FACE

TCS NQT

Most Repeated Aptitude Questions

By FACE

Standard Aptitude:

Question 1:

Esha bought two varieties of rice, costing Rs 50 per kg and Rs. 60 per kg each and mixed them in some ratio. Then she sold the mixture at Rs. 70 per kg, making a profit of 20%. What was the ratio of the mixture?

a. 1:10 b. 3:8 c. 1:5 d. 2:7

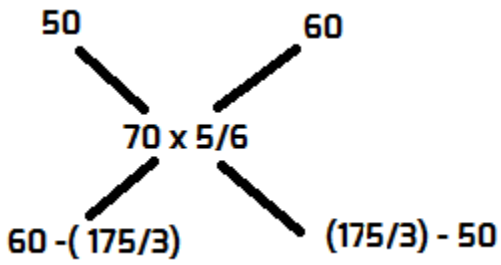
Answer: c

Solution:

Selling price of the mixture = 70 and profit = 20%

Cost price of the mixture = $70\times\frac{100}{120}=70\times\frac{56}{70}\times\frac{100}{120}=70\times56$

By applying allegation rule:



So ratio = $60-\frac{175}{3}:\frac{175}{3}-50=60-\frac{175}{3}:\frac{175}{3}-\frac{150}{3}=1:5$

Question 2:

Jake can dig a well in 16 days. Paul can dig the same well in 24 days. Jake, Paul and Hari together dig the well in 8 days. In how many days Hari alone can dig the well?

a. 32 days b. 48 days c. 96 days d. 24 days

Answer: b

Solution:

Let the total work to be done is 48 meters.

Now Jake can dig 3 mts, Paul can dig 2 mts a day.

Now all of them combined dug in 8 days so per day they dug 48/8 = 6 mts.

So Of these 8 mts, Hari's capacity is 1 mt.

So he takes 48 /1 = 48 days to complete the digging job.

Question 3:

There is a set of 36 distinct points on a plane with the following characteristics:

* There is a subset A consisting of 14 collinear points.

* Any subset of three or more collinear points from the 36 are a subset of A.

How many distinct triangles with positive area can be formed with each of its vertices being one of the 36 points? (Two triangles are said to be distinct if at least one of the vertices is different)

a. 7140 b. 4774 c. 1540 d. 6776

Answer: d

Solution:

The given data indicates that 14 points are collinear and remaining 22 points are non collinear.
A triangle can be formed by taking 1 points from 14 and 2 points from 22 (or) 2 points from 14 and 1 points from 22 (or) 3 points from 22
$\Rightarrow {}^{14}C_1 \times {}^{22}C_2 + {}^{14}C_2 \times {}^{22}C_1 + {}^{22}C_3 = 6776$

Question 5:

Roshan is proud of his Swiss Watch that he got as birthday gift from his father. Roshni like teasing her brother and on one occasion she said "what is there with a costly

watch. The reflex angle between the hands are the same in yours and mine". If the time was 11:20, then what was the reflex angle?

a. 200 b. 310 c. 140 d.290

Answer: c

Solution:

The minute hand travels 6° per minute and the hour hand travels 0.5° per minute.

At 11:20, the minute hand would have effectively travelled for 20 minutes covering (20 * 6 = 120°) after completing eleven full revolutions in eleven hours with net ZERO displacement from reference point.

The Hour hand would have travelled for 60*11 + 20 = 680 minutes. It covers an angle of 680 x 0.5 = 340°

The angle between the two hands **now** is 340° - 120° = 220°

But, we have to consider only the reflex angle, i.e, 360 - 220 = 140°

Question 6:

Divide 50 into two parts, such that the sum of their reciprocals is 1/12.

a. 25, 25 b. 10, 40 c. 20, 30 d.290

Answer: c

Solution:

Let 50 be divided into two parts such that one of the part be x and the other part thus be (50-x). As per the given question:

(1/(50-x))+(1/x)=1/12.

On solving this we get the two parts as 20 and 30.

Question 7:

Three containers A, B and C are having mixtures of milk and water in the ratio of 1:5, 3:5, 5:7 respectively. If the capacities of the containers are in the ratio 5:4:5, find the ratio of milk to water, if all the three containers are mixed together.

a. 53:115 b. 53:113 c. 54:115 d. 54:113

Answer: a

Solution:

Assume that there are 500,400 and 500 litres respectively in the 3 containers.

Then, we have, 83.33, 150 and 208.33 litres of milk in each of the three containers.

Thus, the total milk is:

83.33 + 150 + 208.33 = 441.66 litres.

Hence, the amount of water in the mixture is:

1400 - 441.66 = 958.33liters.

Hence, the ratio of milk to water is:

441.66 : 958.33 = 53:115

Question 8:

Find the number of zeros in the expression 15 x 32 x 25 x 22 x 40 x 75 x 98 x 112 x 125.

a. 9 b.7 c. 14 d.12

Answer: a

Solution:

The expression can be written as:

$5 \times 3 \times 2^5 \times 5^2 \times 2 \times 11 \times 2^3 \times 5 \times 5^2 \times 3 \times 2 \times 7^2 \times 5^3 \times 2^4 \times 7$

As 5 x 2 = 10, we only consider those: $2^{14} \times 5^9$

Therefore $2^9 \times 5^9$ will give 9 zeros.

Question 9:

In how many ways can 7 different objects be divided among 3 persons so that either one or two of them do not get any object?

a.36 b.180 c.381 d.84

Answer: c

Solution:

Case 1: when one of them do not get any object, then the objects will be divided among 2 persons.

No. of ways to select 2 persons = ${}^3C_2$

No. of ways to divide 7 objects among 2 persons = $2^7 - 2$ [each object can be given to 2 people (2 is subtracted as both should get at least 1)]

So required no. of ways= $({}^3C_2) \times (2^7 - 2) = 378$

Case 2: when objects are given to only one person.

Required. no. of ways= ${}^3C_1 = 3$.

So, total no. of ways = 378 + 3 = 381

Question 10:

Ratio of the radii of the cylinder to the cone is 1:2. Assume, their heights are the same. Find the ratio of their volumes.

a.3:4 b.1:2 c.1:4 d.4:1

Answer: a

Solution:

Let the radius of the cylinder be x and the radius of the cone is 2x

Volume of the cylinder:

Volume = $\pi x^2 h$

Volume of the cone:

Volume = $1/3\ \pi r^2 h$

Volume = $1/3\ \pi(2x)^2\ h$

Volume of cylinder : Volume of cone = $\pi x^2 h : 4/3\ \pi x^2 h = 3 : 4$

Question 11:

Which of the following numbers must be added to 5678 to give remainder of 35 when divided by 460?

a. 980 b. 797 c. 955 d. 618

Answer: b

Solution:

Dividend = divisor × quotient + remainder

$5678 = 460 \times 12 + 158$

(dividing 5678 by 460 we get quotient = 12 and remainder = 158)

We need the remainder to be 35 by adding a number x.

Since 158>35, the quotient we will get by dividing (5678+x) by 460 should be greater than 12. It may be 13, 14, 15 etc. Taking the lowest one here i.e.13.

So (5678 + x) = 460 × 13 + 35 (here 35 is remainder)

⇨ x = 337 (not in the option)

Instead of 13 we must take (460 x 14) to be the quotient, you will get x = 797 (our option)

Question 12:

George walks 36 kms partly at a speed of 4kms per hour and partly at 3 kms per hour. If he had walked at a speed of 3kms per hour when he had walked at 4 and 4 kms per hour when he had walked at 3 he would have walked only 34 kms. The time (in hours) spent by George walking was:

a. 8 b. 12 c. 5 d. 10

Answer: d

Solution:

Let George walked "a" hours at 4 kmph, and "b" hours at 3 kmph.

Given:

4a + 3b = 36
3a + 4b = 34
Adding them we get: 7a + 7b = 70

⇨ a + b = 10.

Question 13:

The sum of four consecutive two-digit odd numbers, when divided by 10, becomes a perfect square. Which of the following can possibly be one of these four numbers?

a. 67 b. 41 c. 25 d. 31

Answer: b

Solution:

Let numbers be: a - 3, a – 1, a + 1, a + 3

Sum/10 = (4 x a)/10

Begin trial and error:

Number	a – 3	a – 1	a + 1	a + 3
Assumption	67	67	67	67
'a' value	70	68	66	64
(4 x a)/10 is in options?	No	No	No	No

Number	a – 3	a – 1	a + 1	a + 3
Assumption	41	41	41	41
'a' value	44	42	40	44
(4 x a)/10 is in options?	No	No	Yes (160/10)	No

Question 14:

In how many ways a team of 11 must be selected from 5 men and 11 women such that the team comprises of not more than three men?

a.1234 b. 1565 c. 2456 d. 2256

Answer: d

Solution:

Maximum 3 men can be played which means there can be 0, 1, 2, 3 men in the teams:
$({}^{5}C_{0} \times {}^{11}C_{11}) + ({}^{5}C_{1} \times {}^{11}C_{10}) + ({}^{5}C_{2} \times {}^{11}C_{9}) + ({}^{5}C_{3} \times {}^{11}C_{8}) = 2256$

Question 15:

4 men throw a die each simultaneously. Find the probability that at least 2 people get the same number.

a. 5/18 b. 13/18 c. 1/36 d. 1/2

Answer: b

Solution:

Let's first find the probability that all the people get different numbers:

Outcome of each die can be any of the 6 numbers. Therefore,
Total number of outcomes =64=64

First die can give any of the 6 numbers
Second die can give any of the remaining 5 numbers
Third die can give any of the remaining 4 numbers
Fourth die can give any of the remaining 3 numbers
Therefore, total favourable outcomes = 6×5×4×3

P(all people get different numbers) = $(6 \times 5 \times 4 \times 3)/6^4 = 5/18$
P(at least 2 people get the same number) = 1 – 5/18 = 13/18

Question 16:

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

Solution:

To form a triangle we need 3 points:

1) select 2 points from the 10 points of line AC & 1 of from the 8 on AB

   = (10C2)*(8C1)

2) select 2 points from the 8 points of line AB & 1 of from the 10 on AC
   = (8C2)*(10C1)

Total no. of triangles = (10C2)*(8C1)+ (8C2)*(10C1) = 640

(we don't consider triangles formed using point A)

Question 17:

How many 7-digit telephone numbers can be formed with 6 and 5 at the right and left extreme ends respectively?

a.2160 b. 720 c. 4320 d. None of these

Answer: d

Solution:

Second digit can be 0 to 9 = 10 ways

Third digit can be 0 to 9 = 10 ways

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Sixth digit can be 0 to 9 = 10 ways

⇨ 10^5 ways

Question 18:

In how many ways a cricketer can score a double century (200 runs) with only boundaries (fours) and over boundaries (sixes)?

a.15 b. 16 c. 17 d. 18

Answer: c

Solution:

$4x + 6y = 200$

⇨ 2x + 3y = 100

⇨ x = (100 - 3y) / 2

So for each even value of y we must get an integral value of x

So for y = 0, x = 50; for y = 2, x = 47; for y = 4, x = 44 and so on, y increases by 2 and x decreases by 3.

We thus get 17 values of x and y.

Question 19:

If all the numbers between 11 and 100 are written on a piece of paper, how many times will the number '4' be used?

a. 20 b. 19 c. 9 d. None of these

Answer: b

Solution:

There are total 9 4's in 14, 24, 34...,94
& total 10 4's in 40,41,42....49
Thus,
Total = 9+10=19.

Question 20:

P, Q, R, S are distinct integers that can take values from 1 to 12. What is the possible smallest value for (P/Q) + (R/S)?

a. (1/12) + (2/11) b.(1/11) + (9/10)

c.(1/11) + (2/12) d.(1/10) + (1/11)

Answer: a

Solution:

For smallest values, denominator must be largest and the numerator must be smallest:

As P, Q, R, S are distinct integers:

Numerators: 1, 2

Denominators: 11, 12

Smallest no. = 1/12 and 2nd smallest no. = 2/11

⇨ (1/12) + (2/11)

Question 21:

A alone can finish the work in 10 hours, B alone can finish the work in 12 hours and C alone can finish the work in 15 hours. A, B and C together started working at 11'o clock. After 2 hours A leaves. When will B & C will together will finish the work?

a.4' o clock b. 5'0 clock c.4:20 d. 5:20

Answer: c

Solution:

Let the total work be = 60 (LCM of 10, 12, 15)
Work done per hour by A = 6, B = 5, C = 4.
Work done in 2 hours by A, B, C = 2 x (6 + 5 + 4) / 60 = 30 / 60 = 1 / 2
Half of total work is done, another half of work is done by B and C.
Remaining work is done by B and C in = 30 / 9 hours = 3 hr 20 min
Total time is = 2 hr + 3 hr 20 mins = 5 hr 20 min.
Work is completed by 11:00 + 5 hr 20 min = 4:20.

Question 22:

In the simple subtraction problem below some single digits (not necessarily distinct) are replaced by letters. Find the value of 6*A + 5*B + 2*C*D?

A1C5 - 1B67 = 656D

a.121 b. 129 c.116 d. 127

Answer: a

Solution:

Carry	**7**	**10**	**12**	**15**
No. 1	~~A~~ (8)	~~1~~	~~C~~ (3)	~~5~~
No. 2	1	B (5)	6	7
Answer	6	5	6	D (8)

⇨ 6*A + 5*B + 2*C*D = 48 + 25 + 48 = 121

Question 23:

After 6 years Raju's father's age will be twice that of his age and 2 years ago, his mother's age was twice that of Raju's age. What is the sum of Raju's parents' age?

a. 4 less than four times Raju's age

b. 2 more than four times Raju's age

c. 4 more than four times Raju's age

d. 2 less than four times Raju's age

Answer: c

Solution:

F + 6 = 2(R + 6)
F = 2R + 6
M - 2 = 2(R - 2)
M = 2R - 2
Therefore the sum of Raju's Parent's age is
F + M = 2R + 6 + 2R - 2
F + M = 4R + 4
4 more than four times Raju's age

Advanced Aptitude

Question 1:

1 red flag, 3 white flags and 2 blue flags are arranged in a line such that:

I. No two adjacent flags are of the same colour

II. The flags at the ends are of 2 different colours.

In how many different ways the flags be arranged?

a. 6 b. 4 c. 10 d. 2

Answer: a

Solution:

Red flags = **R**; White flags = **W**; Blue flags = **B**; And vacant spaces = **_**

As No 2 adjacent flags are of the same colour, these are the 2 possible arrangements-

W_W_W_
OR
_W_W_W

Now, 1 red flag and 2 blue flags have to be arranged in these vacant places.

Hence, these 3 flags can be arranged in 3! / 2! ways = 3 ways { *RBB*, *BRB*, *BBR*}

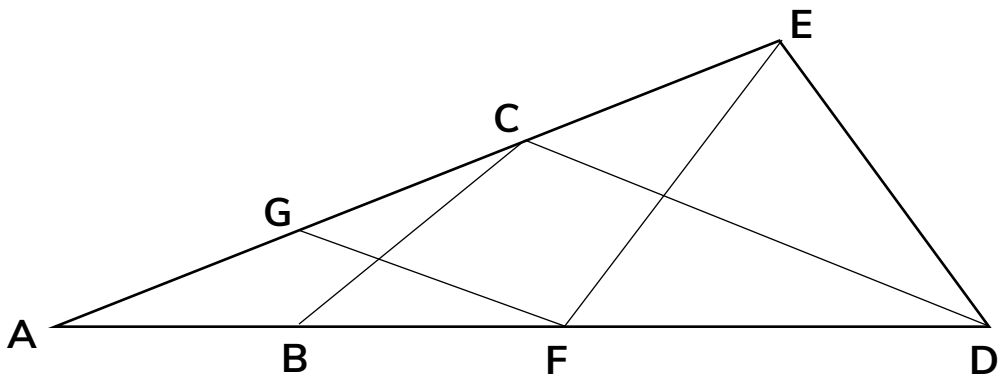
If we consider the 1st possible arrangement, then also these 3 flags can be arranged in 3 ways and this is applicable to the 2nd possible arrangement also.

So, Total number of ways = 3 + 3 ways

⇨ 6 ways

Question 2:

In the figure AB = BC = CD = DE = EF = FG= GA. Then angle DAE is approximately:



a. 15° b. 20° c. 30° d. 25°

Answer: d

Solution:

Let us assume, DAE = x
Triangle ABC is isosceles as AB = BC --> BCA = CAB = x
Hence, CBD = CAB + BCA = x + x = 2x [External angle of triangle ABC]

Triangle BCD is isosceles as BC = CD --> CBD = CDB = 2x
Hence, DCE = DAE + CDA = x + 2x = 3x [External angle of triangle ACD]

Triangle CDE is isosceles as CD = DE --> DCE = DEC = AED = 3x

Similarly, ADE = EFD = AEF + DAE = EGF + DAE = (DAE + GFA) + DAE = DAE + DAE + DAE = 3x

Hence, in triangle ADE, ADE + DAE + AED = 3x + x + 3x = 7x

Hence, 7x = 180 ---> x = 180/7 = 25.7.. ≈ 25

Question 3:

A farmer has decided to build a wire fence along one straight line of his property. For this he planned to place several fence-posts at 6m intervals, with posts fixed at both ends of the side. After he bought the posts and wire, he found that the number of posts he had bought was five less than required. However, he discovered that the number of posts he had bought would be just sufficient if he spaced them 8m apart. What is the length of the side of his property and how many posts did he buy?

a. 100m, 15 b. 100m, 16 c. 120m, 15 d. 120m, 16

Answer: d

Solution:

Let L = length of field; n = no. of gaps (between 2 posts)

L = (n + 5) x 6 (as 5 posts increase gaps by 5)

L = 8 x n

Solving we get, L = 120 m and x = 15 (For 15 gaps we require 16 poles)

Question 4:

ABCDEFGH is a regular octagon. A and E are opposite vertices of the octagon. A frog starts jumping from vertex to vertex, beginning from A. From any vertex of the octagon except E, it may jump to either of the two adjacent vertices. When it reaches E, the frog stops and stays there. Let a(n) be the number of distinct paths of exactly n jumps ending in E. Then what is the value of a(2n-1)?

a. 0 b. 4 c. 2n -1 d. Cannot be determined

Answer: a

Solution:

Firstly, notice that the shortest path from A to E involves exactly 4 jumps. 4 is an even number.

Assume we have some path from A to E. If at some vertex our frog jumps back then later it must turn back again, so this vertex is visited twice. Thus, the frog always makes even number of jumps to reach vertex E.

Since (2n-1) is odd, there is no path from A to E that frog can follow for (2n-1) jumps. Thus, a(2n-1) = 0