

Quantitative Aptitude Mega Quiz for RRB (Solutions)

S1. Ans.(a)

Sol.

First part = x and second part = $94 - x$

$$\rightarrow \frac{\frac{x}{5}}{\frac{94-x}{8}} = \frac{3}{4}$$

$$\rightarrow \frac{x}{5} * \frac{8}{94-x} = \frac{3}{4}$$

$$\rightarrow 47x = 15 * 94$$

$$\rightarrow x = 30$$

S2. Ans.(b)

Sol.

Mean proportional = \sqrt{ab}

$$\rightarrow \sqrt{(3 + \sqrt{2})(12 - \sqrt{32})}$$

$$\rightarrow \sqrt{(3 + \sqrt{2}) 4(3 - \sqrt{2})}$$

$$\rightarrow 2\sqrt{9 - 2}$$

$$\rightarrow 2\sqrt{7}$$

S3. Ans.(d)

Sol.

Boys: Girls = 4: 3 = 32: 24

Girls: Teachers = 8: 1 = 24: 3

$$\rightarrow \text{Boys: Girls: Teachers} = 32: 24: 3$$

$$\rightarrow \text{Required ratio (Student: teacher)} \\ = (32 + 24): 3 = 56: 3$$

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DFCCIL 2021

Live Batch for Jr. Executive Post

Starts May 18, 2021

1 PM to 7 PM

S4. Ans.(a)**Sol.**

$$\frac{(x^3 - y^3)}{(x^2 + xy + y^2)} = \frac{5}{1}$$

$$\rightarrow \frac{(x - y)(x^2 + xy + y^2)}{(x^2 + xy + y^2)} = \frac{5}{1}$$

$$\rightarrow x - y = 5 \dots(i)$$

Again,

$$\rightarrow \frac{(x^2 - y^2)}{x - y} = \frac{7}{1}$$

$$\rightarrow \frac{(x - y)(x + y)}{x - y} = 7$$

$$\rightarrow x + y = 7 \dots(ii)$$

On solving eq. (i) and (ii) we get,
 $X = 6, y = 1$

$$\rightarrow \text{So, required ratio } \frac{2x}{3y} = \frac{2 \times 6}{3 \times 1} = \frac{4}{1}$$

S5. Ans.(d)**Sol.**

$$\text{Successful students} = \frac{9}{11} \times 132 = 108$$

$$\text{Unsuccessful students} = \frac{2}{11} \times 132 = 24$$

When 4 more students succeed,

$$\text{Required ratio} = (108 + 4) : (24 - 4)$$

$$\rightarrow 112 : 20 = 28 : 5$$

S6. Ans.(b)**Sol.**

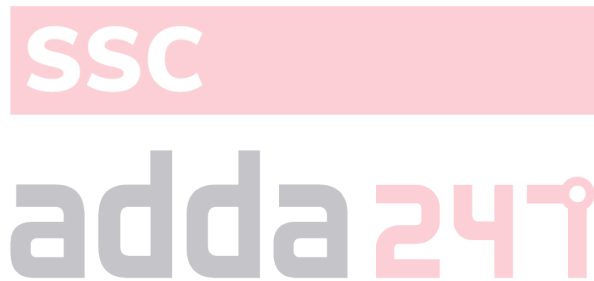
Let the number to be added be z.

$$\rightarrow \frac{x + z}{y + z} = \frac{p}{q}$$

$$\rightarrow qx + qz = py + pz$$

$$\rightarrow zp - zq = qx - py$$

$$\rightarrow z = \frac{qx - py}{p - q}$$



S7. Ans.(a)

Sol.

5 years ago, let the age of father = $2x$ years (let)

Then, Age of son = x years

$$\rightarrow \text{ATQ, } 2x + 5 + x + 5 = 100$$

$$\rightarrow 3x = 100 - 10 = 90$$

$$\rightarrow x = 30$$

Father's present age

$$= 2x + 5 = 60 + 5 = 65 \text{ years}$$

Son's present age = $x + 5 = 30 + 5 = 35$ years.

After 10 years,

$$\text{Ratio} = \frac{65+10}{35+10} = \frac{75}{45} = \frac{5}{3}$$

S8. Ans.(c)

Sol.

Let the numbers be $3x$ and $4x$.

Their HCF = $x = 15$

$$\rightarrow \text{Sum of numbers} = 3x + 4x = 7x$$

$$= 15 \times 7 = 105$$

S9. Ans.(d)

Sol. Let the original number of students be $2x$, $3x$ and $4x$ in three class.

According to the question,

$$\rightarrow \frac{2x+12}{3x+12} = \frac{8}{11}$$

$$\rightarrow 24x + 96 = 22x + 132$$

$$\rightarrow 2x = 132 - 96 = 36$$

$$\rightarrow x = 18$$

So, Original number of students

$$= 2x + 3x + 4x$$

$$= 9x = 9 \times 18 = 162$$

S10. Ans.(d)

Sol.

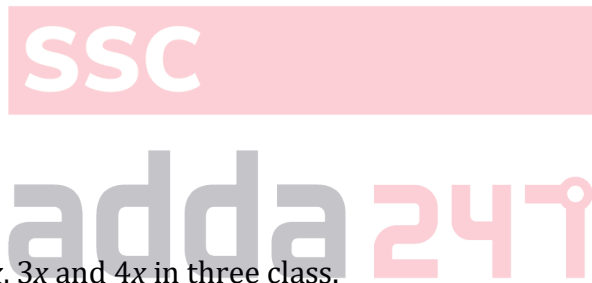
According to the question,

$$\text{Sum of remaining two numbers} = 11 \times 36 - 9 \times 34$$

$$= 396 - 306 = 90$$

Ratio of the remaining two numbers = 2: 3

$$\rightarrow \text{Smaller number} = \frac{2}{5} \times 90 = 36$$



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S11. Ans.(c)

Sol.

$$\begin{aligned}\text{Average income of whole group} &= \frac{4200 * 40 + 4000 * 35}{75} \\ &= \frac{168000 + 140000}{75} = \frac{308000}{75} = \text{Rs. } 4106\frac{2}{3}\end{aligned}$$

S12. Ans.(b)

Sol.

$$\begin{aligned}\text{required mean} &= \frac{1+1+2+2+3+3+4+4+5+5+6+6+7+7}{1+2+3+4+5+6+7} \\ &= \frac{1+4+9+16+25+36+49}{28} = \frac{140}{28} \rightarrow 5\end{aligned}$$

S13. Ans.(c)

Sol.

Weight of 12th person = x kg (let).

$$\therefore \text{Average weight of 12 persons} = \left(\frac{11 * 95 + x}{12}\right) \text{ kg}$$

ATQ,

$$\rightarrow \frac{11 * 95 + x}{12} + 33 = x$$

$$\rightarrow 1045 + x + 396 = 12x$$

$$\rightarrow 1441 = 11x$$

$$\rightarrow x = 131 \text{ kg}$$

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S14. Ans.(b)

Sol.

Let the average cost of each book bought (of 64 books) be x.

According to the question,

$$\rightarrow 64 * x - 50(x + 1) = 76$$

$$\rightarrow 64x - 50x - 50 = 76$$

$$\rightarrow 14x = 76 + 50 = 126$$

$$\rightarrow x = \frac{126}{14} = 9$$

$$\therefore \text{Required average price} = 9 + 1 = 10$$

S15. Ans.(d)

Sol.

Average of 7 consecutive odd integers = 37

$$\therefore \text{Fourth odd number} = 37$$

$$\therefore \text{First odd number} = 31$$

$$13\text{th odd number} = 31 + 24 = 55$$

$$\therefore \text{Required average} = \frac{31 + 55}{2} = 43$$

S16. Ans.(b)

Sol.

Average contribution of 9 students of the class

= Rs. x (let).

According to the question,

$$\rightarrow \frac{7 + 50 + x + 50 + x + 90}{9} = x$$

$$\rightarrow 350 + 2x + 140 = 9x$$

$$\rightarrow 9x - 2x = 490$$

$$\rightarrow 7x = 490$$

$$\rightarrow x = 70$$

S17. Ans.(a)

Sol.

Sum of new numbers = $na + (2 + 4 + 8 + 16 \dots \text{to } n \text{ terms})$

Now, $S = 2 + 4 + 8 + 16 + \dots \text{to } n \text{ terms}$

Here, $a =$ first term = 2

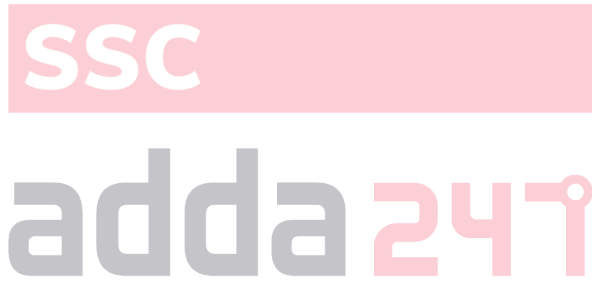
$$r = \text{common ratio} = \frac{4}{2} = 2$$

It is a geometric progression series.

$$\therefore S = \frac{a(r^n - 1)}{r - 1} = \frac{2(2^n - 1)}{2 - 1} = 2(2^n - 1)$$

$$\therefore \text{Required average} = \frac{na + 2(2^n - 1)}{n}$$

$$= a + \frac{2(2^n - 1)}{n}$$



S18. Ans.(d)

Sol.

$$a + b + c = 18 \times 3 = 54$$

$$\text{And, } b + c + d = 16 \times 3 = 48$$

$$\therefore a + b + c - b - c - d$$

$$\rightarrow 54 - 48 = 6$$

$$\rightarrow a - d = 6$$

$$\rightarrow a - 19 = 6$$

$$\rightarrow a = 19 + 6 = 25$$

S19. Ans.(a)

Sol.

Let the average monthly income of man be Rs. x .

$$\therefore \text{Man's annual income} = \text{Rs. } 12x$$

$$\therefore \text{Man's annual expenses} = \text{Rs. } \left(\frac{6x + 12}{8}\right) = \text{Rs. } 9x$$

$$\text{Savings} = 12x - 9x = \text{Rs. } 3x$$

$$\therefore 3x = 6000$$

$$x = \text{Rs. } 2000$$



S20. Ans.(c)

Sol.

Let Mahendra singh Dhoni's average of runs for his 64 innings be x runs.

\therefore Total number of runs in 64 innings = $64x$

According to the question,

$$\rightarrow \frac{64x + 0}{65} = x - 2$$

$$\rightarrow 64x = 65x - 130$$

$$\rightarrow x = 130$$

\therefore New average of runs = $x - 2$

$$= 130 - 2 = 128$$

S21. Ans.(b)

Sol.

$$\text{Gain} = X * \frac{25}{100} = \text{Rs. } \frac{X}{4}$$

$$\text{Taxes} = \frac{X}{4} * \frac{1}{2} = \text{Rs. } \frac{X}{8}$$

S22. Ans.(c)

Sol.

The C.P. of a cow = be x and that of a goat y .

$$3x + 8y = 47200 \dots(i)$$

$$8x + 3y = 100200 \dots(ii)$$

By equation (i) $\times 3 -$ (ii) $\times 8$,

$$\rightarrow 9x + 24y - 64x - 24y = 141600 - 801600$$

$$\rightarrow 55x = 660000$$

$$\rightarrow x = \text{Rs. } 12000$$

S23. Ans.(d)

Sol.

C.P. of article be x

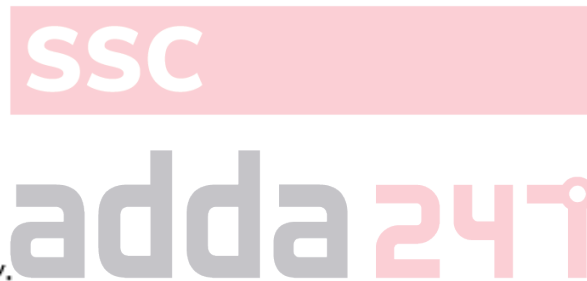
$$\text{So, First S.P.} = \frac{80x}{100} = \text{Rs. } \frac{4x}{5}$$

ATQ,

$$\rightarrow \frac{4x}{5} + 100 = \frac{x * 105}{100}$$

$$\rightarrow \frac{21x}{20} - \frac{4x}{5} = 100$$

$$\rightarrow x = \text{Rs. } 400$$



S24. Ans.(c)**Sol.**If the C.P. of wrist watch be x , thenC.P. of wall clock = $(390 - x)$

ATQ,

$$\rightarrow \frac{x * 10}{100} + \frac{(390 - x) * 15}{100} = 51.50$$

$$\rightarrow 10x + 5850 - 15x = 5150$$

$$\rightarrow 5x = 5850 - 5150 = 700$$

$$\rightarrow x = \text{Rs. } 140$$

So, C.P. of wall clock = $390 - 140 = \text{Rs. } 250$ ∴ Required difference = $250 - 140 = \text{Rs. } 110$ **S25. Ans.(c)****Sol.**

CP of 73 articles = 5110

$$\therefore \text{CP of 89 articles} = \frac{5110}{73} * 89 = 6230$$

Total SP of 89 articles = 5607

$$\text{Loss} = (6230 - 5607) = 623$$

$$\therefore \text{Loss percent} = \frac{623}{6230} * 100$$

$$= 10\%$$

S26. Ans.(a)**Sol.**Let CP of each TV be x .

According to the question,

$$\rightarrow 2(x - 9400) = 10600 - x$$

$$\rightarrow 2x - 18800 = 10600 - x$$

$$\rightarrow 3x = 10600 + 18800$$

$$= 29400$$

$$\rightarrow x = \text{Rs. } 9800$$

S27. Ans.(c)**Sol.**Let the CP of the article be Rs. 100 and its SP be x

ATQ,

$$\rightarrow \frac{100 - x}{100} * 100 = \frac{2x - 100}{100} * 100$$

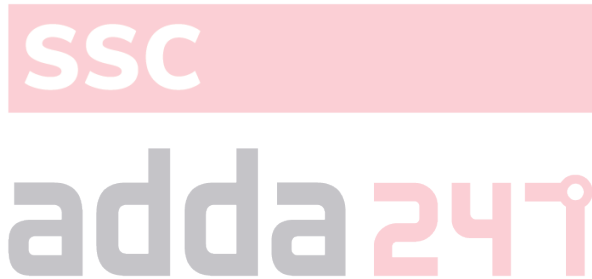
$$\rightarrow 100 - x = 2x - 100$$

$$\rightarrow 3x = 200$$

$$\rightarrow x = \frac{200}{3}$$

$$\rightarrow \therefore \text{Loss\%} = 100 - \frac{200}{3}$$

$$\rightarrow \frac{100}{3} = 33\frac{1}{3}\%$$



S28. Ans.(b)

Sol.

	Initial : New	
Price =	100 : 80	or 5 : 4
Quantity =	80 : 100	or 4 : 5

1 unit = 5

So, initial quantity = $4x = 20\text{kg}$

New quantity = $5x = 25\text{kg}$

Initial price/kg = $\frac{1200}{20} = 60 \text{ Rs. /kg}$

So, reduced price = $\frac{1200}{25} = 48 \text{ Rs. /kg}$

S29. Ans.(a)

Sol.

For the sake of convenience,
let the number of toffees of each type

Bought be 99 (LCM 11 and 9).
CP of first kind of 99 toffees = 90
CP of second kind of 99 toffees = 110

So, CP of 198 toffees = 200
ATQ,
SP of 1 toffee is 1 Rs.
So, SP of 198 toffees = 198
Loss = 2 Rs.

Loss% = $\frac{2}{200} * 100 = 1\%$

S30. Ans.(c)

Sol.

Let the initial CP be $100x$, so, initial SP = $95x$

New CP which is 10% less = $90x$

He will sell this at 30% profit, so new SP = $90x * \frac{130}{100} = 117x$

So, initial CP of article = $100x = 100 * \frac{3}{2} = \text{Rs. } 150$

$$\left. \begin{array}{l} 22x = 33 \\ x = \frac{3}{2} \end{array} \right\}$$

