1. Eight persons namely A, B, C, D, E, F, G and H sit around a circular table facing towards or away from the center. Each of them likes a different icecream flavor, one of the flavors being Strawberry.

The following is what we know about them.

Conditional statements

1. H’s neighbors face in same direction but opposite to that of H.
2. G sits third to the left of E who faces towards the center.
3. D’s spouse who likes Chocolate flavor sits third to the left of D.
4. C sits third to the right of a man and they face in the same direction.
5. B’s immediate neighbors face in same direction but opposite to that of B.
6. The woman who likes Vanilla flavor sits opposite to the man who likes Red Velvet.
7. A who likes Black Currant flavor sits second to the left of D and they face in the same direction.
8. The immediate neighbors of C like Vanilla and Mulberry flavors.
9. B and F sit together and none of them sits with A and D.
10. G’s spouse who likes Fruit n Nut flavor sits second to the left of G.
11. The immediate neighbors of H’s only sister who is neither C nor E are A and D.
12. B who likes Butter Scotch flavor is the only one whose both immediate neighbors are of opposite gender to B.

Questions

Question 1. How many persons face away from the center?

1. 6
2. 4
3. 5
4. 3

5. Cannot be determined

Question 2. How many men are there?

1. 3
2. 6
3. 5
4. 4
5. Cannot be determined

Question 3. Who likes Strawberry flavor?

1. G
2. E
3. F
4. H
5. Cannot be determined

Question 4. Who sits second to the left of C?

1. A woman
2. The one who likes Fruit n Nut
3. G
4. Both options 1 and 3
5. Options 1, 2 and 3

Question 5. Who sits opposite to the one who likes Mulberry?

1. The one who likes Strawberry
2. C
3. A
4. H
5. None of these

Question 6. Who among the following is an immediate neighbor of the one who likes Chocolate?

1. The one who likes Vanilla
2. E
3. The one who likes Red Velvet
4. C
5. None of these

ANSWER:

Question 1. How many people face away from the centre?
Answer 1. Option 4: 3.

Question 2. How many men are there?
Answer 2. Option 3: 5.

Question 3. Who likes Strawberry flavor?
Answer 3. Option 1: G.

Question 4. Who sits second to the left of C?
Answer 4. Option 4: Both options 1 and 3.

Question 5. Who sits opposite to the one who likes Mulberry?
Answer 5. Option 3: A.

Question 6. Who among the following is an immediate neighbor of the one who likes chocolate?
Answer 6. Option 3. The one who likes Red Velvet.

2. (Questions 1 to 5): Study the following information

carefully to answer the given questions

Seven people P, Q, R, S, T, U and V live on separate floors of a 7-floor building. Ground floor is numbered 1, first floor is numbered. 2 and so on until the topmost floor are numbered 7. Each one of

these is travelling to a different city, namely Delhi, Mumbai, Patna, Chennai, Kolkata, Bangalore and Lucknow but not necessarily in the same order. Only three people live above the floor on which P lives. Only one person lives

between P and the one travelling to Bangalore. U lives immediately below the one travelling to Mumbai. The one travelling to Mumbai lives on an even-numbered floor. Only three people live between the ones travelling to

Bangalore and Patna. T lives immediately above R. T is not travelling to Patna.

Only two people live between Q and the one travelling to Kolkata. The one travelling to Kolkata lives below the floor on which Q lives. The one travelling to Delhi does not live immediately above or immediately below Q. S

does not live immediately above or immediately below P. V does not travel to Chennai.

1).Which of the following is true with respect to V as per the given information'?

a) The one who lives immediately below V is travelling to Mumbai

b) V lives on floor no. 7

c) V lives immediately below T

d) V lives on the lowermost floor

e) V is travelling to Bangalore

2).Who among the following lives on floor no.3?

a) The one travelling to Chennai

b) The one travelling to Kolkata

c) R

d) V

e) T

3).Who lives on the floor immediately above T?

a) P

b) Q

c) S

d) V

e) U

4).To which of the following cities is S travelling?

a) Mumbai

b) Bangalore

c) Patna

d) Kolkata

e) Chennai

5).How many people live between the floors on which S and the one travelling to Mumbai live?

a) None

b) Two

c) One

d) More than three

e) Three

ANSWER:

FLOOR	PERSON	CITY
7	S	Chennai
6	Q	Patna
5	V	Lucknow
4	P	Mumbai
3	U	Kolkata
2	T	Bangalore
1	R	Delhi

3.

1.Six people named Gaurav, Anish, Kartik, Mohit, Mayank and Manav are married to six women named Charu, Kriti, Sugandh, Priya, Neha and Deepa, but not necessarily in the same order. They have different professions, viz. Doctor, Accountant, CA, Engineer, Businessman and Architect, but not necessarily in the same order. They like to play different sports, viz. Cricket, Football, Hockey, Basketball, Badminton and Tennis but not necessarily in the same order.
Kartik is CA but he was not married to Charu or Deepa. Gaurav is a Doctor and Mayank is an Engineer. However neither of them was married to Kriti or Priya. The woman whose husband is an Architect likes to play Cricket. Sugandh's husband likes to play Football, but he is not a Doctor. Charu and Neha's husbands like to play Cricket and Badminton and are CA and Architect but not necessarily following the above mentioned order. Mohit is not
an Accountant or an Architect and likes to play Tennis. Manav is married to Kriti and he likes to play Basketball.

4.

In a garden, benches were placed in a hexagonal pattern. Each bench could accommodate only one person . All the benches forming the edges of the hexagon are equidistant from each other. Six persons –Rahul, Rehan, Reham, Rihan, Rahim, Rohan come for a picnic to the garden and get themselves
seated on each chair of the hexagon for a photograph.

- **Rohan is in the middle of Rahul and Rihan**
- **Rahul is not adjacent to Rihan and Reham**
- **Rahim is not adjacent to Rehan and Rihan**
- **Rehan and Rihan are adjacent to each other**

Each of the six persons saw under their benches and found a gift bag containing six different things- chocolate, cake, Candy, Books, ice cream and cards.

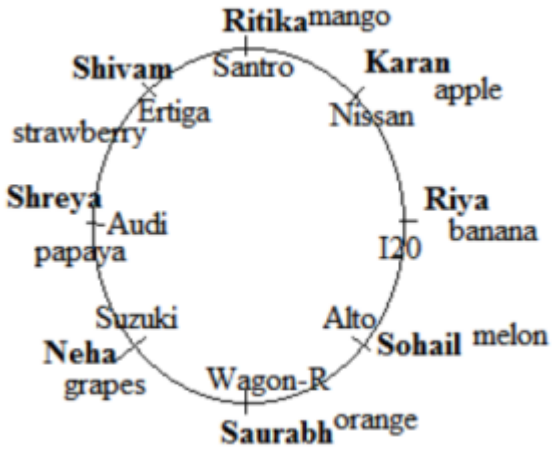
The person sitting between Rohan and Rahim got ice-cream.
The person facing Rohan got Cakes.
The person facing Rahul got books and the person facing Rihan got candy.

5.

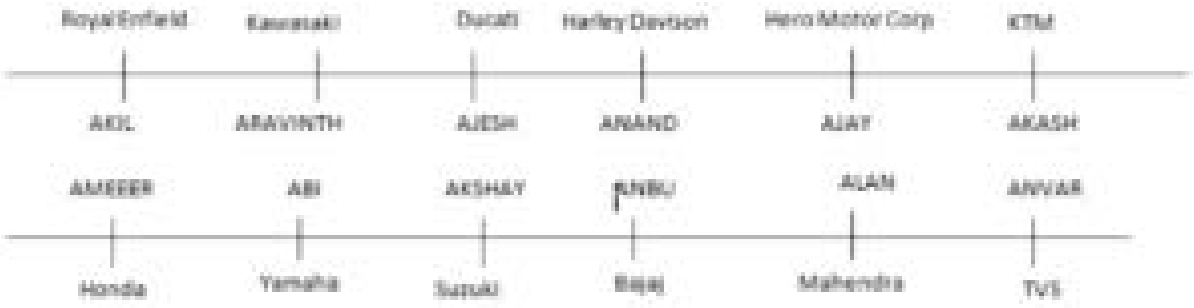
A family has five married couples and each one of them have one child. Ages of children are 2, 5, 7, 4 and 8 years whose names are A, B, C, D, and E but not necessarily in the same order
Male members are Gaurav, Ajay, Mukul, Sahil and Deepak and female members are Sheena, Radhika, Naina, Tiya and Priya but not necessarily in the same order.
(i) Name of Gaurav's child is not C or E and he is not eldest or youngest.
(ii) Naina's child is 7 years old and her husband is one among Ajay, Mukul and Deepak.
(iii) D is 2 years old but she is not a child of Mukul.
(iv) A's age is not a multiple of 2 and is not a child of Gaurav or Sheena.
(v) Radhika's husband is either Mukul or Deepak.
(vi) Priya's child is 5 years old but the name of the child is not B or E.
(vii) Mukul's wife name is Sheena.

ANSWERS:

3.


Ritika
mango
Shivam
Santro
Karan
apple
Ertiga
Nissan
strawberry
Shreya
Riya
Audi
banana
papaya
I20
Suzuki
Alto
Neha
Sohail
melon
grapes
Wagon-R
Saurabh
orange

4.


Royal Enfield
Kawasaki
Ducati
Harley Davison
Hero Motor Corp
KTM
ADIL
ARAVINTH
AJESH
ANAND
AJAY
AKASH
AMEER
ABI
AKSHAY
ALAN
ANVAR
Honda
Yamaha
Suzuki
Bajaj
Mahendra
TVS

5.

Days	Person	Price
Monday	D	Rs 600
Tuesday	E	Rs 400
Wednesday	G	Rs 1200
Thursday	C	Rs 1800
Friday	F	Rs 2700
Saturday	B	Rs 1500
Sunday	A	Rs 900

A took a voluntary retirement on February 1st, 2014 and received 10 lakhs as retirement benefits. As on that day he also had Rs 3 lakhs in the bank. Of the total amount he had, 60% was invested in the bank which gives an annual compounded interest of 15%, for three years. Of the remaining part, half was invested in shares, which appreciated by 15% in the first year, 6% in the second year and depreciated by 10% the next year. The remaining part was invested in real estate. The real estate values increased by 10% in the first year, reduced by 10% in the next year and remained steady in the third year.

1. What was the value (in rupees lakhs) of A's investment on February 1st, 2015?

A) 21 lakhs
B) 14.82 lakhs
C) 15.36 lakhs
D) 15.97 lakhs

Solution:

Total amount 1st February 2014 = 10 +3 = Rs 13 lakhs

Bank	Shares	Real estate
7.8 lakhs	2.6	2.6

For 1st year, the value in the bank will increase by 15%. So, the total value will be 1.15 times of previous value. Hence, value after 1 year in bank = 7.8*1.15 = 8.97

For the first year, share value increases by 15%. Hence, value after 1 year in shares = 2.6*1.5 = 2.99

Similarly, Value after 1 year in real estate = 2.6*1.1 = 2.86

Total value in 2015 = Rs 14.82 lakhs

2. What was the approximate value (kin rupees lakhs) of his investment on 1stFebruary 2017?

A) 16.21 lakhs
B) 16.82 lakhs
C) 17.286 lakhs
D) 17.87 lakhs

Solution:

Money in bank = $7.8*(1+0.5)^3$ = 7.8*1.52= 11.86 (use compound interest formula for three years)

For the first year, share value increases by 15%, for the second year it increases by 6% and for the third year it decreases by 10%. So, value of share at the end of three years is 2.6*1.1*1.06*0.9 = 2.852

Similarly, Value of real estate = 2.6*1.1*0.9 = 2.574
Total value = 17.286

3. In which year did the investment show the maximum increase?
A) First
B) Second
C) Third
D) Both (A) and (C)

Solution:

Value of investment on 1st February 2014 = 13 lakhs
Value of investment on 1st February 2015 = 14.82 lakhs
Value of investment on 1st February 2016 = 16.063
Value of investment on 1st February 2017 = 17.286
It is clearly seen that maximum %increase is in 2015.

Directions:(1-5) Study the following table and answer the questions based on it.

The total population of village satana is 3550, out of which 36% people are below poverty line. The total population of Satana is 11 ¼% less than the total population of amin, while there are 29% people in amin who lives below poverty line.

In Nilokheri the people living below poverty line are 40 more than that in amin which is 40% of the total population of this village. The average population of Gharaunda and Samalkha is equal to the average population of amin and Nilokheri, while the difference between their population is 1800 (Village Samalkha is more populated). 47% of the population of Gharaunda are below poverty line. Overall 46% of the population of all villages' together lives below poverty line

1What percent of population of Samalkha lives above poverty line? (Approximate)

A. 26%
B. 27%
C. 28%
D. 29%
E. 30%

2.Find the approximate average no. of people below poverty line in the given villages.

A. 1610
B. 1620
C. 1615

D. 1320

E. 1730

3.If 35% of the BPL population of Nilokheri are children, while 30% of the overall population of this village are children. Then what percent of population above poverty line are children?

A. 25%

B. 30%

C. 26 1/3 %

D. 26 2/3 %

E. None of these

4.What is the difference between total population of Nilokheri and that of Gharaunda?

A. 300

B. 200

C. 250

D. 400

E. None of these

5.If in the next year the total population of amin would increase by 20%, while BPL population would decrease by 25%, then what percent of population in next year would be below poverty line?

A. 18.125%

B. 18.325%

C. 18.225%

D. 18.525%

E. None of these

Directions:(6-10) Study the following data carefully to answer the questions that follow:

Gaurav, a sweet seller, bought some quantity of three types of sweets Rasgulla, Rasmalai and Kalakand in ratio of 6 : 10 : 9. Kalakand costed him a total of Rs. 18,900 at rate of 420 per kg. By selling Kalakand at a discount of 5% he earned a profit of 13 2/21% On Rasmalai (which was marked Rs. 500 per kg) he earned Rs. 5 less profit per kg as compared to that on Kalakand by selling Rasmalai at 10% discount. Gaurav spent a total of Rs. 46,400 on buying these sweets, while he earned a total profit of Rs. 5875 on selling all bought sweets. Rasgullas were marked 40% above cost price per kg.

6.What is the difference between the number of Accord cars sold by dealers D and E together and the number of City cars sold by dealers B and F together?

A. Rs. 365.8
B. Rs. 371.2
C. 420.5
D. 325.2
E. None of these

7.If Gaurav gave an extra discount of 20% on Kalakand, then his gain% or loss% was :

A. $9\frac{11}{21}\%$ profit

B. $8\frac{11}{21}\%$ loss

C. $10\frac{11}{23}\%$ loss

D. $9\frac{11}{21}\%$ loss

E. 9% loss

8.Find the total quantity of sweets bought by Gaurav ?

A. 135 kg

B. 126 kg

C. 125 kg

D. 120 kg

E. 130 kg

9. If 10kg of Rasmalai was wasted away due to some reason. Find profit% or loss% by selling the remaining Rasmalai as per given condition.

A. 10% loss

B. 10% gain

C. 12% loss

D. 15% loss

E. None of these

10.Cost price per kg of Kalakand was what percent less than marked price per kg of Kalakand ?

A. 18%

B. 16%

C. 15%

D. 12%

E. 20%

ANSWER:

1.

B. 27 %

Required percentage $= \frac{1187}{4400} \times 100 \approx 27\%$

	Satana	Amin	Nilokheri	Gharaunda	Samalkha
Total Population	3550	4000	3000	2600	4400
BPL	1278	1160	1200	1222	3213

2.

C. 1615

Required average $= \frac{8073}{5} \approx 1615$

	Satana	Amin	Nilokheri	Gharaunda	Samalkha
Total Population	3550	4000	3000	2600	4400
BPL	1278	1160	1200	1222	3213

3.

D. 26 2/3 %

Required percentage $= \frac{480}{1800} \times 100 = 26\frac{2}{3}\%$

	Satana	Amin	Nilokheri	Gharaunda	Samalkha
Total Population	3550	4000	3000	2600	4400
BPL	1278	1160	1200	1222	3213

4.

D. 400

Required difference =3000-2600=400

	Satana	Amin	Nilokheri	Gharaunda	Samalkha
Total Population	3550	4000	3000	2600	4400
BPL	1278	1160	1200	1222	3213

5.

A. 18.125%

$$\frac{0.75\times1160}{1.2\times4000}\times 100 = 18.125\%$$

	Satana	Amin	Nilokheri	Gharaunda	Samalkha
Total Population	3550	4000	3000	2600	4400
BPL	1278	1160	1200	1222	3213

6.

B. Rs. 371.2

Required average C.P. per kg

$$= \frac{46400}{125} = \text{Rs. } 371.2$$

Let the quantity of Rasgulla, Rasmalai and Kalakand be 6x, 10x and 9x respectively.

Total quantity of Kalakand $= \frac{18900}{420} = 45$ kg

$\therefore$ Total quantity of Rasgula $= 45\times\frac{6}{9} = 30$ kg

Total quantity of Rasmalai $= 45\times\frac{10}{9} = 50$ kg

Now, S.P. of Kalakand

$= \frac{100+\frac{275}{11}}{100}\times 420 = \text{Rs. } 475/\text{kg}$

$\therefore$ M. P. of Kalakand $= 475\times\frac{100}{95}$

$= \text{Rs. } 500/\text{kg}$

S. P. of Rasmalia $= \frac{90}{100}\times 500$

$= \text{Rs. } 450/\text{kg}$

C. P. of Rasgulla

$= \frac{[46400-(50\times 400)-(45\times 420)]}{30}$

$= \text{Rs. } 250/\text{kg}$

Profit per kg of Rasgulla

$= \frac{5875-(50\times 50)-(45\times 55)}{30}$

$= \text{Rs. } 30$

$\therefore$ S.P. per kg of Rasgulla = 250 + 30 = Rs. 280

And M.P. per kg of Rasgulla

$= \frac{140}{100}\times 250 = \text{Rs. } 350$

Sweets	Quantity (Kg)	C.P. (in Rs/kg)	M.P. (Rs./kg)	S.P. (Rs./kg)	Profit (Rs./kg)
Rasgulla	30	250	350	280	30
Rasmalai	50	400	500	450	50
Kalakand	45	420	500	475	55

7.

D. $9\frac{11}{21}\%$ loss

New S.P. $= \frac{80}{100}\times 475 = \text{Rs. } 380/\text{kg}$

$\therefore$ Loss% $= \frac{40}{420}\times 100 = 9\frac{11}{21}\%$

Let the quantity of Rasgulla, Rasmalai and Kalakand be 6x, 10x and 9x respectively.

Total quantity of Kalakand $= \frac{18900}{420} = 45$ kg

$\therefore$ Total quantity of Rasgula $= 45\times\frac{6}{9} = 30$ kg

Total quantity of Rasmalai $= 45\times\frac{10}{9} = 50$ kg

Now, S.P. of Kalakand

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And M.P. per kg of Rasgulla

$= \frac{140}{100}\times 250 = \text{Rs. } 350$

Sweets	Quantity (Kg)	C.P. (in Rs/kg)	M.P. (Rs./kg)	S.P. (Rs./kg)	Profit (Rs./kg)
Rasgulla	30	250	350	280	30
Rasmalai	50	400	500	450	50
Kalakand	45	420	500	475	55

8.

C. 125 kg

Total sweets bought = 30 + 50 + 45 = 125 kg

Let the quantity of Rasgulla, Rasmalai and Kalakand be 6x, 10x and 9x respectively.

Total quantity of Kalakand $= \frac{18900}{420} = 45$ kg

$\therefore$ Total quantity of Rasgula $= 45\times\frac{6}{9} = 30$ kg

Total quantity of Rasmalai $= 45\times\frac{10}{9} = 50$ kg

Now, S.P. of Kalakand

$= \frac{100+\frac{275}{11}}{100}\times 420 =$ Rs. 475/kg

$\therefore$ M. P. of Kalakand $= 475\times\frac{100}{95}$

= Rs. 500/kg

S. P. of Rasmalia $= \frac{90}{100}\times 500$

= Rs. 450/kg

C. P. of Rasgulla

$= \frac{[46400-(50\times 400)-(45\times 420)]}{30}$

= Rs. 250/kg

Profit per kg of Rasgulla

$= \frac{5875-(50\times 50)-(45\times 55)}{30}$

= Rs. 30

$\therefore$ S.P. per kg of Rasgulla = 250 + 30 = Rs. 280

And M.P. per kg of Rasgulla

$= \frac{140}{100}\times 250 =$ Rs. 350

Sweets	Quantity (Kg)	C.P. (in Rs/kg)	M.P. (Rs./kg)	S.P. (Rs./kg)	Profit (Rs./kg)
Rasgulla	30	250	350	280	30
Rasmalai	50	400	500	450	50
Kalakand	45	420	500	475	55

9.

A. 10 % loss

Total. C.P. = 50 × 400 = Rs. 20,000

Total S.P. = 40 × 450 = Rs. 18,000

$\therefore$ Required loss% $= \frac{2000}{20000}\times 100 = 10\%$

Let the quantity of Rasgulla, Rasmalai and Kalakand be 6x, 10x and 9x respectively.

Total quantity of Kalakand $= \frac{18900}{420} = 45$ kg

$\therefore$ Total quantity of Rasgula $= 45\times\frac{6}{9} = 30$ kg

Total quantity of Rasmalai $= 45\times\frac{10}{9} = 50$ kg

Now, S.P. of Kalakand

$= \frac{100+\frac{275}{11}}{100}\times 420 =$ Rs. 475/kg

$\therefore$ M. P. of Kalakand $= 475\times\frac{100}{95}$

= Rs. 500/kg

S. P. of Rasmalia $= \frac{90}{100}\times 500$

= Rs. 450/kg

C. P. of Rasgulla

$= \frac{[46400-(50\times 400)-(45\times 420)]}{30}$

= Rs. 250/kg

Profit per kg of Rasgulla

$= \frac{5875-(50\times 50)-(45\times 55)}{30}$

= Rs. 30

$\therefore$ S.P. per kg of Rasgulla = 250 + 30 = Rs. 280

And M.P. per kg of Rasgulla

$= \frac{140}{100}\times 250 =$ Rs. 350

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Rasgulla	30	250	350	280	30
Rasmalai	50	400	500	450	50
Kalakand	45	420	500	475	55

10.

B. 16 %

Required percentage $= \frac{80}{500}\times 100$

$= 16\%$

Let the quantity of Rasgulla, Rasmalai and Kalakand be 6x, 10x and 9x respectively.

Total quantity of Kalakand $= \frac{18900}{420} = 45$ kg

$\therefore$ Total quantity of Rasgula $= 45\times\frac{6}{9} = 30$ kg

Total quantity of Rasmalai $= 45\times\frac{10}{9} = 50$ kg

Now, S.P. of Kalakand

$= \frac{100+\frac{275}{11}}{100}\times 420 =$ Rs. 475/kg

$\therefore$ M. P. of Kalakand $= 475\times\frac{100}{95}$

= Rs. 500/kg

S. P. of Rasmalia $= \frac{90}{100}\times 500$

= Rs. 450/kg

C. P. of Rasgulla

$= \frac{[46400-(50\times 400)-(45\times 420)]}{30}$

= Rs. 250/kg

Profit per kg of Rasgulla

$= \frac{5875-(50\times 50)-(45\times 55)}{30}$

= Rs. 30

$\therefore$ S.P. per kg of Rasgulla = 250 + 30 = Rs. 280

And M.P. per kg of Rasgulla

$= \frac{140}{100}\times 250 =$ Rs. 350

Sweets	Quantity (Kg)	C.P. (in Rs/kg)	M.P. (Rs./kg)	S.P. (Rs./kg)	Profit (Rs./kg)
Rasgulla	30	250	350	280	30
Rasmalai	50	400	500	450	50
Kalakand	45	420	500	475	55

Directions (1-5): Each question below is followed by two statements A and B. You have to determine whether the data given in the statement is sufficient for answering the question. You should use the data and your knowledge of Mathematics to choose the best possible answer.

Give answer (a) if the statement **A alone** is sufficient to answer the question, but the statement B alone is not sufficient.
Give answer (b) if the statement **B alone** is sufficient to answer the question, but the statement A alone is not sufficient.
Give answer (c) if both statements **A and B together** are needed to answer the question.
Give answer (d) if either the statements **A alone or statement B alone** is sufficient to answer the question
Give answer (e) if you **cannot get** the answer from the statements **A and B together,** but need even more data.

Q1. Triangle ABC has angle BAC equal to 90°. What is the measure of the angle ABC?
A. The angle ACB is 35°.
B. The angle CBA is 55°.

Q2. X, Y and Z are three consecutive even numbers (not necessarily in this order). What is the sum of these numbers?
A. The difference between X and Z is 4.
B. One-third of Y is 14.

Q3. What is the salary of P, in a group of P, Q, R, S, T and U, whose average salary is Rs. 35,000?
A. Total of the salary of Q and S is Rs. 54000.
B. Total of the salary of T and U is Rs. 58000.

Q4. What is the rate p.c.p.a. on an amount of Rs. 6,000 deposited in a Bank?
A. The simple interest for four years is Rs. 3600.
B. The difference between the simple interest and compound interest is Rs. 894.0375.

Q5. What is the number?
A. 20% of that number is one fifth of that number.
B. 5/6th of that number is less than that number by 15.

Solutions (1-5):

S1. Ans.(d)
Sol.
From statement A
$\angle ABC = 180 - (\angle BAC + \angle ACB)$
$= 180 - (90 + 35) = 55°$
From statement B, $\angle ABC = 55°$

S2. Ans.(c)
Sol.
A. $x - z = 4 \; or \; z - x = 4$
B. $\frac{y}{3} = 14 \Rightarrow y = 42$
So, nos. are 40, 42, 44
So, both statements together are required to answer the question

S3. Ans.(e)
Sol.
$P + Q + R + S + T + U = 6 \times 35000 = 210000$
A. $Q + S = 54000$
B. $T + U = 58000$
$P + R = 210000 - (54000 + 58000)$
$= 210000 - 112000$
$= 98000$
We cannot find salary of P from given data

S4. Ans.(a)
Sol.
Principle = 6000
A. S.I. $= 3600$
T = 4 years
Rate $= \frac{3600 \times 100}{6000 \times 4} = 15\%$
B. CI − SI $= 894.0375$
So, we can find rate from statement A, but statement B is not sufficient.

S5. Ans.(b)
Sol.
A. Let no. is x
$x \times 20\% = \frac{x}{5}$
B. $\frac{5x}{6} = x - 15$
$\Rightarrow x = 90$
So, statement A is insufficient whereas statement B alone is sufficient to answer the question.

Directions (6-10): Each of the questions consists of a question followed by three statements. You have to study the questions and the statements and decide which of the statements(s) is/are necessary to answer the question.

Q6. What is the area of the hall?
I. Material cost of flooring per sq metre is Rs. 250
II. labour cost of flooring the hall is Rs. 3,500
III. Total cost of flooring the hall is Rs. 14,500
(a) I and II only
(b) II and III only
(c) All I, II and III
(d) Any two of the three
(e) None of these

Q7. What was the percentage of discount offered?
I. Profit earned by selling the article for Rs. 252 after giving discount was Rs. 52.
II. Had there been no discount the profit earned would have been Rs. 80
III. Had there been no discount the profit earned would have been 40%.
(a) I and II only
(b) II and either I or III only
(c) I and III only
(d) I and either II or III only
(e) None of these

Q8. What is the speed of the train?
I. The train crosses a signal pole in 13 sec.
II. The train crosses a platform of length 250 m in 27 seconds.
III. The train crosses another train running in the same direction in 32 seconds.
(a) I and II only
(b) I and III only
(c) II and III only
(d) Any two of the three
(e) None of these

Q9. What is the population of State 'A'?
I. After increasing the population of State A by 15% it becomes 1.61 lakhs
II. Ratio of population of State A to that of State B is 7 : 8 respectively
III. Population of State B is 1.6 lakhs
(a) I only
(b) II and III only
(c) I and II only
(d) Either only I or II and III
(e) All I, II and III

Q10. How many workers are required for completing the construction work in 10 days?
I. 20% of the work can be completed by 8 workers in 8 days
II. 20 workers can complete the work in 16 days
III. One eighth of the work can be completed by 8 workers in 5 days
(a) I and II only
(b) II and III only
(c) I only
(d) III only
(e) Any one of three

Solutions (6-10):

S6. Ans.(c)
Sol.
Let area = x m^2
Then,
250x + 3500 = 14500
By this equation, we can find x
So, all the three statements are required

S7. Ans.(d)
Sol.
I. S.P. = 252
Profit = 52
C.P. = 252 – 52 = 200
II. Profit = 80 (when no discount)
So, M.P = $200 + 80 = 280$
III. When discount = 0
Profit = 40%
Profit = $200 \times \frac{40}{100} = 80$
So, we can calculate M.P. and consequently discount percentage.
So, statement I with either II or III is necessary to answer the question

S8. Ans.(a)
Sol.
I. Time to cross a pole = 13 sec
$\frac{L_1}{S_1} = 13$
II. $\frac{L_2+P}{S_2} = 27 \Rightarrow \frac{L_2+250}{S_2} = 27$
III. $\frac{L_1+L_2}{S_1-S_2} = 32$
So, from above equations, we can see statement I & II are sufficient to find out speed of train.

S9. Ans.(d)
Sol.
I. $A \times \frac{115}{100} = 1.61$ lakh
II. $A : B = 7 : 8$
III. $B = 1.6$ lakh
So, we can see, population of A can be find out either only by statement I or statement II & III together.

S10. Ans.(e)
Sol.
I. $n \times 10 = 8 \times 8 \times 5$
II. $n \times 10 = 20 \times 16$
III. $n \times 10 = 8 \times 5 \times 8$
So, from any of the three statements, we can get the answer.

Directions (11-15): Given below are 3 statements with each question, you have to decide that which of the following statement/statements are necessary to answer the question.

Q11. X, Y and Z secured 45%, 50% and 60% marks respectively in Biology. W's marks in Biology is 12.5 more than X's marks and 4 less than Z's marks. Find out the individual marks of four students.
A. For the students total marks obtained for Biology is 311.5.
B. Total of W's and X's marks in Biology is 147.5.
C. Z has obtained 84 marks.
(a) A and B together
(b) Only C

(c) A and either B or C
(d) All together
(e) None of the above

Q12. At what time will a train reach Lucknow from Patna?
A. The train crosses another train of equal length of 97.5 m and running in opposite direction in 9 sec.
B. The train leaves Patna at 11:15 am for Lucknow, which is at a distance of 567 km.
C. The 97.50-m-long train crosses a signal pole in 5 sec.
(a) Only A
(b) B and C together
(c) A and C together
(d) All statements are required
(e) Only B

Q13. Find the height of an equilateral triangle.
A. Perimeter of the triangle is equal to the perimeter of the rectangle whose length and breadth are in the ratio of 5 :3.
B. Perimeter of a square is known, which is twice the perimeter of the triangle.
C. Area of the triangle is known.
(a) Any two of them
(b) Any of them
(c) Only C
(d) Either B or C alone
(e) A and either B or C

Q14. What is the value of a two–digit number?
A. The sum of the digits is 5.
B. The difference of the squares of the digits is 15.
C. The difference of their digits is 3.
(a) A and B together are sufficient
(b) B and C together are sufficient
(c) C and A together are sufficient
(d) Any one pair of A and B, B and C or C and A is sufficient
(e) Data inadequate

Q15. A boat takes 2 hours to travel from point A to B in still water. To find out its speed upstream, which of the following information is/are required?
A. Distance between point A and B.
B. Time taken to travel downstream from B to A.
C. Speed of the stream of water.
(a) All are required
(b) Any one pair of A and B, B and C or C and A is sufficient.
(c) Only A and B
(d) Only A and C
(e) None of these

Solutions (11-15):

S11. Ans.(e)
Sol.

$(60 - 45)\% = 12.5 + 4$

$100\% = \frac{16.5}{15} \times 100 = 110$
$x = 49.5, y = 55, z = 66, w = 62$
So none of the statements is required

S12. Ans.(b)
Sol.
St. A = relative speed of train

$= \frac{195}{9}$ m/s or 78 km/h

St. B = Distance = 567 km

St. C = Speed of train

$= \frac{97.5}{5} = 19.5$ m/s

The speed of the other train is not known so only B and C are the required Statements

S13. Ans.(d)
Sol. Let area of triangle = 163 sq.m. and perimeter of square = 48 m.
St. C — $\frac{\sqrt{3}}{4}a^2 = 163$, from here side of the equilateral triangle and height can be calculated.
St. B — Side of triangle

$= \frac{48}{3\times 2} = 8$

$h = \frac{\sqrt{3}}{2}a$

St. A — no conclusion
So, using either B or C alone we can find the height.

S14. Ans.(d)
Sol. From I, $x + y = 5$
From II $x^2 - y^2 = 15$
From III $x - y = 3$
So, number can be 41or 14
∴ Any one pair of statements A, B and C is sufficient to give the answer.

S15. Ans.(b)
Sol. Let distance = d
Speed in still water = x
Speed of current = y
$\therefore \frac{d}{x} = 2$
From A, d given
B, $\frac{d}{x+y}$ = given
C, y = given
∴ Any one pair of statements A, B and C is sufficient to give the answer.

1. **Nishu is standing on a railway bridge which is 180 m long. He finds that a train crosses the bridge in 20 seconds but himself in 8 seconds. Find the speed of the train?**
   A.35 kmph
   B.54 kmph
   C.62 kmph
   D.70 kmph
   E.None of these
2. **Two trains are running at 40 km/hr and 20 km/hr respectively in the same direction. Fast train completely passes a man sitting in the slower train in 5 seconds. What is the length of the fast train?**
   A.27 7/9 m
   B.28 m
   C.29 m
   D.30 2/7 m
   E.None of these
3. **Two train travel in opposite directions at 36 kmph and 45 kmph and a man sitting in slower train passes the faster train in 8 seconds. Then length of the faster train is:**
   A.120 m
   B.140 m
   C.160 m
   D.180 m
   E.None of these
4. **Two train travel in opposite directions at 36 kmph and 45 kmph and a man sitting in slower train passes the faster train in 8 seconds. Then length of the faster train is:**
   A.120 m
   B.140 m
   C.160 m
   D.180 m
   E.None of these
5. **Two trains are running in opposite directions with the same speed. If the length of each train is 120 metres and they cross each other in 12 seconds, then the speed of each train (in km/hr) is:**
   A.12 kmph
   B.24 kmph
   C.36 kmph

D.48 kmph
E.None of these

6. **Excluding stoppages, the speed of a bus is 54 kmph and including stoppages, it is 45 kmph. For how many minutes does the bus stop per hour?**
   A.10 min
   B.12 min
   C.18 min
   D.15 min
   E.None of these

7. **A motor car starts with the speed of 70 km/hr with its speed increasing every two hours by 10 kmph. In how many hours will it cover 345 kms?**
   A.4 hrs
   B.4 hrs 5 mins
   C.4 1/2 hrs
   D.2 hrs
   E.None of these

8. **A person travels from P to Q at a speed of 40 kmph and returns by increasing his speed by 50%. What is his average speed for the both the trips?**
   A.35 kmph
   B.4o kmph
   C.48 kmph
   D.55 kmph
   E.None of these

9. **Three trains are running from a place A to another place B. Their speeds are in the ratio of 4 : 3 : 5. The time ratio to reach B by trains will be**
   A. 4 : 3 : 5
   B. 5 : 3 : 4
   C. 15 : 9 : 20
   D. 15 : 20 : 12

10. **A man in a train notices that he can count 21 telephone posts in one minute. If they are known to be 50 meters apart, then at what speed is the train travelling?**
    A.50 kmph
    B.54 kmph
    C.60 kmph

D.62 kmph
E.None of these

11. **Two trains starting at the same time from two stations 200 km apart and going in opposite directions cross each other at a distance of 110 km from one of the stations. What is the ratio of their speeds?**
A.9 : 28
B.11 : 9
C.11 : 8
D.9 : 22
E.None of these

12. **A and B walk around a circular track. They start at 8 a.m. from the same point in the opposite directions. A and B walk at a speed of 2 rounds per hour and 3 rounds per hour respectively. How many times shall they cross each other before 9.30 a.m.?**
A.15
B.8
C.7
D.10
E.None of these

13. **The distance between two cities A and B is 330 km. A train starts from A at 8 a.m. and travels towards B at 60 km/hr. Another train starts from B at 9 a.m. and travels towards A at 75 km/hr. At what time do they meet?**
A.10:30 am
B.10:45 am
C.11 am
D.11:25 am
E.None of these

14. **The speed of a car increases by 2 kms after every one hour. If the distance travelled in the first one hour was 35 kms, what was the total distance traveled in 12 hours?**
A.456 kms
B.482 kms
C.552 kms
D.556 kms
E.None of these

15. **A thief is noticed by a policeman from a distance of 200 m. The thief starts running and the policeman chases him. The thief**

and the policeman run at the rate of 10 km and 11 km per hour respectively. What is the distance between them after 6 minutes?

A.100 m
B.150 m
C.190 m
D.200 m
E.None of these

ANSWERS :

1. **Answer – B (54 kmph)**
   Explanation – Let the length of the train be x metres.
   Then, the train covers x metres in 8 seconds (train is actually covering itself because length of man is very less compartable to train)and (x + 180) metres in 20 seconds.
   equate speed in both case,s=d/t
   ∴ x/8 =(x + 180) / 20 ⇔ 20x = 8(x + 180) ⇔ x = 120.
   ∴ Length of the train = 120 m.
   Speed of the train = [120/8]m/sec (convert to km/hr i.e x 18/5)
   =[120/8] x 18/5kmph = 54 kmph.

2. **A (27 7/9 m)**
   Explanation – When SAME direction- MINUS
   Relative speed = (40-20) km/hr = [20 x 5/18] m/sec = [50/9] m/sec.
   Length of faster train = sxt=[50/9 x 5] m = 250/9 m = 27 7/9 m.
3. **D (180 m)**
   Explanation – When OPP. direction-PLUS
   Relative speed = (36 + 45) km/hr
   = [81 x 5/18] m/sec = [45/2] m/sec.
   Length of train = [45/2 x 8] m = 180 m.
4. **A (12 sec)**
   Explanation – Speed of the first train = [120 / 10] m/sec = 12 m/sec.
   Speed of the second train = [120 / 15] m/sec = 8 m/sec.
   Relative speed = (12 + 8) = m/sec = 20 m/sec.
   ∴ Required time = (120 + 120) / 20 secc = 12 sec
5. **C (36 kmph)**
   Explanation – Let the speed of each train be x m/sec.

Then, relative speed of the two trains = 2x m/sec.
So, 2x = (120 + 120)/12 ⇔ 2x = 20 ⇔ x = 10.
∴ Speed of each train = 10 m/sec = [10 x 18/5] km/hr = 36 km/hr

6. **A (10 min)**
Explanation – Due to stoppages, it covers 9 km less.Time taken to cover 9 km = (9/54 x 60) min = 10 min

7. **C (4 1/2 hrs)**
Explanation – Distance covered in first 2 hours = (70 x 2) km = 140 km
Distance covered in next 2 hours = (80 x 2) km = 160 km
Remaining distance = 345 – (140 + 160) = 45 km.
Speed in the fifth hour = 90 km/hr
Time taken to cover 45 km = as speed is 90km/hr means it covers 90 km in 1 hour
so,if 90km……..1 hr
45km…….?
?=45/90hr=1/2hr
Total time taken = 2 + 2 +1/2=4 (1/2)hrs

8. **C (48 kmph)**
Explanation – Speed on return trip = 150% of 40 = 60 kmph
Average speed =
[2 x 40 x 60] / [40 + 6]km/hr =4800/100km/hr = 48 km/hr.

9. **D(15 : 20 : 12)**
Explanation: Ratio of speeds = 4 : 3 : 5
Therefore Ratio of times taken [t=d/s or t indirectly proportional to s when distance is same]= (1/4) : (1/3) : (1/5) = 15 : 20 : 12

10. **C (60 kmph)**
Explanation – Number of gaps between 21 telephone posts = 20
Distance traveled in 1 minute = (50 x 20) m = 1000 m = 1 km
Speed = 60 km/hr

11. **B (11 : 9)**
Explanation – In the same time, they cover 110 km and 90 km respectively.Ratio of their speeds = 110 : 90 = 11 : 9

12. **C (7)**
Explanation – Relative speed = (2 + 3) = 5 rounds per hourSo, they cross each other 5 times in an hour and 2 times in half an hourHence, they cross each other 7 times before 9.30 a.m.

13. **C (11 am)**
Explanation – Suppose they meet x hrs after 8 a.m.
Then, (Distance moved by first in x hrs) + [Distance moved by second in (x-1) hrs] = 330

60x + 75(x – 1) = 330
x = 3
So, they meet at (8 + 3), i.e. 11 a.m

14. **C (552 kms)**

Explanation – Total distance travelled in 12 hours = (35 + 37 + 39 + …… upto 12 terms) This is an A.P. with first term,
a = 35, number of terms, n = 12, common difference, d =2.
Required distance =12/2 (2 x 35 + (12 – 1) x 2) = 6(70 + 22) = 552 kms

15. **A(100m)**

Explanation:
Relative speed of the thief and policeman = (11 – 10) km/hr = 1 km/hr
Distance covered in 6 minutes =[(1/60)*6] km = (1/10)km = 100 m.
Distance between the thief and policeman = (200 – 100) m = 100 m.