TCS SET 4

1. **Mother, daughter and infant total weight is 74 kg. Mother's weight is 46 kg more than daughter and infant's weight. Infant's weight is 60% less than daughter's weight. Find daughter's weight?**

   a. 10

   b. 9

   c. 8

   d. 7

   Answer: a. 10

   Explanation: Total Age is M+D+I=74
   given that M-D-I=46
   solving above 2 eq's we get Mother age = 60
   now remaining age=14 which is sum of daughter and Infant age.
   Given that Infant age is 60% less than Daughter. i.e. If daughter age is 100 then infant age is 40.
   So ages ratio of D and I is 100: 40 i.e. ... 5 : 2
   So (5+2)=7 parts equal to 14, then 5 parts equal to 10. 2 parts equal to 4, daughter age is =10 and infant age is = 4

2. **A vessel is filled with liquid, 3 parts of which are water and 5 parts of syrup. How much of the mixture must be drawn off and replaced with water so that the mixture may be half water and half syrup?**

   a. 1/5

   b. 1/6

   c. 1/8

   d. 1/4

Answer: a. 1/5

Explanation: Suppose the vessel initially contains 8 liters of liquid.

Let x liters of this liquid be replaced with water.
Quantity of water in new mixture = (3−3x8+x) liters.

Quantity of syrup in new mixture = (5−5x8) liters.
(3−3x8+x) = (5−5x8)
=> 5x + 24 = 40 - 5x
=> 10x = 16 => x = 8/5
So, part of the mixture replaced = (85×18) = 1/5.

3. **There is a circle which circumscribes three unit circles which are tangential to each other. What is the circumference of bigger circle?**

a. pi(6+2sqrt3)/sqrt3

b. pi(3+2sqrt3)/sqrt3

c. pi(2+2sqrt3)/sqrt3

d. pi(4+2sqrt3)/sqrt3

Answer: d. pi(4+2sqrt3)/sqrt3

Explanation: Just draw according to question,
now, join the center of the smaller circles.
radius of bigger circle = 1+ radius of circle circumscribing the equilateral triangle.
Hence radius of bigger circle = 2/root 3 + 1
Hence circumference = 2* pie * R
i.e. pi(4+2sqrt3)/sqrt3

4. **Find wrong number in series: 2, 3, 6, 0, 8, -3, 14, -6**

a. 3

b. 6

c. -6

d. 0

Answer: c. -6

Explanation: two alternate series:
2+4 =6,
3-3 =0

6+4 =10,
0-3 =-3
10+4 =14
-3-3 =-6

5. **Average salary of 17 teachers is 45000.3 teachers left and the average salary dropped by 2500.What is the sum of salaries of 3 teachers who left?**

   a. 173000

   b. 170000

   c. 176000

   d. 85000

   Answer: b. 170000

   Explanation: - Total Initial Salary: 17*45000 = 765000
   Average Salary After removal of 3 Teachers = 45000-2500 = 42500
   Total Final Salary : 14*42500 = 595000
   Sum of Salaries of 3 teachers who left : 765000 - 595000 = 170000

6. **A series of book was published at seven year intervals. When the seventh book was published the total sum of publication year was 13, 524. First book was published in?**

   a. 1911

   b. 1910

   c. 2002

   d. 1932

   Answer: a. 1911

   Explanation: Let the years be n, n+7, n+14, ..., n+42.
   (∵ use formula Tn=a+(n−1)d to
   find nth term)
   Sum = Sn=n/2(2a+(n−1)d)
   = 7/2(2n+(7−1)7) = 13,524
   7n+147=13,524
   ⇒ n = 1911

7. **Which of the following numbers must be added to 5678 to give a reminder 35 when divided by 460?**

a. 955

b. 618

c. 980

d. 797

Explanation: 5678/460 gives 158 as remainder
5678-158 = 5520 which is divisible by 460 completely
and we can add multiples of 420 to 5520 so it remains divisible by 460 without a remainder
Since all options given are greater than 460,So we add 920 to 5520 which means we add (920-158) to 5678 = 762
we need 35 remainder , therefore 762+35= 797 ans.

8. **If f(1) = 4, f(x+y) = f(x) + f(y) + 7xy + 2 for x>0 and y>0, find f(2) + f(5).**

a. 165

b. 189

c. 115

d. 170

Answer: c. 115

Explanation: F(x+y)=f(x)+f(y)+7xy+2
so
f(1+1)=f(1)+f(1)+7*1*1+2
=4+4+7+2
=17
f(2)=17
f(2+2)=f(2)+f(2)+7*2*2+2
=17+17+28+2
=64
f(4)=64
f(4+1)=f(4)+f(1)+7*4*1+2
=64+4+28+2
=98
f(5)=98
now
f(2)+f(5)= 17+98
=115

9. **Two vertical ladders length of 6 m and 11 m are kept vertically at a distance of 12 m. Find the top distance of both ladders?**

a. 13

b. 24

c. 12

d. 18

Answer: a. 13

Explanation: So distance between the top points = AD = √12^2+5^2=13. So in paper B he did well.

10. **HCF of 2472, 1284 and a third number 'n' is 12. If their LCM is 8*9*5*103*107, then the number 'n' is**

a. 2^2* 3^2*7^1

b. 2^2*3^2*8103

c. None of the above

d. 2^2*3^2*5^1

Answer: d. 2^2*3^2*5^1

Explanation: 2472 = 2^3×3×103
1284 = 2^2×3×107
HCF = 2^2×3
LCM = 2^3×3^2×5×103×107
HCF of the numbers is the
highest number
which divides all the numbers.
So N should be a multiple of 2^2×3
LCM is the largest number
that is divided by the given numbers.
As LCM contains 3^2×5 these two
are from N.
So N = 2^2×3^2×5

11. **There are 10 points on a straight line AB and 8 on another straight line AC none of them being point A. how many triangles can be formed with these points as vertices?**

a. 680

b. 720

c. 816

d. 640

Answer: d. 640

Explanation: To form a triangle we need 3 points
select 2 points from the 10 points of line AB & 1 from the 8 on AC
= (10C2)*(8C1)
select 2 points from the 8 points of line AC & 1 from the 10 on AB=
(8C2)*(10C1)
total no. of triangles = (10C2)*(8C1)+ (8C2)*(10C1) = 640

12. **A merchant buys 20kg of wheat at 30rs/kg and 40k at 25rs/kg. He mixes and sells 1/3 rd of mixture at 26rs/kg. Price at which merchant should sell the remaining mixture so that a profit of 25% on whole outlay is?**

    a. Rs. 30

    b. Rs. 40

    c. Rs. 360

    d. Rs. 37

    Answer: d. 37

    Explanation: CP of total mixture=(20*30)+(25*40)=1600rs
    as he needs 25% profit, so he needs to earn 1600+(1600*(25/100))=2000rs.
    he has already got Rs by selling 1/3 part=1/3 of 60 kg..=20 kg
    =20*26=520rs..
    now he needs 2000-520=1480rs.
    so he must sell remaining 40 kg at=1480/40=37rs/kg

13. **An organization has 3 committees, only 2 persons are members of all 3 committee but every pair of committee has 3 members in common. what is the least possible number of members on any one committee?**

    a. BACD

    b. ABCD

    c. DACB

    d. ACDB

    Answer: d. ABCD

    Explanation: Total 4 members minimum required to serve only on one committee.

The least possible no of member of members on any one committee = 4

In all 3 committees, say X,Y,Z, 2 persons say A and B are common.
C is common between X and Y.
D is common between Y and Z.
E is common between X and Z.

so X committee has ABCE. Y committee has ABCD. Z committee has ABCD

14. The letters in the word "PLACES" are permuted in all possible ways and arranged in the alphabetical order. Find the word at 48 position.

a. ALSCEP

b. AESPLC

c. ALCEPS

d. AESPCL

Answer: b. AESPLC

Explanation: The letters in the word \"places\" are permuted in all possible ways and arranged in the alphabetical order.

total permutations= 6! = 720

720/6 = 120 words,
first 120 will start with letter a. So 48th letter will start with a.

So FIRST LETTER IS A.

if we keep a in first place, we will have 5! permutations with c,e,l,p and s.

5!/5 = 120/5 = 24 words.
First 24 words(0-24) will be with first two letters as AC
Next 24 words(25-48) will be with first two letters as AE.
So 48th word has first two letters as AE.
48th letter is the last word with first two letters as AE.

So rest of the letters of the word will be arranged from last to first: S-P-L-C

So 48th word is AESPLC

15. Three generous friends, each with some money, redistribute the money as follows: Sandra gives enough money to David and Mary to double the amount of money each has.

David then gives enough to Sandra and Mary to double their amounts. Finally, Mary gives enough to Sandra and David to double their amounts. If Mary had 11 rupees at the beginning and 17 rupees at the end, what is the total amount that all three friends have?

a. 105

b. 60

c. 88

d. 71

Answer: d. 71

Explanation: let sandra, david and mary each has s, d and 11(given) respectively.
After first distribution
David has d+d=2d, marry has 11+11=22 and sandra has s-d-11.
After second distribution,
sandra has 2*(s-d-11) , mary has 2*22=44 and david has 2d-(s-d-11)-22=3d-s-11.
After third distribution,
sandra has 2*2(s-d-11), david has 2*(3d-s-11) and mary has
44-2(s-d-11)-(3d-s-11)=77-s-d
It is given that finally Mary has 17 rs. So,
77-s-d=17
=>s+d=60
=> s+d+11(Mary\'s money)=60+11=71.

16. **The ratio of radii of cylinder to that of cone is 1:2. Heights are qual. Find ratio of their volume**

a. 1:2

b. 2:3

c. 3:4

d. 5:6

Answer: c. 3:4

Explanation: let, the radius of the cylinder is r
The radius of the cone is 2r
The volume of the cylinder is n(pi)r^2 h
The volume of the cone is 1/3 n(pi)r^2 h & according to the condition, volume will be 1/3 n(pi)(2r)^2
as the heights are equal so,
[n(pi)r^2 h] / [1/3 n(pi)(2r)^2 h]= 3:4

17. **Raj divided 50 into two parts such that the sum of their reciprocal is 1/12 ,we get the parts as**

a. 28,22

b. 24,36

c. 36,14

d. 20,30

Answer: d. 20,30

Explanation: the answer is 20,30
50 divided into two parts ,d parts r x,50-x
1/x+1/(50-x)=1/12
solving we get x=20,30

18. **In a group of five families, every family is expected to have a certain number of children, such that the number of children forms and arithmetic progression with a common difference of one, starting with two children in the first family. Despite the objection of their parents, every child in a family has as many pets to look after as the number of off springs in the family. What is the total number of pets in the entire group of five families?**

a. 99

b. 9

c. 55

d. 90

Answer: d. 90

Explanation: As the number of children are in arithmetic progression starting with 2,
the five families have 2, 3, 4, 5, 6 kids respectively.
As each child has kept the pets
equal to the number of kids in the
family, each family has n2 pets.
So total = 22+32+42 +52 +62 = 90

19. **Megha drives along the perimeter of square field of side 10kms. She drives along the first side at 10kmph.along second side 20 kmph along 3rd side 30kmph and along the fourth side at 40 kmph. Her average speed is?**

a. 19.2 kmph

b. 18 kmph

c. 30 kmph

d. 20 kmph

Answer: a. 19.2 kmph

Explanation: Average speed: total distance/total time
Total distance=10*4=40 km
total time =10/40 + 10/20 + 10/30 + 10/40
So, Average Speed = 19.2 Km/h

20. A completes 80% of a work in 20 days. Then B also joins and A and B together finish the remaining work in 3 days. How long does it need for B if he alone completes the work?

a. 25

b. 45

c. 37.5

d. None of the above

Answer: c. 37.5

Explanation: let total work is 100 unit.
A can do 80 unit in 20 days ....so he can do 4 unit in 1 days.
now A has finished 80 units so remaining work is 20 unit
so, 20 unit work takes 3 days' time to complete in which A will do 12 unit
(since A do 4 unit/days)
thus ,B do 8 unit in 3 days
and total work is 100 unit
so B will take (3/8)*100 = 37.5 days to complete total
work

21. It takes 52 days to complete an agreement deal by a certain number of men. After 17 days, 300 men are added and 21 days are reduced. How many men were working initially?

a. 250

b. 200

c. 150

d. 170

Answer: b. 200

Explanation: Let x no people works initially.
So the left work after 17 days can be done by x people is in 35, but the same work can be done by x+300 is in 35-21=14 days.
so, 35*(x/(x+300))=14
x=200.
initially 200 people worked

22. **8+88+888+.....+8888.....8888. There are 21 "8" digits in the last term of the series. Find the last three digits of the sum.**

    a. 968

    b. 567

    c. 269

    d. 864

    Answer: a. 968

    Explanation: 21*8=168 carry 16
    20*8=160+16=176 carry 17
    19*8=152+17=169
    the value is 968

23. **On a certain assembly line, the rejection rate for Hyundai i10s production was 4 percent, for Hyundai i20s production 8 percent and for the 2 cars combined 7 percent. What was the ratio of Hyundai's i10 production?**

    a. 76.92

    b. 68

    c. 80

    d. 23

    Answer: a. 76.92

    Explanation: let the no of i10 cars be x
    and i20 be y
    now the rejected i10 cars are
    4x/100 and i20 cars are
    8y/100

    and it is given that 4x/100
    +8y/100 = 7(x+y)/100

so we get y = 3x
so the ratio is 3:1

24. In a staircase, there are 10 steps. A child is attempting to climb the staircase. Each time, she can either make 1 step or 2 steps. In how many different ways can she climb the stair case?

a. 10

b. 21

c. 36

d. 89

Answer: d. 89

Explanation: she can go by
1 steps-1 way
that is choosing 1 two-step in 9 moves:
9C1 : 9 ways//
2 two-steps:
choosing 2 two-steps in 8 moves:
8C2 = 28 ways//
3 two-steps
7C3 = 35 ways//
4 two-steps//
6C4 = 15 ways//
5 two-steps//
which covers all the 10 stairs.. that means only one way
2 2 2 2 2 = 1 way//
Adding all the ways:
1 + 9 + 28 + 35 + 15 + 1 = 89 ways

25. In how many different ways can the letters of the word "LEADING" be arranged in such a way that the vowels always come together?

a. 360

b. 720

c. 480

d. 5040

Answer: b. 720

Explanation: Given letters are A, E, I, D, L, N, G
Of which AEI are vowels. Let us combine them into a single letter x. Now total letters are x, D,
L, N, G
These letter are arranged in 5! ways. But 3 vowels can arrange themselves in 3! ways. So total
ways 5! x 3! = 720

26. The diagonal of a square is twice the side of an equatorial triangle. The ratio of the area of the triangle to the area of square is

a. Sqrt(3):8

b. Sqrt(2):4

c. Sqrt(2):5

d. Sqrt(3):6

Answer: a. Sqrt(3):8

Explanation: let side of square is a
then diagonal of square is {sqrt2a}
given {sqrt2a}= 2*side of triangle
so side of triangle = {sqrt2a}/2 i.e. a/sqrt2
area of triangle = sqrt3/4*side^2.....according to formula
new area = sqrt3/4*{a/sqrt2}*{a/sqrt2} i.e.....sqrt3a*a/8
area of square = a^2
ratio = sqrt3*a^2/8a^2....i.e sqrt3/8

27. The ratio of the number of apples to oranges to pears is 7:11:9. Tom ate 21 fruits. As a result, the ratio of the number of apples to oranges to pears became 2:3:3. How many fruits were left?

a. 168

b. 170

c. 169

d. 171

Answer: a. 168

Explanation: 27x = number of fruits initially
8y = number of fruits after tom ate some

27x - 21 = 8y
putting x = 7 (by T&N)

y = 21

28. The average temperature of Tuesday Wednesday and Thursday was 37 C. The average temperature of Wednesday and Thursday and Friday was 38 C. if the temperature on Friday was 39 C. Find the temperature on Tuesday.

a. 37.33

b. 38.33

c. 36

d. None of the above

Answer: c. 36

Explanation: (tues + wed + thurs)/3=37
tues + wed + thurs=111...(1)
(wed + thurs + fri)/3=38
(wed + thurs + fri) =114...(2)
Given friday is 39.
then, (2) - (1) Fri - Tues = 3
So 39 - Tues = 3
Tuesday =36

29. Find wrong number in series: 1, 8, 27, 64, 81, 216, 343

a. 64

b. 81

c. 343

d. 27

Answer: b. 81

Explanation: cubes of natural numbers
81 is not the cube of desired numbers

30. In what proportion water must be added to spirit to gain 20% by selling it at the cost price?

a. 1/5

b. 1/4

c. 1/3

d. 1/2

Answer: 1/5

Explanation: Let the C.P of spirit be = Rs.10 per liter

Then S.P l liter of the mixture = Rs. 11
Profit = 20%
Therefore, C.P of the mixture = Rs. [100/120×10] = Rs. 25/3 per liter
Therefore, Ratio of water and spirit = 1:5