1889.
P: Nehru meets Mahatma Gandhi inFebruary 1920.
Q: In 1905 he was sent to London tostudy at a school called Haroow.
R: He became the first Prime Ministerof Independent India on 15 August 1947.
S: He married Kamla Kaul in 1915.S6: He died on 27 May 1964.
The Proper sequence should be:
a) QRPS c) QSPR
b) RPQS d) SQRP

7. S1: The Olympic flag was created in1913.
P: There is also a second Olympicflag used for the winter games.
Q: These flags are made of white silkand contain 5 intertwined rings.
R: It was solemnly inaugurated inParis in June 1914.
S: It was created at the suggestionof Baron Pierre de Coubertin.
S6: From left to right the rings are blue, yellow, black, green and red. The Proper sequence should be:
a) PSRQ c) QPSR
b) RQPS d) SRPQ

8. S1: Venice is a strange and beautifulcity in the north of Italy.
P: There are about four hundred oldstone bridges joining the island of Venice.
Q: In this city there are no motorcars, no horses, and no buses.
R: These small islands are near oneanother.
S: It is not an island but a hundredand seventeen islands.
S6: This is because Venice has nostreets.
The Proper sequence should be:
a) PQRS c) PRQS
b) SRPQ d) PQSR

9. S1: One day the beggar was passingin front of a big mansion.
P: He had not seen such good foodat all.
Q: The beggar also held out his bowland received a share.
R: A rich man lived there.
S: That day the rich man was distributing food to all the poor. S6: He wanted to eat peacefully sohe took it and sat under a tree.
The Proper sequence should be:
a) RSQP c) PRSQ
b) PSQR d) SRPQ

10. S1: When a satellite is launched, therocket begins by going slowly upwards through the air.
P: However, the higher it goes theless air it meets.
Q: As the rocket goes higher, ittravels faster.
R: For the atmosphere becomesthinner.
S: As a result there is less friction.S6: Consequently, the rocket still does not become too hot.
The Proper sequence should be:
a) QPRS c) QSPR
b) PQRS d) PQSR

ONE WORD SUBSTITUTES

Important points to remember while answering the One Word Substitutesquestions

The only way out for this section is by building up your vocabulary because the section asks you to replace group of words or a full sentence effectively withoutcreating any kind of ambiguity in the meaning of the sentences. Like the word "autobiography" can be used in the place of the sentence "The life story of a man/woman written by himself/herself"

Here are some tips and techniques:

How to learn a new word

There are 3 stages of understanding when you learn a new word.

First, you learn the meaning of the word and how it is used. Repeated exposure to theword develops familiarity with the word.

Then you can differentiate this word from similar words. Usually words may seem similarbut there is a difference in the context in which it is employed.

Finally, you have accumulated a word in your vocabulary when you can recollect theword and use it in your speech or writing.

Why is it important to learn a word thoroughly?

Let's look at 3 words and how they differ and why it is important to know more than justthe meaning.

Wisdom is the knowledge of an individual learnt from life or learnt collectively by a group. For example, the wisdom of native American communities, or the wisdom of theSufi sect.

Erudition is academic knowledge. For example, Prof. Shetty's erudition in Economicsmakes him a front runner for the Nobel Prize.

Acumen is knowledge gained through practice of a profession. For example - a personwith a strong business, political or financial acumen.

Now imagine solving Fill in the Blanks/One Word Substitutes armed with such knowledgeand confidence.

How to build a vocabulary

1. Read

Regular reading increases exposure to words. We recommend you read editorials, essaysand opinion pages of prominent new papers and magazines, many of which are easily available online of which are easily available online.

2. Use the words

Creating sentences of your own reinforces your understanding.

3. Enjoy

Though you may be developing your vocabulary for company tests or competitive exams, remember that a good vocabulary is a permanent asset.

If you are not regularly using or revising the new words you've learned, you will forget them. There is no substitute for regular revision. Create flash cards for yourself as you learn or download wordlists on your mobile phone and learn on the move.

QUESTIONS

1. Study of earth.
   a) Seismology c) Geology
   b) Earthquake d) Histology

2. One who pretends to be what he isnot.
   a) Robber c) Fraud
   b) Hypocrite d) Fallible

3. Worship of idols.
   a) Idolatry c) Pessimist
   b) Optimist d) Topiary

4. A person who is made to bear the blame due to others
   a) Omnipresent c) Anonymous
   b) Scapegoat d) Epilogue

5. That which cannot be conquered.
   a) Indestructible c) Invincible
   b) Indefensible d) Ambiguous

6. A person who speaks less.
   a) Garrulous c) Dandy
   b) Blabbermouth d) Reticent

7. The act or habit of talking in one'ssleep.
   a) Somniloquy c) Somnambulism
   b) Stammer d) Monogamy

8. A man who is always ready to help others.
   a) Civilized c) Kind

b) Samaritan d) Belligerent

9. A person who is too stubborn to admit.
a) oblique c) obdurate
b) determined d) fascinated

10. A person who is generous and has an exalted soul
a) magnanimous c) miser
b) stingy d) frugal

11. Be the embodiment or perfect example of
a) Characterize c) Idol
b) Personify d) Signify

12. A person interested in reading booksand nothing else
a) Book-keeper c) Scholar
b) Book-worm d) Student

13. Something that relates to everyonein the world
a) General c) Common
b) Usual d) Universal

14. A style full of words
a) Verbose c) Pedantic
b) Rhetorical d) Abundant

15. To issue a thunderous verbal attack
a) Languish c) Animate
b) Fulminate d) Invigorate

16. Look at with fixed eyes.
a) Stare c) Stardust
b) Starch d) Stiff

17. Temporary loss of strength and energy resulting from hard physicalor mental work.
a) Devolve c) Degenerate
b) Fade d) Fatigue

18. Characterized by tolerance and mercy
a) Lenient c) Honest
b) Obedient d) Confident

19. Convert ordinary language into code
a) Encrypt c) Encrust
b) Beset d) Harass

20. A component of a mixture or compound
a) Mixture c) Alloy
b) Ingredient d) Solvent

21. Long spell of dry weather
a) Stare c) Survive
b) Drought d) Stale

PREPOSITIONS

A preposition describes a relationship between other words in a sentence. In itself, a word like "in" or "after" is hard to define. Prepositions are nearly always combined with other words in sentences

Prepositions of Time: *at, on*, and *in*

- We use *at* to designate specific times.The train is due at 12:15 p.m.
- We use *on* to designate days and dates.My brother is coming on Monday.
  We're having a party on the 10th of this month.
- We use *in* for nonspecific times during a day, a month, a season, or a year.She likes to jog in the morning.
  It's too cold in winter to run outside.He started the job in 1971.
  He's going to quit in August.

Prepositions of Place: *at, on*, and *in*

- We use *at* for specific addresses. Showing a point or location in space or on a scale.Sudarshan lives at 171, 1st Cross, Vijayanagar
  We met at a restaurant.
  The temperature was at the boiling point.
- We use *on* to designate names of streets, avenues, etc.Her house is on Commercial Street.
- And we use *in* for the names of land-areas (towns, counties, states, countries, andcontinents).
  She lives in Kakinada.

IN	AT	ON	NO PREPOSITION
(the) bed*	class*	the bed*	Downstairs
the bedroom	Home	the ceiling	Downtown
the car	the library*	the floor	Inside
(the) class*	the office	the horse	Outside
the library*	school*	the plane	Upstairs

Prepositions of Movement: to and No Preposition

- We use *to* in order to express movement toward a place.They were driving to work together.
  She's going to the dentist's office this morning.
- *Toward* and *towards* are also helpful prepositions to express movement. These aresimply variant spellings of the same word; use whichever sounds better to you. We're moving toward the light.
  This is a big step towards the project's completion.

- With the words *home, downtown, uptown, inside, outside, downstairs, upstairs*, weuse no preposition.
  Grandma went upstairs
  Grandpa went home.
  They both went outside.

Prepositions of Time: for and since

- We use *for* when we measure time (seconds, minutes, hours, days, months, years).He held his breath for seven minutes.
  She's lived there for seven years.
  The Chinese and the Japanese have been quarreling for seven centuries.
- We use *since* with a specific date or time.He's worked here since 1970.
  She's been sitting in the waiting room since two

Examples of other preposition and their usage:
By - Showing nearness, cause, or agent.

- He left his briefcase by the door
- He was frightened by the loud noise
- The rates are regulated by the central bank.

for - Showing how or why something is used, or for whom something is done.

- This folder is for recent reports.
- He was honored for his achievements in molecular biology.
- I have a present for you.

for - Showing how long something happens, showing direction

- He is going to Russia for five days.
- This is the train for Patna. [Note the implied purpose: *for = for going to*]

in - Showing inclusion of an object or action in another object, place, activity,occupation, etc.

- They took a walk in the city
- The computer is in the closet
- He was the inspector in the play
- He worked in advertising.

in - Showing the general time of an action.

- I'll see you in May.
- They started the company in 1998.

Note that in referring to place or time, *in* is more general and less specific in its meaning than *at* or *on*. Thus: ***in*** *India* [a larger boundary] vs. ***on*** *MG Road* or ***at*** *23rd Street.* Time: ***in*** *June* [a larger time boundary] vs. ***on*** *June 23* or ***at*** *three o'clock.*
in - Replacing *into:* showing motion or direction from outside to a point within:

- Go in the kitchen
- Put the milk in the refrigerator.

into - Showing direction of an object or action so that it becomes included in another object, place, activity, occupation, etc.

- He took the plates into the kitchen
- He went into the city
- I want to get into advertising.

of - Showing connection, part, or amount
- He's the father of Jignesh
- The rear wheels of the car skidded.
- I would like half a pound of boiled beans.

of - Denoting the object of an action or state expressed by a verb or adjective.
- I didn't think of that.
- She was tired of explaining the procedure.
- My boss is afraid of flying.

on - On top, touching, or being in a position in space or time.
- The book is on the table.
- He was on the Planning Committee.
- The house is on the 22nd Main
- I'll see you on Monday. He will arrive on May 7.

on - On often replaces onto to show movement or position
- He got on the train
- He put the book on the table.

on - On commonly replaces about
- I am reading an article on thermodynamics.

to - Movement or action toward something else.
- He suggested to me that we go inside. [The suggestion was an action directedtoward me.]
- He went to the door.

with - Showing participation, cooperation.
- I went with him to the theater
- He fought with his brother.
- He works with his father.

with - Showing the means or instrument.
- He hit him with a rock.
- He bored the audience with a long anecdote.

with - Showing the object of a feeling or behavior.
- I was angry with him.
- He had to be firm with the students

QUESTIONS

Directions: Fill in the blanks withthe correct Prepositions.

1. Marie was born_____a cold, snowy day_____January. More precisely, she was born _____ January 20.
2. Pierre comes_____Lac Saint-Jean, but he has lived_____Quebec City since he got married.
3. I bought this necklace _____the store today. It is_____ my mother. I am going to give it _____her_____her birthday.
4. Joaquin and I rode our bicycles _____the bridge and _____ the forest.
5. John has been transferred ___ another branch Montreal. Heand his family will be moving _____ Montreal this summer.
6. Stars are balls of gas that give _____ light.
7. Gravity is the force that attractsobjects in space_____each other.
8. He tried to warn his daughter _____ the dangers_____going out alone _____ night.
9. It was love and caring that she was desperately_____need __, not advice.
10. _____an hour, we had traveled tenmiles.
11. _____This rate, we would reach Estancia_____dinnertime.
12. There was a good wind blowing _____us.
13. Joaquin rode_____some broken glass.
14. _____fifteen minutes, his front tire went flat.
15. Joaquin repaired the tire _____ a short time.
16. Then, we continued riding _____our destination.
17. Tired and hungry, we arrived homeshortly _ _____sunset.
18. The sofa is _____the arm chair.
19. The clock is_____the mantelpiece.
20. The magazine is _____the table.
21. The painting is _____the fireplace.
22. There are lots of books _____ the bookcase.
23. The goldfish is_____the goldfish bowl.
24. We must finish this report _____ December 31 at the very latest.
25. Every morning, Mr. Johnson arrives the office___8 AM.
26. We never work_____Sundays.
27. Have another piece of cake. I madeit_you.
28. Astronomers study the planets _ _____ our solar system.
29. A galaxy is a system_____stars.
30. Would you like to live_____the moon?
31. The Chinese Wall can be seen _____ the moon.
32. A "light year" is the distance covered _____light travelling during one year.
33. Man first landed on the moon _____ 1969.
34. A crater is a hole_____the ground.
35. The workers went_____strike because they thought their wages were too low.
36. Although we had expected them totake a taxi, they came_____car.
37. _____today's newspaper it's stated that a new agreement will be signed _____those two countries soon.
38. I learned to ride a horse_____the age _____five.
39. Guess what? The favorite was beaten _____a very close race.
40. Will you please pick up a pizza _____ dinner_____your way home this evening?

READING COMPREHENSION

Important points to remember while answering the Reading Comprehensionsection

Reading comprehension is the ability to read text, process it and understand its meaning. An individual's ability to comprehend text is influenced by their traits and skills, one of which is the ability to make inferences. If word recognition is difficult, students use too much of their processing capacity to read individual words, which interferes with their abilityto comprehend what is read. There are a number of approaches to improve reading comprehension, including improving one's vocabulary and reading strategies.

The Reading Comprehension question type on the company tests or competitive exams requires you to read passages that are up to 150 - 250 words long (about 1/3rd to 2/3rd of apage) and answer a small number of questions about them. You are likely to see between 3and 5 reading passages, each with 3-4 questions each. In rare cases, a passage will have only 2 questions attached.

Passages may be about the physical or biological sciences, social science, the humanities(history, art, archaeology), or business topics, such as economic models, marketing strategies, or human resource theories.

Knowing some basic techniques on how to improve your reading comprehension can helpput your mind at ease when attempting the company tests and/or competitive examinations.

Read and Underline

This method can be used most effectively with a paper-driven test. With this method we useeither a colored highlighter or pen as you read. Now you now add color/underline to the critical information, and for some the words "pop" out for faster recognition.

Taking Notes

During the actual test, this method is not practical. But as a practice method for some it canbe helpful. As you read a passage, take brief notes. Refer to these notes as you answer the questions. The objective of this approach is to wean yourself off the notes, by taking fewer and fewer notes as your reading comprehension improves with practice.

Sub Vocalization – Hear the Words

Some people need to hear the words to improve their understanding of the passage they are reading. While reading out loud is neither practical, nor acceptable during a test - youcould read the passage to yourself in such a very low voice that no one can hear you. You

want to make sure during the test, no one can say that you were talking to "someone" oryou were disturbing them during the test.

Create a Mental Picture

As you read the passage, create a mental image or series of images of the words you are reading. By using your mind to engage in the passage - you may be able to get a better understanding of the questions being asked, and maybe able to "see" the answer in the passage provided. Care must be taken to limit you mental image to only what the passagesays and prevent your mind from wandering and adding unsupported facts.

When studying and preparing for your test, having some reading comprehension strategiesand tips is the best way to approach studying.

Knowing the basic types of questions is helpful, but if you understood the questions you hadto answer a few things would happen:

- If you knew the questions asked, you would scan the passage for key words that maylead you to the answer (the "In Front of You" type question).
- If you knew the questions asked, you could eliminate some of the descriptive descriptions and unnecessary words to help you seek out the answer from the passage(the "Think and Search" type question).
- If you knew the questions asked, you focus your attention towards the issues beingraised (the "You and The Author" type question).

When you get the test and are instructed to start the reading comprehension section, *you may want to read the questions first for each passage*, *and then read the passage*. By doingthis you can focus your attention to the areas that are related to each question. Another option is to skim read the passage, to gain a basic understanding of the material. Then readthe questions asked, and then re-read the passage for comprehension, knowing what is now being asked. This may allow you to better focus on the more important details.

Retention Tricks to be used during Reading Comprehension

No matter how slowly or quickly a person reads it is of little value if they don't comprehendand retain what they have read. How many times have you read a sentence and realized that your mind was blank so you had to read the same sentence over again. Worse, how many times have you paid attention to what you were reading and yet you still didn't feel like you were grasping what was being said? Here are a few secrets that will help you

- **Read with the Intent to Teach What You Have Learned**

It has been said that you really don't understand something unless you can teach it to someone else. If a person is reading material that they know they will need to teach to someone else, their focus greatly increases along with their comprehension and retention. Conversely, when people read without the belief that they will be called upon to share whatthey are reading with others, they often have a low interest level which results in low

comprehension. For this reason, one of the most effective methods of meaningful reading isto plan on teaching what you are reading to someone else.

- **Speed Reading Improves Comprehension**

Interestingly, people seem to have better comprehension when they speed read. This is because speed reading requires you to read in chunks instead of focusing on individual words. When you read in chunks it is easier to get a more complete and accurate picture ofwhat is being said. Hence, comprehension is improved.

- **Creating Good Mental Images**

Another secret to improving reading skills is to learn to create mental images based on whatyou read. Studies indicate that the better readers make a wide range of visual, auditory andother sensory images when they read. This enables them to become more emotionally involved when they read and the images, along with the information, is retained along with a greater comprehension of what they read.

- **Asking Questions along the Way**

Good readers tend to ask questions about what they are reading before, during and after the reading. This makes them much more engaged and involved in what they are reading.By being more engaged, they increase in comprehension and retention.

- **Identify the Most Significant Themes and Ideas**

If a person will actively look for the main ideas and themes in the content they are reading,their awareness arises and they are much more mentally alert. This enhances comprehension and it makes the reading process much more engaging. Retention is also made easier since a synopsis of what is being read is being made.

- **Continuously Increase Vocabulary**

Comprehension in reading is predicated upon having a wide understanding of words. It is wise to learn at least one new word per day. The greater a person's vocabulary, the bettertheir reading comprehension skills will be.

This is a great starting point, but you need to determine the correct answer to earn your marks for each question. Summarizing the strategies available for Reading Comprehension

1. **Three Step Method**
   - Preview
   - Reading
   - Review
2. **Skimming**
3. **Outlining**
   - Underlining
   - Note taking
4. **Phrasing (grouping words)**

5. **Getting the Main Idea**
6. **Reading the Questions first**
7. **Predicting Questions**
8. **Questioning the Author**
    - What is the author's purpose?
    - What is the author doing in this paragraph?
    - Why did the author put this information here?
    - What is being compared/contrasted here?
    - What alternatives does the author offer?
    - What is the author implying?
    - What is the author not telling you?
    - What is the author's tone?
9. **SQ3R Method (from Effective Study by Francis Robinson)**
    - Survey
    - Question
    - Read
    - Recite
    - Review

***Directions*:** In the given passages below, Read through the passage and choose ONE answer for each question

PASSAGE 1:

There's an old saying in the theatre world "Never work with children or animals". It's a pity that Herman Gross has never heard this piece of advice, or if he has, that he didn't pay attention to it. It's not so much that *Pet Doctor* is a bad film; although I can't really find many reasons for saying it's a good one. It's more that it makes me angry. Gross isa good actor. His appearance on the New York stage last winter in Shakespeare's Romeoand Juliet showed that he really can act. So what's he doing in this nonsense?

It's a story about a small town doctor who finds he's making more money by looking after the local children's pets than he is by looking after humans. Then he gets into trouble with the police, because he doesn't have the right sort of license to do this and, surprise, surprise, the children and their pets find a way to solve his problems. I won't say how, as it's the only part of the film that's even slightly original or amusing. If you have to see it, you'd be annoyed with me for telling you. But my advice is, when it comes to a cinema near you stay in and shampoo the cat.

Questions

1. What is the writer trying to do in the text?

a) Compare Herman Gross with another actor.
b) Give his or her opinion about using animal's films.
c) Give his or her opinion about *Pet Doctor.*

2. The text gives the reader

a) Information about a new film.
b) Ideas about how animals should be cared for.
c) News about the lives of film stars.

3. The writer thinks that *Pet Doctor* is...

a) Amusing.
b) Original.
c) Not worth seeing

4. Why did the writer mention *Romeo and Juliet*?

a) It's an example of a really good play.
b) Gross proved he's a good actor in it.
c) The central characters are very young.

5. Which one of these TV guides is describing *Pet Doctor*?

a) A doctor is loved by the children whose pets he cures. But everything goes wrongand he is sent to prison.

b) A doctor finds he can cure local animals, and then discovers this isn't allowed. But itall finishes happily.

c) A doctor prefers animals to humans and stops looking after his patients. People aredying, the animals are cured, then the police arrive ….

PASSAGE 2:

When I opened the first 'Body Shop' in 1976 my only object was to earn enough to feed my children. Today `The Body Shop' is an international company rapidly growing all around the world. In the years since we began I have learned a lot. Much of what I have learned will be found in this book, for I believe that we, as a company, have something worth saying about how to run a successful business without giving up what we really believe in.

It's not a normal business book, nor is it just about my life. The message is that to succeed in business you have to be different. Business can be fun, a business can be runwith love and it can do well. In business, as in life, I need to enjoy myself, to have a feeling of family and to feel excited by the unexpected. I have always wanted the people who work for 'The Body Shop' to feel the same way. Now this book sends these ideas of mine out into the world, makes them public. I'd like to think there are no limits to our 'family', no limits to what can be done. I find that an exciting thought. I hope you do,too.

Questions

6. What is the writer's main purpose in writing this text?

a) To tell the reader her life story.

b) To introduce her ideas to the reader.

c) To explain how international companies operate.

7. What would someone learn from this text?

a) How to make a lot of money.

b) How to write a book about business.

c) What the writer's book is about?

8. How does the writer feel about the business she runs?

a) She also runs it for her pleasure of doing business.

b) It is not like any other company.

c) It is likely to become even more successful.

9. What kinds of workers does the writer like to employ?

a) Workers who get on well with the public.

b) Workers who have the same attitude as she does.

c) Workers who have their own families.

10. What kind of person does the writer seem to be?

a) She seems to be someone with strong opinions.

b) She doesn't seem to be very confident.

c) She sees running a business as just a job.

PASSAGE 3:

This museum is in the center of the town, a few meters from the cathedral, and near the market. It contains dolls, dolls' houses, books, games and pastimes, mechanical and constructional toys. In this collection there are toys made by all sorts of toy manufacturers from the most important to the smallest, including the most ordinary toysand the most precious. There are also records of children's pastimes over the last

hundred and fifty years.

Most major manufacturing countries of Europe had toy industries in the last century; French and German factories produced millions of toys each year. Many collectors of toys think that the second half of the nineteenth century was the best period for toyproduction and the museum has many examples of toys from this period which are stillin perfect condition.
There is now a growing interest in the toys of the 1920s and 1930s and as a result ofthis the museum has begun to build up a collection from these years. Visitors to themuseum will find that someone is always available to answer questions - we hope youwill visit us. Hours of opening 10.00-17.30 every day (except December 25 and 26) **Questions**

11. This writing is from...

a) An advertisement.
b) A school history book.
c) A storybook.

12. What is the writer trying to do?

a) To scold.
b) To give opinions.
c) To give information.

13. The museum has so many toys from the late 19th century because...

a) It is located in the middle of town.
b) Many consider this period the best for manufactured toys.
c) Visitors are interested in toys from that time.

14. What period of toy manufacturing is receiving increased attention?

a) Every day except in December.
b) The 1920s and 1930s.
c) The 20th century.

PASSAGE 4:

Charlotte King made an once-in-a-lifetime visit to China last October and took lots of photographs. When she got back she decided to send away her films for printing one ata time. In this way she would more easily be able to match her photographs to the diary she had kept while she was there. It was a good thing that she did, because the first filmshe sent to the company for printing was lost. Miss King was very upset that she would never see her precious pictures of Shanghai and Suzhou.

The company offered her a free roll of film, but Miss King refused to accept this offer andwrote back to say that their offer wasn't enough. They then offered her £20 but she refused this too and asked for £75, which she thought, was quite fair. When the firm refused to pay she said she would go to court. Before the matter went to court, however,the firm decided to pay Miss King £75. This shows what can be done if you make the effort to complain to a firm or manufacturer and insist on getting fair treatment.

Questions

15. What is the writer trying to do?

a) To complain about photographic printing.

b) To give advice on how to complain.
c) To inform us about legal problems.

16. Before her visit, Charlotte had
a) Been to China once before.
b) Never been to China before.
c) Already been to China several times.

17. It was a good thing that Miss King sent her films away one at a time because...
a) Not all the films were lost.
b) She was offered a free roll of film.
c) She was able to complete her diary.

18. When Miss King said she would go to court, the company...
a) Offered her £20.
b) Said their offer wasn't enough.
c) Made the decision to pay £75.

SUBJECT VERB AGREEMENT

Important points to remember while answering the Subject Verb Agreementsection
Subject-verb agreement: the verb must agree with the subject in both person andnumber. Here are some things to watch out for.

SUBJECT-VERB SEPARATION
Problems often arise when something plural comes between a singular subject and its verb (or vice versa). This can occur in a number of different situations, for instance in sentences with subjects containing prepositional phrases, subjects containing relative clauses and subjects with appositives. For example,

- The deeply rooted desires of doom in the locked box tries to escape every now and then.
- Rewrite: The deeply rooted desires of doom in the locked box try to escape everynow and then.

INDEFINITE PRONOUNS AS SUBJECTS
Indefinite pronouns as subjects can cause more problems than just subject-verb separation. Most indefinite pronouns are singular (e.g. *another, anyone, anything, each, everybody, everything, much, no one, nothing, somebody, something*), but some (i.e. *all, any, more, most, none, some*) can be either singular or plural depending on the context. They can refer to either a single quantity (mass/uncountable noun) or a numberof individual units in a group (countable noun). Use your judgement to determine whether the indefinite pronoun refers to a countable or uncountable noun and decide whether the verb should be singular or plural.

- Only some of Jaguar Juice was drunk. (uncountable, singular)
- Only some of Cougar Cookies were missing. (countable, plural)

COLLECTIVE NOUNS AS SUBJECTS
Collective nouns are names of collections or groups that can be considered as individual units. Since most are countable nouns, they usually take a singular verb (unless pluralized, i.e. the army is coming this way vs. the armies are coming this way). That being said, a singular collective noun can take a plural verb if the writer is trying to emphasize the individual members of the group.

- The government is usually identified by its country and not its political leader.
- His family comes from Narnia. (singular)
- His family come from Narnia, Never land and Wonderland. (plural)
- Countable nouns that are considered an amount or measurement (e.g. weight,distance, time, money) are usually considered as singular subjects.
- If you can afford it, Rs750 is enough to buy both Boardwalk and Park Place.
- I think 34685.526 years is a long time to wait for a spouse, even if he is yourintergalactic soul mate.

Words such as *number, half* and *majority* are often considered collective nouns and canbe either singular or plural.

- A 52% majority isn't very comforting
- The majority are coming to Ridhima's pool party.

VERBS BETWEEN SINGULAR AND PLURAL NOUNS

The problem here arises with sentences that have a singular subject but plural predicate noun (or vice versa). Always remember that the verb agrees with the subject, no matter what may come later on in the sentence. Still, this can lead to an awkwardly worded sentence. You can avoid this by rewriting the sentence to make both the subject and predicate noun singular (or both plural), or by rewriting the sentence entirely. For example,

- Wrong: Dori's downfall were shiny objects.
- Correct: Dori's downfall was shiny objects.

COMPOUND SUBJECT WITH HOODWINKING CONNECTORS

Compound subjects with *and* are obviously plural and the corresponding verbs should agree accordingly (NOTE: On rare occasions when the two subjects identify the same person or thing or when both are thought of as a unit, the verb is singular, e.g. My dog and my best friend was there for me that day). However, phrasal connectives (e.g. *as well as*, *in addition to*, *together with*) are prepositional phrases, not conjunctions. Therefore a singular subject followed by a phrasal connective still calls for the singular form of the verb. Even though this is grammatically correct, it can still come off soundingawkward. To solve this, rewrite the sentence with *and*.

- Wrong: The chicken as well as the turkey were convinced they could fly if they triedhard enough.
- Correct: The chicken as well as the turkey was convinced they could fly if they triedhard enough.
- Revised: The chicken and the turkey were convinced they could fly if they tried hardenough.

TRICK: Prepositional phrases are posers; they don't actually make the subject plural.

SUBJECTS CONNECTED BY *OR*, *NOR*

The verb should always agree with the subject closest to it. For example:

- Wrong: Bert or Ernie have to call Elmo a.s.a.p.!
- Correct: Bert or Ernie has to call Elmo a.s.a.p.!
- Wrong: Neither his gossiping guppies nor his chastising chicken are worth the wait.
- Correct: Neither his gossiping guppies nor his chastising chicken is worth the wait.

SUBJECT AFTER VERB

This most commonly occurs with *there* and *here* constructions. The verb still has toagree with subject that follows the verb. Note that when compound singular nouns follow *here* or *there*, most writers use a singular verb (that only agrees with the first andclosest noun).

- Now there are too many people who believe vampires sparkle in the sun.
- Here come the pant isocratic polar bears.
- Over her face glides a small stream of sorrows.
- BUT here comes the superficial sock king and his associates.
- NOTE that *it* always takes a singular verb.
- It is problems like these that make him rethink his mad mustard methods.

RELATIVE PRONOUNS AS SUBJECTS

Relative pronouns (*who, which,* and *that*) can be either singular or plural depending ontheir antecedent and the verb must agree accordingly.

- His success was due to the lion's pride and perseverance, which havelasted throughout the years. (antecedent = pride and perseveranc
- Most issues with agreement in these cases stem from the use of phrases containing *one of the* **_ or** *one of those* _ that are followed by relative pronouns.
- She is one of the few princesses who like to play in the mud.
- Here the verb is plural because the pronoun *who* refers to princesses. This type of construction only takes a singular verb when *only* is placed before *one.* For example,
- He is the only one of those politicians who has a soul.
- TRICK: You can always rearrange the sentence to avoid this problem.
- Revised: Unlike most other princesses, she likes to play in the mud. Revised: He isthe only politician with a soul there.