

Number System

Solution

1. **Answer: (E)**

$$\text{I. } \frac{x+1}{y-7} = \frac{5}{3} \Rightarrow 3x - 5y = -38 \dots\dots\dots(i)$$

$$\text{II. } \frac{x-3}{y+1} = \frac{4}{5} \Rightarrow 5x - 4y = 19 \dots\dots\dots(ii)$$

From (i) & (ii)

$$y = \frac{247}{13} = 19, x = \frac{257}{13} = 19$$

Required sum = 19 + 19 = 38

2. **Answer: (C)**

Let fraction = $\frac{a}{b}$

$$\frac{a+3}{b-1} = \frac{5}{4}$$

$$4a - 5b = -17 \dots(i)$$

$$\frac{a-5}{b+1} = \frac{2}{3}$$

$$3a - 2b = 17 \dots(ii)$$

Solve both equation

$$a = b = 17$$

$$\text{Fraction} = \frac{17}{17}$$

3. **Answer: (B)**

As per the question ratio of X & Y is X : Y = 1 : $\frac{1}{2}$

Similarly ratio of Y & Z is Y : Z = 1 : $\frac{1}{4}$

$$\therefore X : Y : Z = 1 : \frac{1}{2} : \frac{1}{8}$$

Simplifying, X : Y : Z = 8 : 4 : 1

It is given Z's share = 480

X's share is 8 × 480 = Rs.3840.

4. **Answer: (C)**

Let the number of 10-paise coins be x.

Number of 25-paise and 50-paise coins will be 3x and 3x + 5 respectively.

$$x \times 0.10 + 3x \times 0.25 + (3x + 5) \times 0.50 = 120$$

$$2.35x + 2.50 = 120$$

$$2.35x = 117.50$$

$$x = 117.50/2.35 = 50$$

5. **Answer: (A)**

Let the capacity of the bus be m.

After dropping one-third and picking up 12 more passengers, the new total number of

passengers is = $m - m/3 + 12 = 2m/3 + 12$ passengers.

At the second stop, half of them are dropped and 3 more are picked up then the number of passengers are = $(2m/3 + 12) \times \frac{1}{2} + 3 = m/3 + 9$

At the last stop the total number of passengers left in the bus is = $m/3 + 9 = 18$
 $m = 27$

Therefore the number of passengers it can maximum accommodate is $m = 27$.

6. **Answer: (B)**

Let's suppose number of Tiger, Elephant, Deer and Zebra in the national park be a, b, c and d respectively.

Hence according to the first condition,

$$b + c + d = 191 \dots(1)$$

$$\text{Similarly, } a + c + d = 178 \dots(2)$$

$$\text{Also, } a + b + d = 169 \dots(3)$$

$$\text{And, } a + b + c = 161 \dots(4)$$

Adding all the above four equations we will get,

$$= > 3(a + b + c + d)$$

$$= 191 + 178 + 169 + 161$$

$$= > a + b + c + d = 233$$

7. **Answer: (B)**

Let the initial amount of money be n.

Money left after buying the notebook

$$= n - n/5 = 4n/5$$

$$\text{Now, } (4n/5) \times 10/100 = 12$$

$$= > n = 150$$

$$\text{Price of the notebook} = 150/5 = \text{Rs. } 30$$

$$\text{Hence, she lost Rs. } 150 - (30 + 12) = \text{Rs. } 108$$

8. **Answer: (D)**

Four times the first = five times the second = seven times the third = 1

$$\text{First part} = \frac{1}{4}$$

$$\text{Second part} = \frac{1}{5}$$

$$\text{Third part} = \frac{1}{7}$$

1st part: 2nd Part: 3rd part = $(1/4) : (1/5) : (1/7) = 35 : 28 : 20$

First friend's share = $(581 \times 35)/(35 + 38 + 20) = (581 \times 35)/93 = 245$

9. **Answer: (B)**

First time when they will blink together
= L.C.M of (30 sec, 40 sec, 25 sec)
= > L.C.M = 600 seconds = 10 minutes
Hence the time at which they will blink 5th time
together = 10 a.m. + (4×10) minute
= 10 : 40 a.m.

10. **Answer: (E)**

Let original fraction = $\frac{x}{y}$

$$\frac{120x}{125y} = \frac{3}{5}$$

$$\frac{40x}{25y} = 1$$

$$\frac{x}{y} = \frac{5}{8}$$

11. **Answer: (B)**

Let four number are a, b, c, d
ATQ,

$$a + b + c + d = 225 \dots\dots(i)$$

And,

$$a - 4 = b + 4 = 4c = \frac{d}{4} \dots\dots(ii)$$

By solving (i) & (ii)

$$a = 40, b = 32, c = 9, d = 144$$

$$\text{Required difference} = 144 - 9 = 135$$

12. **Answer: (E)**

From (i) & (ii),

Let, HCF be x

Then LCM is 44x

$$44x + x = 540$$

$$x = \frac{540}{45} = 12$$

From (iii), $A + B = 10K$

Let, $A = 12a$ & $B = 12b$

Then $A + B = 12(a + b)$, where a & b are coprime.

$$\text{Also } a \times b = 44$$

Possible values of a and b are (4,11) or (1, 44)

$$\text{Sum of } A + B = 12(4 + 11) = 180$$

$$\text{Or } A + B = 12(1 + 44) = 540$$

13.

So, questioned can't be answered even after including all the statements.

Answer: (B)

Let the original number by xy

According to given condition

$$(10x + y) > 3(10y + x)$$

$$7x - 29y > 0$$

On putting $y = 1$

X has to be more than or equal to 5

So for $y = 1$,

Possible values for x are 5, 6, 7, 8, 9

So, 5 number are possible when y is 1

(51), (61), (71), (81), (91) be

On putting $y = 2$

X has to be 9

So 92 is another number

Values greater than 2 are not possible for y.

If we take $y = 3$ than x has to be 13 which is not possible

So there are 6 possible number.

14.

Answer: (C)

Let the number of coins of denominations of one, two, and five be 11x, 9x and 5x respectively.

$$\text{According to question, } (5 \times 5x) - (2 \times 9x) = 56 \Rightarrow x = 8$$

Total value of the coins in the piggy bank =

$$(1 \times 11x) + (2 \times 9x) + (5 \times 5x)$$

$$= 11x + 18x + 25x$$

$$= 54x = 54 \times 8 = \text{Rs. 432}$$

15.

Answer: (D)

Let the price of one plate of biriyani be x and the no. of plates of kebab be y.

The price of one plate of kebab = $x/2$

Now,

$$((yx + 4x/2) - (4x + xy/2)) / (4x + xy/2) = 20/100$$

$$\Rightarrow ((y + 4/2) - (4 + y/2)) / (4 + y/2) = 20/100$$

$$\Rightarrow y = 7$$

16.

Answer: (C)

Since 'm' number of team titans are formed.

So, in team titans; total boys = 20m and total girls = 10m

And 'n' number of team vipers are formed.
So, in team vipers; total boys = $30n$ and total girls = $20n$

Total boys = $20m + 30n = 1300$ (1)

Total girls = $10m + 20n = 800$ (2)

From (1) and (2)-

$$\Rightarrow 2 \times (10m + 20n) - (20m + 30n) = 2 \times 800 - 1300$$

$$\Rightarrow 40n - 30n = 300$$

$$\Rightarrow n = 30 \text{ and } m = 20$$

$$\text{Required per cent} = (m/n) \times 100 = (20/30) \times 100 = 66.67\%$$

17. **Answer: (D)**

Let M and N have x and y number of apples respectively. It is given $x + y < 125$. Let the number of apples they exchanged be k. Then $(x + k) = 5(y - k)$

$$\text{And } (x - k) = 4(y + k)$$

$$\text{i.e. } x - 5y = -6k \text{ and } x - 4y = 5k$$

$$(x - 5y) / (x - 4y) = -6/5$$

$$\text{Cancelling k we get } 11x = 49y$$

$$x : y = 49:11.$$

Therefore, possible sum of numbers is 60 & 120.

Hence option D.

18. **Answer: (C)**

Let number of hats, mirrors and handkerchiefs bought are x, y and z respectively.

$$x + y + z = 23$$

$$45x + 20y + 19z = 574 \text{ .. (1)}$$

$$\text{Also, } z > y > x \text{ .. (2)}$$

Now, let us work through the options:

$$45(6) + 20(7) + 19(10) = 270 + 140 + 190 = 600$$

$$45(4) + 20(9) + 19(10) = 180 + 180 + 190 = 550$$

19.

$$45(5) + 20(7) + 19(11) = 225 + 140 + 209 = 574$$

$$45(6) + 20(8) + 19(9) = 270 + 160 + 171 = 601$$

As only 3rd option satisfies the equations (1) and (2), thus 3rd option is the correct one.

Answer: (C)

Initially the number of dolls present in the showroom = 65

Number of dress packs present in the showroom = $3 \times 65 = 195$

Dress packs damaged by rats = 80 %

$$= (80 / 100) \times 195$$

$$= 156$$

$$\Rightarrow \text{Number of dress packs left undamaged} = 195 - 156 = 39$$

Number of dress packs ordered by the manager = 41

So total number of dress packs present in the showroom finally = $41 + 39 = 80$

Now the number of dolls that can be sold in the showroom, each with 2 pair of dress packs given free = $80 / 2 = 40$

So number of dolls that the manager decides to send back to the factory = $65 - 40 = 25$.

20.

Answer: (C)

The bells toll together at 2: 10 pm.

They all will toll together for second time after time 'T' where T is the L.C.M of t_1 , t_2 , t_3 and t_4 .

$$\text{LCM of } 48, 132, 432, \text{ and } 48 = 4752$$

The bells will toll together for third time at 2T.

The third largest bell would have tolled $(2T / 48) + 1$ times including the first time it tolled on 2: 10 pm.

$$= (4752 \times 2 / 48) + 1$$

$$= 199 \text{ times}$$