Quiz Date: 31st March 2020

Directions (1-5): What will come in place of (?) in the following number series?

Q1.   1,   4,   9,   28,   57,   ?
(a) 229
(b) 172
(c) 286
(d) 168
(e) 282

Q2.   4,   20,   45,   83,   143,   241,   ?
(a) 451
(b) 438
(c) 402
(d) 404
(e) 408

Q3.   24,   122,   340,   726,   1328,   ?
(a) 2194
(b) 1326
(c) 3372
(d) 2192
(e) 2200

Q4.   2009,   1910,   1833,   1778,   1745,   ?
(a) 1703
(b) 1670
(c) 1711
(d) 1734
(e) 1648

Q5.   2,   3,   8,   27,   112,   ?,   3396
(a) 560
(b) 452
(c) 565
(d) 678
(e) 665

Q6. Several litres of alcohol drawn off a 72 litre vessel full of alcohol and equal amount of water added. Again, the same volume of the mixture was drawn off and replaced by water. As a result, the vessel contained 18 litres of pure alcohol. How much the alcohol was drawn off initially?
(a) 30 litres
(b) 37 litres

(c) 39 litres
(d) 36 litres
(e) 35 litres

Q7. A vessel contains 100 litres mixture of milk and water in the respective ratio of 22 : 3. 40 litres of the mixture is taken out from the vessel and 4.8 litres of pure milk and pure water each is added to the remaining quantity of mixture. By what percent quantity of water is less than the quantity of milk in final mixture?

(a) $78\frac{1}{2}$ %

(b) $79\frac{1}{6}$ %

(c) $72\frac{5}{6}$ %

(d) 76 %

(e) $77\frac{1}{2}$%

Q8. In a vessel, there is a mixture of apple, orange and mango juices in the ratio of 3 : 5 : 4 respectively. A quantity of 12 litres from the mixture is replaced by 8 litres of apple juice. Thereafter the quantities of apple and orange juices in the resultant mixture become same. Find out the initial quantity of mixture in the vessel.
(a) 76 litres
(b) 65 litres
(c) 60 litres
(d) 80 litres
(e) 58 litres

Q9. A jar has 60 litres of milk. From the jar, 12 litres of milk was taken out and replaced by an equal amount of water. If 12 litres of the newly formed mixture is taken out of the jar, what is the final quantity of milk left in the jar?
(a) 38.4 litres
(b) 40 litres
(c) 36 litres
(d) 28.6 litres
(e) 36.5 litres

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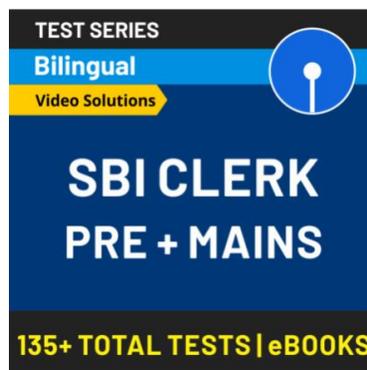
Q10. There are 3 containers A, B and C which contain water, milk and acid respectively in equal quantities. 10% of the content of A is taken out and poured into B. Then, 10% from B

is transferred to C, from which again 10% is transferred to A. What is the proportion of milk in container A at the end of the process ?
(a) 9/10
(b) 1/11
(c) 1/121
(d) 10/1011
(e) None of these

Q11. Several litres of acid were drawn off a 54-litre vessel full of acid and an equal amount of water added. Again the same volume of the mixture was drawn off and replaced by water. As a result, the vessel contained 24 litres of pure acid. How much of the acid was drawn off initially ?
(a) 12 litres
(b) 16 litres
(c) 18 litres
(d) 24 litres
(e) None of these

Q12. There are two vessels A and B which contains mixture of sulphuric acid and nitrous oxide in the ratio of 7 : 2 and 3 : 4 respectively. Mixture of both vessels are mixed to obtain a mixture of 390 ml, in which quantity of nitrous oxide is 160 ml. Find ratio of quantity of mixture in vessel A to that of in vessel B?
(a) 7 : 6
(b) 6 : 7
(c) 5 : 7
(d) 7 : 9
(e) 4 : 7

Q13. There are two solutions of Sulphuric Acid (acid + water) with concentration of Acid 50% and 80% respectively. They are mixed in a certain ratio to get a 62% sulphuric acid solution. This solution is mixed with 6 litres of water to get back 50% solution. How much of the 80% concentration solution has been used in the entire process?
(a)16 L
(b)8 L
(c)10 L
(d)20 L
(e)25 L

Q14. Two litres of mixtures of wine and water contain 12% water. They are added to 3 litres of another mixture containing 7% water, and half a litre of water in then added to whole. What is the percentage of water in resulting concoction?
(a) 17(2/7)%
(b) 15(7/11)%
(c) 17(3/11)%
(d) 16(2/3)%
(e) None of these

Q15.   In a vessel there is a certain quantity of mixture of milk and water in the ratio 5 : 1 respectively. 24 litres of mixture is taken out and same quantity of milk is added to the vessel. The ratio of milk and water now becomes 13 : 2 respectively. Again 15 litres of mixture is taken out. What is the quantity of milk in the resulting mixture? (in litres)
(a) 85 litres
(b) 80 litres
(c) 81 litres
(d) 91 litres
(e) 104 litres

Solutions

S1. Ans.(b)
Sol.
The pattern is
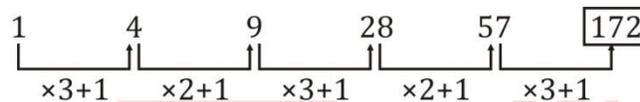
S2. Ans.(c)
Sol.
Series is
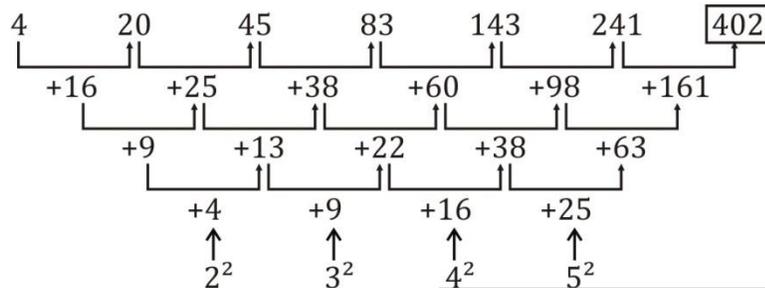
S3. Ans.(a)

Sol.
$3^3 - 3 = 27 - 3 = 24$
$5^3 - 3 = 125 - 3 = 122$
$7^3 - 3 = 343 - 3 = 340$
$9^3 - 3 = 729 - 3 = 726$
$11^3 - 3 = 1331 - 3 = 1328$
$13^3 - 3 = 2197 - 3 = 2194$

S4. Ans.(d)
Sol.
Series is
$2009 - 11 \times 9 = 2009 - 99 = 1910$
$1910 - 11 \times 7 = 1910 - 77 = 1833$
$1833 - 11 \times 5 = 1833 - 55 = 1778$
$1778 - 11 \times 3 = 1778 - 33 = 1745$
$1745 - 11 \times 1 = 1745 - 11 = 1734$

S5. Ans.(c)
Sol.
Series is
$2 \times 1 + 1 = 3$
$3 \times 2 + 2 = 8$
$8 \times 3 + 3 = 27$
$27 \times 4 + 4 = 112$
$112 \times 5 + 5 = 565$
$565 \times 6 + 6 = 3396$

S6. Ans.(d)
Sol. Let initial quantity taken = x

$18 = 72 \ \{1 - \dfrac{x}{72}\}^2$

$\dfrac{1}{4} = \{1 - \dfrac{x}{72}\}^2$

x = 36 li

S7. Ans.(b)
Sol.
Initial quantity of milk
$= 100 \times \dfrac{22}{25}$
$= 88 \ \ell$
And that of water $= 100 - 88 = 12\ell$
Quantity of milk in 60 ℓ of mixture
$= 60 \times \dfrac{22}{25}$
$= 52.8 \ \ell$

and that of water = 7.2 ℓ
Now, new quantity of milk and water
    Milk   Water

52.8 + 4.8   7.2 + 4.8

= 57.6 ℓ = 12 ℓ
New ratio of milk and water = 57.6 : 12 = 24 : 5
∴ Required percentage = $\frac{19}{24} \times 100$ = $79\frac{1}{6}$%

S8. Ans.(c)
Sol.
Let initial quantities of Apple, Orange and Mango Juices are $3x, 5x$ and $4x$ respectively.
∴ Initial quantity of mixture = $12x$
After changing in mixture, quantity of orange left in mixture
$= \left(5x - \frac{5}{12} \times 12\right) = (5x - 5)$ lit
and quantity of apple juice left.
$= 3x - \frac{3}{12} \times 12 + 8 = 3x + 5$
ATQ, $3x + 5 = 5x - 5 \Rightarrow x = 5$
∴ Initial quantity of mixture = 60 ℓ

S9. Ans.(a)
Sol.
Required quantity of milk
$= 60\left(1 - \frac{12}{60}\right)^2$
$= 60 \times \frac{16}{25}$
$= 38.4 \ell$

S10. Ans.(d)
Sol.
Let amount of water, milk and acid in containers A, B and C respectively = 100x
Water remaining after 10% content of A taken out = 90x(water)
Now milk and water in 'B' = 100x (milk) and 10x (water)

10% content of B = 10x (milk) and x(water)

After pouring 10% content of B into 'C' the content of C = 100x (Acid), 10x (Milk) and x(water)

10% content of 'C' includes = 10x (acid), x (milk) and $\frac{x}{10}$ (water)

Now after pouring 10% content of 'C' into A, the content of A $= \left(90x + \frac{x}{10}\right)$ (water), x (milk) and 10x (acid)

Proportion of milk in container 'A' $= \frac{x}{101.1x} = \frac{10}{1011}$

S11. Ans.(c)
Sol.
From the formula
$A\left(1 - \frac{D}{A}\right)^n = R$
Where
A → Actual quantity of pure liquid
D → Quantity replaced
n → number of process
R → Remaining quantity of initial liquid
$\left(1 - \frac{x}{54}\right)^2 = \frac{24}{54} = \frac{4}{9}$
$\Rightarrow 1 - \frac{x}{54} = \frac{2}{3}$
$\Rightarrow x = 18\ell$

S12. Ans.(b)
Sol.
Let total mixture of sulphuric acid and nitrous oxide in vessel A and B be P mℓ and Q mℓ respectively
ATQ,
P + Q = 390   ...(i)
$\frac{2P}{9} + \frac{4Q}{7} = 160$
14P + 36Q = 10080   ...(ii)
From 14 × (i) – (ii)
Q = 210 mℓ
P = 390 – 210 = 180 mℓ
Required ratio $= \frac{180}{210} = 6 : 7$

S13. Ans.(c)
Sol.
Let x litres of 50% and
y litres of 80% solutions are used.
$\frac{x}{y} = \frac{80 - 62}{62 - 50} \Rightarrow \frac{x}{y} = \frac{3}{2}$
Solution get mixed in the ratio 3: 2.

Let the value of newly formed solution = Z litres

$$\Rightarrow \frac{0.62\,Z}{Z+6} = \frac{1}{2}$$
$$\Rightarrow 1.24\,Z = Z + 6$$
$$\Rightarrow Z = \frac{6}{0.24} = 25$$

$\therefore$ Required quantity of mixture having 80% acid $= \frac{2}{5} \times 25 = 10$ litres

S14. Ans.(c)
Sol.
Water in first mixture = $2 \times \frac{12}{100} = 0.24$ ltr.
Water in second mixture = $3 \times \frac{7}{100} = 0.21$ ltr.
Additional water added = 0.5 Ltr
Total water = 0.24 + 0.21 + 0.50 = 0.95
% water = $\frac{0.95}{3+2+0.5} \times 100 = 17\frac{3}{11}\%$

S15. Ans.(d)
Sol.

A.T.Q
$$\frac{5x - 20 + 24}{x - 4} = \frac{13}{2}$$
$$\Rightarrow \frac{5x + 4}{x - 4} = \frac{13}{2}$$
$$\Rightarrow 13x - 52 = 10x + 8$$
$$\Rightarrow 3x = 60$$
$$\therefore x = 20$$

So, Milk = 100 -20 +24 = 104 litre
$\frac{13}{15} \times 15 = 13\ litre\ milk\ taken\ out$
Milk in the remaining mixture = 104 – 13 = 91 litre

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