# Aptitude & Mental Ability

## Tnpsc Previous Questions With Explanation - Part 4

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**1. If ABDUL is coded as 0304062314 the SITA is coded as**

**A)20112203 B)21112203 C)0305201 D)211222033**

Numbers are assigned to their alphabets

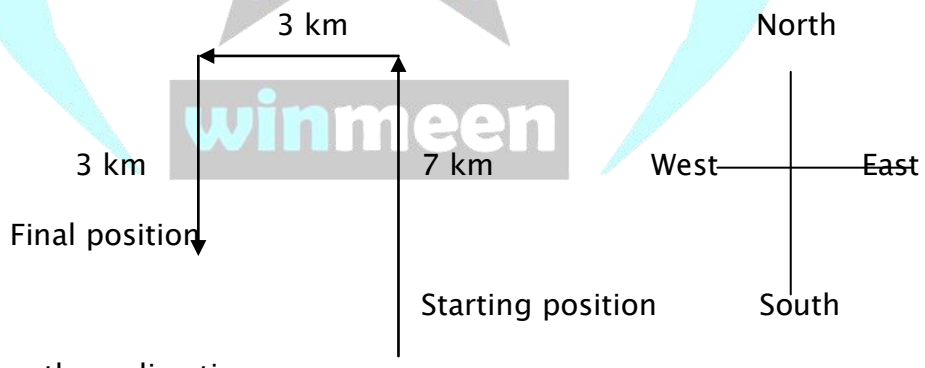
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

SITA => 21112203

**2. If Ragini walks 5 km in a Northern Direction, turns left and walks for 7km and again turns-left and walks for 3 km. In what direction is she walking finally?**

**A)East B)West C)North D)South**




She finally walks southern direction

**3. The HCF and LCM of two numbers are 12 and 144 respectively. One number is 36 the other number is?**

**A)24 B)58 C)28 D)48**

Product of two numbers is equal to their HCF and LCM

Let the unknown number be x,

x * 36 = 12 *144

$$x = \frac{1728}{36} = 48$$

**4. Rahul owes Rs. X and gives Rs. 50 note for payment. He receives the following change: 3X fifty paise coins, 14 ten paise coins and 4X five paise coins. X is equal to ?**

**A)12 B)16 C)18 D)22**

Let the unknown be x,

x+ 3x * 0.50 + 14 * 0.10 + 4x * 0.05 =50

x + 1.5x + 1.40x + 0.2x = 50

2.7x = 48.60

x= 18

**5. A Vehicle travels 360 km in 4hours. Find the distance it covers in 6 hours 30 mins. at the same speed.**

**A)585km B)575km C)625km D)685km**

$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$ ;

$\text{Speed} = \frac{360}{4} = 90$ km/hr;

$\text{Distance} = 90 * \frac{13}{2}$

$= 45 * 13 = 585$ km

6 hours 30 min = $6\frac{1}{2}$ hours

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

**A)26 B)27 C)25 D)24**

Let the no of days be x,

$$=> \frac{1}{x} + \frac{1}{2x} = 18 ;$$

$$=> \frac{3x}{2x^2} = 18;$$

=> 2x = 54

=> x = 27

**7. Find the length of the longest pole that can be place in a room 12m long , 8m broad and 9m high.**

**A)15m B)16m C)18m D)17m**

The room will be in shape of cuboid. The longest pole that can be kept will across the diagonal.

l=12 ; b=8 ; h=9

Diagonal $= \sqrt{l^2 + b^2 + h^2}$

$= \sqrt{144 + 64 + 81}$

$= \sqrt{289}$

$= 17$

**8. The difference between two parallel sides of a trapezium is 4cm. The perpendicular distance between them is 19 cm. If the area of the trapezium is 475 cm², find the length of the parallel sides.**

**A)27cm, 23cm B)28cm, 22cm C)26cm, 24cm D)25cm, 25cm**

Let the two parallel sides of the trapezium be a cm and b cm.

So, a – b = 4 ⟶ 1

=> 12*(a+b) *19=475

=>( a+b ) =50 ⟶ 2

Solving (1) and (2), we get: a = 27, b = 23.

So, the two parallel sides are 27 cm and 23 cm.

**9. Three containers have their volumes in the ratio 3:4:5. They are full of mixtures of milk and water. The mixtures contain milk and water in the ratio of 4:1, 3:1 , and 5:2**

**respectively. The contents of all these three containers are poured into a fourth container. The ratio of milk and water in the 4th container is,**

**A)4:1 B)151:48 C)157:53 D)5:2**

Let the three containers contain 3x, 4x and 5x litres of mixtures respectively.

Milk in 1st container = (4/5) * 3x = (12x)/5

Water in 1st container = 3x – (12x/5) = (3x)/5

Milk in 2nd container = (3/4) * 4x = 3x

Water in 2nd container = 4x – 3x = x

Milk in 3rd container = (5/7) * 5x = (25x)/7

Water in 3rd container = 5x – (25x/7) = (10x)/7

Therefore, total milk = (12x)/5 + 3x + (25x)/7

= (314x)/35

Total water = (3x)/5 + x + (10x)/7

= (21x + 35x + 50x)/35

= (106x)/35

So, ratio of milk and water in the fourth container

=> (314x)/35 : (106x)/35

= 314 : 106

= 157 : 53

(OR)

If the combined volume is 12 cubic units, then milk in the resulting solution

= (4/5)*3 + (3/4)*4 + (5/7)*5 = 314/35

So, the required ratio = (314/35)/(12–(314/35)) = 157/53

**10. Fill in the blanks:**

**BDF, HJL, ? , TVX**

**A)RPN** **B)NPQ** **C)PRN** **D)NPR**

By Alphabetical order

B + 5=H D + 5=J F + 5=L

**H + 5=N** **J + 5=P** **L + 5=Q**

N + 5=T P + 5=X Q + 5=X

The answer is NPR

**11. $\frac{1}{3}$ of $\frac{1}{2}$ of $\frac{1}{5}$ of x = 15. Find x?**

**A)350** **B)450** **C)550** **D)250**

$=>\frac{1}{3} * \frac{1}{2} * \frac{1}{5} * x = 15.$

$=> x = 15 * 5 * 3 * 2$

$=> x = 450$

**12. Simplify: $\sqrt[5]{\sqrt[3]{x^6}}$ :**

**A) $x^{\frac{2}{5}}$** **B) $x^{\frac{1}{5}}$** **C) $x^{\frac{1}{3}}$** **D) $x^{\frac{2}{3}}$**

$=> \sqrt[5]{\sqrt[3]{x^6}}$

$=> \sqrt[15]{x^6}$

$=> x^{\frac{6}{15}}$

$=> x^{\frac{2}{5}}$

**13. When a ball bounces it rises $\frac{3}{4}$ of the height from which it fell. If the ball is dropped from a height of 32m, how high will it rise at the third bounce?**

**A)13m** **B)$13\frac{1}{2}$ m** **C)14m** **D)15m**

Required height at the 1st bounce = $32 * \frac{3}{4}$

Required height at the 2nd bounce $= 32 * \frac{3}{4} * \frac{3}{4}$

Required height at the 3rd bounce $= 32 * \frac{3}{4} * \frac{3}{4} * \frac{3}{4}$ (straight to this step)

$$= 13\frac{1}{2} \text{ m}$$

**14. 2 men and 3 boys can do a piece of work in 10 days while 3 men and 2 boys do the same work in 8 days. In how many days can 2 men and 1 boy do the work?**

**A) 2/25** **B) $12\frac{1}{2}$** **C)13** **D)12**

Let one man do the work alone in 'm' days.

Let one boy do the work alone in 'b' days.

In one day 1/m part of the work is done by 1 man and

in one day 1/b part of the work is done by 1 boy.

Now by given condition we have

2 * 1/m +3 * 1/b=10 ⟶ 1

(work done by 2 men and 3 boys in one day)

We also have

3 * 1/m +2 * 1/b=18 ⟶ 2

Solving above two equations we get

1/b=1/100 and

1/m=7/200;

To find how many days will 2 men and 1 boy take.

work completed in one day by 2 men and 1 boy is

=2×7/200+1/100=8/100

=1/12.5

The work will be completed in $12\frac{1}{2}$ days.

**15. A man borrows Rs.2550 to be paid back with compound interest at the rate of 4% per annum by the end of 2 years in two equal yearly installments. How much will each installment be?**

**A)Rs.1275** **B)Rs.1283** **C)Rs.1352** **D)Rs.1377**

Let the value of each installment be Rs.x

$\Rightarrow x/(1+4/100) + x/(1+4/100)^2 = 2550$

$\Rightarrow 25x/26 + 625x/676 = 2550$

$\Rightarrow 1275x = 2550 * 676$

$x = (2550*676)/1275$

$= 1352.$

Value of each installment = Rs.1352

**16. Water flow into a tank with a base 200m * 150m through a rectangular pipe 1.5 m * 1.25 m at the rate of 20 kmph. In what time in (minutes) will the water rise 2 metres?**

**A)93min** **B)95min** **C)96min** **D)94min**

Rise is 2m so,

Volume required in the tank = $(200 \times 150 \times 2)\ m^3$

$= 60000\ m^3$

Length of water column flown in1 min = $(20 \times 1000)/60$ m

$=1000/3$ m

Volume flow per minute = $1.5 \times 1.25 \times (1000/3) m^3$

$= 625 m^3$

Required time = (60000/625) min

= 96min

**17. Two whole numbers whose sum is 72 cannot be in the ratio ?**

**A)5:7** **B)3:5** **C)3:4** **D)4:5**

Except the ratio 3:4

The sum of all other ratio is a divisor of 72

The total sum of ratio 3:4 is 3x+4x =7x

72 is not a divisor of 7

so 3:4 is the answer

**18. Raman salary's was decreased by 50% and subsequently increased by 50%. How much percent does he lose?**

**A)15%** **B)20%** **C)25%** **D)30%**

Assume Ram's Salary = 100

Decreased by 50% becomes = 100 – 50%(100)

= 100–50 =50

Subsequently increased by 50% = 50 +50% (50)

=50 + 25=75

Net salary loss = difference/initial * 100

=((100–75)/100) *100

=25%



(or)

formula for increase and decrease is

$=>\ a + b - \frac{ab}{100} = -50 + 50 - \frac{50*50}{100}$ ( – for decrease and + increase)

= 25%

19. A tradesman sold an article at a loss of 20%. If teh selling price had been increased by Rs. 100, these would havce been a gain of 5%. What was the cost price of the article?

A)Rs 100 B) Rs 200 C) Rs 400 D) Rs 500

Let C.P be rs.x , then

(105% of X)-(80% of x)=100

25% of x=100

x/4=100 => x=400

C.P will be Rs.400

(OR)

Total Loss or Gain is = (-80 + 105 )

( - ) for loss and ( + ) for gain

Total loss or gain is 25% for Rs 100 in increase

25% of x = 100

x = 400

20. Range of the first ten positive integers is

A) 10 B) 9 C) 5 D) 4.5

First ten positive intergers are

1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 ,10

Range = Largest number - smallest number

Range = 10-1 =9

**21. An institute organised a fete and 1/5 of the girls and 1/8 of the boys participated in the same. What fraction of the total number of students took part in the fete?**

**A)2/13 B) 13/40 C) Data inadequate D) None of these**

** Suppose if there are 18 students (10 girls, 8 boys). **

1/5 of 10=2 (girls).

1/8 of 8=1 (boy).

Total participation=2+1=3.

Total students=10+8=18.

Answer = 3/18 = 1/6.

Answer cannot be determined until we have the "Ratio of girls to boys".

**22. The following AP is -1 , -5/6 , -2/3,....10/3 then the total number of term is**

**A)25 B)27 C)23 D)21**

To find the total number of terms,

t(n) = a + (n-1) d;

t(n) = 10/3 ; a = -1 ; d = 1/6 ;

10/3 = -1 + (n - 1 ) * 1/6

10/3 + 1 = (n-1) * 1/6;

13/3 = ( n - 1) * 1/6

n-1 = 26

n = 27

**23. If Rama pays Rs. 1000 at the beginning of every month in a post office recurring deposit for 5 years. If the rate of interest is 7%. What is the amount rama gets at the end 5 years ?**

**A)62675 B)72675 C)10675 D)70675**

Amount = (1000 * 60) + ((1000 * 60 * 61 * 7)/ 2 * 12 * 100))

= 60000 + (427 * 25 )

= 60000 + 10675

= 70675

The Amount he gets after 5 years is Rs. 70675

**24. 4 men and 6 boys can do a piece of work in 10 days while 4 men and 4 boys do the same work in 8 days. In how many days can 1 men and 1 boy do the work?**

**A) 2 B) 1 C)3 D)5**

Let one man do the work alone in 'm' days.

Let one boy do the work alone in 'b' days.

In one day 1/m part of the work is done by 1 man and

in one day 1/b part of the work is done by 1 boy.

Now by given condition we have

4 * 1/m +6 * 1/b=10 ⟶ 1

(work done by 4 men and 6 boys in one day)

We also have

4 * 1/m +4 * 1/b=8 ⟶ 2

Solving above two equations we get

1/b= 1 and

1/m=1;

To find how many days will 1 men and 1 boy take.

work completed in one day by 1 men and 1 boy is

=1×1+1 x 1= 2

=2

The work will be completed in 2 days.

**25. Find the least number which when divided by 20,25,35 and 40 leaves remainders 14,19,29 and 34 respectively**

**A)1394 B)1388 C)1380 D)1400**

The LCM of 20,25,35,40 are ,

20=2*2*5

25=5*5

35=1*5*7

40=2*2*2*5

LCM of 20,25,35,40 =2*2*2*5*5*7 = 1400

The remainder is 6 less than the divisor in each of the cases

Hence the required number = LCM – 6 = (1400-6) = 1394