CHALLENGE BOARD WORKOUT-MARCH

1. Tap 'A' can fill the tank completely in 6 hrs while tap 'B' can empty it by 12 hrs. By mistake, the person forgot to close the tap 'B', As a result, both the taps, remained open. After 4 hrs, the person realized the mistake and immediately closed the tap 'B'. In how much time now onwards, would the tank be full?

-posted by Swathi, Nov 8

Explanation:

Tap A can fill the tank completely in 6 hours
=> In 1 hour, Tap A can fill 1/6 of the tank
Tap B can empty the tank completely in 12 hours
=> In 1 hour, Tap B can empty 1/12 of the tank
i.e., In one hour, Tank A and B together can effectively fill $(1/6-1/12)= 1/12$ of the tank
=> In 4 hours, Tank A and B can effectively fill $1/12×4=1/3$ of the tank.
Time taken to fill the remaining $(1-1/3) =2/3$ of the tank = $(2/3)/(1/6)= (2/3)/ (1/6) = 4$ hours

2. Machine P can print one lakh books in 8 hours. Machine Q can print the same number of books in 10 hours while machine R can print the same in 12 hours. All the machines started printing at 9 A.M. Machine P is stopped at 11 A.M. and the remaining two machines complete work. Approximately at what time will the printing of one lakh books be completed?

-posted by Arun, Dec 28

Explanation :

Work done by P in 1 hour = 1/8
Work done by Q in 1 hour = 1/10
Work done by R in 1 hour = 1/12
Work done by P,Q and R in 1 hour = 1/8 + 1/10 + 1/12 = 37/120
Work done by Q and R in 1 hour = 1/10 + 1/12 = 22/120 = 11/60
From 9 am to 11 am, all the machines were operating.
Ie, they all operated for 2 hours and work completed = $2 × (37/120) = 37/60$

Pending work = 1- 37/60 = 23/60
Hours taken by Q an R to complete the pending work = (23/60) / (11/60) = 23/11
which is approximately equal to 2
Hence the work will be completed approximately 2 hours after 11 am ; ie around 1 pm.

3. Arun borrowed a certain sum from Manish at a certain rate of simple interest for 2 years. He lent this sum to Sunil at the same rate of interest compounded annually for the same period. At the end of two years, he received Rs. 2400 as compound interest but paid Rs. 2000 only as simple interest. Find the rate of interest.

-posted by Aarthi, Jan 25

Explanation: Let the sum be x
Simple interest on x for 2 years = Rs.2000
Simple interest = PRT/100 2000= x×R×2/100
⇒xR=100000--- (1)
Compound Interest on x for 2 years = 2400
P $(1+R/100)^T-P=2400$ $x(1+R/100)^2-x=$ 2400
$x(1+2R/100+R2/10000)-x$
$=2400$ $x(2R/100+R^2/10000)=2400$
2 $Xr/100+xR^2/10000=2400$--- (2)
Substituting the value of xR from (1) in (2) , we get
$2×100000/100+100000×R/10000=2400$
$2000+10R=2400$ $10R=400R=40\%$

4. A milk vendor has 2 cans of milk. The first contains 25% water and the rest milk. The second contains 50% water. How much milk should he mix from each of the containers so as to get 12 litres of milk such that the ratio of water to milk is 3 : 5?

-posted by Sathya, Nov 19

Let x and $(12-x)$ litres of milk be mixed from the first and second container respectively.
Amount of milk in x litres of the the first container =.75x=.75x
Amount of water in x litres of the the first container =.25x=.25x
Amount of milk in $(12-x)$ litres of the second container =.5(12-x)=.5(12-x)

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Amount of water in (12−x) litres of the second container =.5(12−x)=.5(12−x)

Ratio of water to milk

=[.25x+.5(12−x)]:[.75x+.5(12−x)]

=[.25x+.5(12−x)]:[.75x+.5(12−x)] =3:5

⇒(.25x+6−.5x)/(.75x+6−.5x)=3/5

⇒(6−.25x)/(.25x+6)=3/5

⇒30−1.25x=.75x+18 ⇒2x=12⇒x=6

Since x=6,

12−x=12−6=6

Hence 6 and 6 litres of milk should mixed from the first and second container respectively.

5. There is a group of persons each of whom can complete a piece of work in 16 days, when they are working individually. On the first day one person works, on the second day another person joins him, on the third day one more person joins them and this process continues till the work is completed. How many days are needed to complete the work?

-posted by Bazilakani, Aug 10

Work completed in 1st day = 1/16

Work completed in 2nd day

= (1/16) + (1/16) = 2/16

Work completed in 3rd day

= (1/16) + (1/16) + (1/16) = 3/16

Just for your reference, work done in 5 days = 15/16.

Pending work in 6th day

= 1 − 15/16

= 1/16.

In 6th day, 6 people are working and work done = 6/16.

To complete the work 1/16, time required

= (1/16) / (6/16) = 1/6 days.

Hence total time required = 5 + 1/6

= $5\frac{1}{6}$ days

Directions (Q.no. 6-10):

P , Q , R , S , T , U , V and W are sitting around a circular table facing center,but not necessarily in the same order.

The husband of V is second to the right of Q , who sits between two males.

T sits second to the left of the daughter of S.

T is sister of U , but is not the immediate neighbor of V's husband.

Only one person sits between P and T.

P is father of U.

S , who is brother of V sits on immediate left of his mother.

Only one person sits between V's mother and W.

Only one person sits between V and U.

U is mother of R and is not an immediate neighbor of W.

-posted by Yugesh, July 15

6. Which of the following statements is true with respect to the given seating arrangement?

A) Q is mother of V

B) No female is an immediate neighbor of S

C) V sits third to the left of her daughter.

D) R sits third to the right of T.

E) None of these

7. Who among the following sits on immediate left of R?

A) U's sister

B) P

C) T's maternal Grandmother

D) Can't be determined

E) None of these

8. Who among the following is daughter of S?

A) W   B) R

C) T   D) Can't be determined

E) None of these

9. What is the position of P with respect to his Grandson?

A) Third to the left

B) Immediate right

C) Third to the right

D) Second to the left

E) None of these

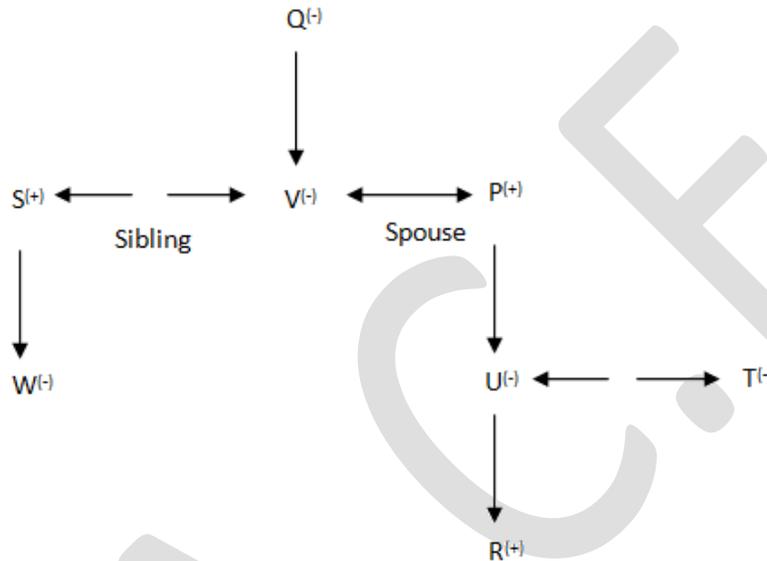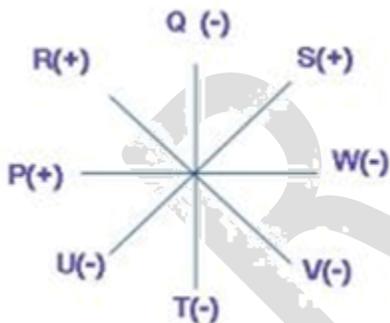10. How many persons sit between U and his Uncle?

A) Two   B) Four

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C) Three   D) One

E) None of these

Answers:

6. (a) 7. (c) 8. (a) 9. (b) 10. (c)

Solution:

D. 6 - 10

+ denotes Male

- denotes Female

11. In an examination two students get 36% and 39% of maximum marks and fails by 30 marks and 24 marks respectively. Find the pass percentage?

-posted by Deepthi, Feb 1

Ans: 51%

3% of the maximum mark = 6

⇒ maximum mark = 200

30 marks = $(30/200) \times 100 = 15\%$ of the maximum mark.

Therefore, required pass percentage

$= 36\% + 15\% = 51$

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12. A milkman adds 500 ml of water to each litre of milk he has in a container. He sells 30 litre of mixture from container and adds 10 litre milk in the remaining. The ratio of milk and water in the final mixture is 11:5. Find the initial quantity of milk in the container ?

-posted by Ramya, Feb 1
Solution

Initially, milk:water =2:1=10:5
finally, milk:water =11:5
i.e., 11−10=1 unit =10 litre
15 units ⟹150 litre
Total quantity before selling 30 litre
=150+30=180 litre
Initial quantity of milk in the container =180×2/3=120 litre

13. A circular road runs round a circular ground. If the difference between the circumferences of the outer circle and inner circle is 66 metres, the width of the road is:

-posted by Nandhini, Feb 8
Solution

2π(R-r)=66 => 2*22/7 * (R-r)=66
Therefore, (R-r)= (66*7/44)= 10.5m

14. A man bought 5 horses and 7 cows of Rs.5850. He gains 10% on selling horses and 16% on selling the cows. If his whole gain is Rs.711, then find the cost price of each horse and each cow.

-posted by Charan kumar, March 15
Solution

Let cost price of each horse =h
cost price of each cow =c
5h+7c=5850 ···(1)
5h×10/100+7c×16/100=711⟹h/2+28c/25=711
⟹25h+56c=35550 ···(2)
Solving (1) and (2) yields
c=300 and h=750

15. If a sum of money triples itself in 40 years at simple interest, what is the rate of interest?

-posted by Prasanna, March 8
Solution

Let the sum of money be Rs.x
After 40 years, this becomes 3x
Simple Interest = 3x − x=2x
Simple Interest = PRN/100
2x=x×R×40/100
2=R×40/100
200=40R
R=5%

Directions (Ques16-20): Study the following information carefully and answer the questions given below.

There are Seven Lecturers – A, B, C, D, E, F and G taught seven subjects, viz., Maths, Zoology, Botany, Chemistry, Physics, English and Statistics on one day in a week starting from Monday and ending on Sunday (of the same week). There will be separate timings for each lecture.

Note: Total hours taken by all the lecturers = 18 hours. The minimum and maximum timing of any lecture will be one hour and five hours respectively. There are two pairs of timings that can be followed by four lecturers.

• Chemistry is taught on Thursday. English is neither taught on Tuesday nor on Saturday. The Botany professor gave lecture immediately after the lecturer A. B is not a Chemistry Professor.

• Maths is taught for one hour. The Professor B gave his lecture on one of the days before Friday. Either the professor E or the professor F not gave his lecture on Sunday. Professor F gave his lecture immediately after E. Lecturer A spent more time than Lecturer C.

• Time taken by lecturer C is the sum of time taken by the lecturers B and F. Subjects Maths & Zoology are taught for same duration. The lecturer who took maximum time is immediately preceded by the person who took less than one hour of maximum time.

• The difference between the subjects taught on Friday and Sunday is equalled to the time taken by the lecturer A. Professor who gave maths

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lecture immediately preceded and followed by C and G respectively.

• Professor who gave lecture on Sunday spent less than three hours. Only one lecture is held between Chemistry and Botany. Zoology is taught after two days of maths lecture. Statistics is neither taught on Monday nor Sunday.

• Botany is not taught on the immediate next day on which Zoology is taught. Physics is taught on Monday.

-posted by Mahalakshmi, Sep 28

16. Which of the following Subject is taught by A ?

(a) Statistics   (b) Chemistry
(c) Zoology   (d) Physics
(e) English

17. Which of the following combinations is True with respect to the given arrangement?

(a) Maths – Tuesday
(b) Chemistry – Friday
(c) Zoology – Wednesday
(d) Physics – Friday
(e) English – Sunday

18. If all the persons are made to arrange in alphabetical order from Monday to Sunday, positions of how many persons will remain unchanged?

(a) Four   (b) None   (c) Two
(d) One   (e) Three

19. Professor D gave lecture for how many hours?

(a) One hour   (b) Two hours
(c) None of the given options is true.
(d) Three hours   (e) Four hours

20. Who among the following gave lecture immediately after F?

(a) B   (b) E   (c) A
(d) D   (e) F

Solution

Days	Subjects	Lecturers	Hours
Monday	Physics	A	3
Tuesday	Botany	C	2
Wednesday	Maths	B	1
Thursday	Chemistry	G	4
Friday	Statistics	E	5
Saturday	Zoology	F	1
Sunday	English	D	2

Answer :
16. D   17. E   18. E   19. B   20. D

21-25: A word and number arrangement machine, when given an input line of words and numbers, rearranges them following a particular rule. The following is an illustration of input and rearrangement.

Input: 96 voluntary supper 17 42 imprint brag until 61 30 shade 68 99 aerial

Step I: until 99 96 voluntary supper 17 42 imprint brag 61 30 shade 68 aerial

Step II: until 99 imprint 61 96 voluntary supper 17 42 brag 30 shade 68 aerial

Step III: until 99 imprint 61 aerial 17 96 voluntary supper 42 brag 30 shade 68

Step IV: until 99 imprint 61 aerial 17 brag 30 96 voluntary supper 42 shade 68

Step V: until 99 imprint 61 aerial 17 brag 30 shade 42 96 voluntary supper 68

Step VI: until 99 imprint 61 aerial 17 brag 30 shade 42 supper 68 96 voluntary

Step VII: until 99 imprint 61 aerial 17 brag 30 shade 42 supper 68 voluntary 96

Step VII is the last step of the above input.

As per the rules followed in the above steps, find out in each of the following questions the appropriate step for the input given below.

Input: 31 ovation veil 12 24 again embark fabric 61 40 vendor 89

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-posted by Rajesh, March 8B

21. Which of the following will be Step V of the rearrangement?

(a) ovation 89 embark 61 31 again fabric 12 veil 24 vendor 40

(b) ovation 89 embark 61 again 31 fabric 12 veil 24 40 vendor

(c) ovation 89 61 embark again 31 12 fabric veil 24 40 vendor

(d) ovation 89 embark 61 again 31 fabric 12 veil 24 vendor 40

(e) None of these

22. What is the position of 'fabric' in Step IV?

(a) Seventh from the right

(b) Seventh from the left

(c) Sixth from the left

(d) Fifth from the right

(e) None of these

23. Which of the following is third to the left of the one that is eighth from the left end in Step III?

(a) veil   (b) 12 (c) again

(d) 31   (e) None of these

24. Which of the following will be the last step but one?

(a) III   (b) IV   (c) V

(d) Can't be determined

(e) None of these

25. If 'ovation' is related to '61' and 'again' is related to 'vendor', '24' is related to which of the following in Step II?

(a) 40   (b) veil   (c) 31

(d) again   (e) None of these

Answer Key:

21. (d) 22. (b) 23. (c) 24. (b) 25. (a)

Explanation:

The machine rearranges one word and one number in each step. As for words, the ones starting with a vowel are rearranged first in reverse alphabetical order. When this is done, the ones starting with a consonant are rearranged in alphabetical order. As for numbers, the odd numbers one rearranged first in descending order and then the even numbers in ascending order.

Input:

31 ovation veil 12 24 again embark fabric 61 40 vendor 89

Step I: ovation 89 31 veil 12 24 again embark fabric 61 40 vendor

Step II: ovation 89 embark 61 31 veil 12 24 again fabric 40 vendor

Step III: ovation 89 embark 61 again 31 veil 12 24 fabric 40 vendor

Step IV: ovation 89 embark 61 again 31 fabric 12 veil 24 40 vendor

Step V: ovation 89 embark 61 again 31 fabric 12 veil 24 vendor 40

26-30: PK, SP, RJ, MP, DK, SK and AK are seven shopkeepers of different shops, viz Grocery, Cosmetics, Clothes, Footwear, Gift items, Watches and Mobile phones. They go to supermarkets, viz. Big Bazaar, Max, Reliance Trends and EasyDay only on Sunday but not necessarily in the same order. At least one shopkeeper goes to one supermarket, but no super market is visited by more than two shopkeepers.

SK, who is a shopkeeper of Clothes, goes alone to Reliance Trends.

The one who is a shopkeeper of Footwear does not go to Big Bazaar. Also, he never goes either with DK or with AK.

MP goes to EasyDay with the person who is the shopkeeper of Mobile phones.

RJ goes to Max. AK is not a shopkeeper of Mobile phones.

The one who is the shopkeeper of Footwear goes to the market with the person who is the shopkeeper of Grocery.

The one who is the shopkeeper of Gift items goes to EasyDay.

PK is a shopkeeper of neither Cosmetics nor Mobile phones.

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The one who is the shopkeeper of Watches goes to Big Bazaar neither with DK nor with MP.

The person who is the shopkeeper of Cosmetics goes to the supermarket with PK.

-posted by Hariharan, Jan 4

26. PK goes which of the following supermarkets?

(a) EasyDay   (b) Max
(c) Big Bazaar   (d) Reliance Trends
(e) None of these

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

I. MP is a shopkeeper of Mobile phones and goes to EasyDay.

II. RJ is a shopkeeper of Footwear and goes to Big Bazaar.

(a) Both I and II   (b) Neither I nor II
(c) Either I or II   (d) Only I
(e) Only II

28. Who among the following is shopkeeper of Gift items?

(a) SP   (b) MP (c) SK
(d) PK   (e) None of these

29. Which of the following statements is definitely incorrect?

(a) RJ is a shopkeeper of Footwear.
(b) DK is a shopkeeper of Mobile phones.
(c) AK is shopkeeper of Grocery.
(d) All are incorrect
(e) None of these

30. Big Bazaar is visited by which of the following person(s)?

(a) AK and DK   (b) Only MP
(c) PK and SP   (d) Only SK
(e) None of these

Answer Key:
26. (c) 27. (a) 28. (b) 29. (c) 30. (e)

Explanation :

Shopkeeper	Super market	shop
PK	Big Bazar	Watch
SP	Max	Grocery/Footwear
RJ	Max	Grocery/Footwear
MP	Easy day	Gift Items
DK	Easy day	Mobile phones
SK	Reliance Trends	clothes
AK	Big Bazar	cosmetics

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