

MBA PIONEER 2024

QUANTITATIVE APTITUDE

DPP: 1

Linear Equations - 1

- Q1** Find the value of k for the equation $kx + 9y = 15 + 6x$ and $20x + ky = 25 + 3y$ gives an infinite solution.
- (A) 12 (B) 14
(C) 16 (D) 18
- Q2** The sum of two numbers is 115 and their difference is 43. Find the average of the numbers.
- (A) 55.7 (B) 57.5
(C) 75.5 (D) 77.5
- Q3** How many solutions are there in the following system of equations?
- $$x^2 + 3x + 10 = y$$
- $$10 - 3x + y = 0$$
- Q4** Sam was asked to multiply a number by $\frac{2}{5}$ instead she multiplied the number by $\frac{5}{2}$. As a result, she got an answer that was 2877 more than the correct answer. What was the number?
- (A) 1370 (B) 1050
(C) 2170 (D) 1970
- Q5** How many solutions are there in the following system of equations?
- $$2x + 2 = -3y$$
- $$10 - 15y = -10x$$
- (A) Infinitely many
(B) Exactly 2 solutions
(C) Exactly 1 solution
(D) No solution
- Q6** In a Magic show 550 tickets were sold. Adult tickets cost \$7.50, children's tickets cost \$3.50, and a total of \$3205 was collected. How many tickets of children's tickets were sold?
- (A) 230 (B) 238
(C) 240 (D) 248
- Q7** Two sharpeners and one eraser cost Rs. 17 and 5 sharpeners and four erasers cost Rs. 50. What is the price of the costlier item?
- (A) 5 (B) 6
(C) 7 (D) 10
- Q8** If 5 is added to the numerator and subtracted from the denominator it becomes $\frac{11}{8}$ and if 3 is subtracted from the numerator and 7 is added to the denominator it become $\frac{1}{2}$. What is the difference between the denominator and numerator of the fraction?
- (A) 1 (B) 2
(C) 3 (D) 4
- Q9** Rahim went to the market for two consecutive days. On the first day, he bought 2 kg apples and 3 dozen bananas for Rs.94. On the second day, he bought 3 kg apples and 2 dozen bananas for Rs.121. Find the cost of 1 kg apple and 1 dozen bananas, if there is no inflation or deflation in the price of commodities over the two-day period.
- (A) 41 (B) 43
(C) 45 (D) 47
- Q10**



If thrice the age of the son is added to the age of the father, the sum is 34. But if thrice the age of the father is added to the age of son, the sum is 86. How much older (in years) is his father than his son at present?

- (A) 21 (B) 24
(C) 26 (D) 28

- Q11** The cost of 2 packets of chips and 3 chocolates is Rs. 47, cost of 5 cakes and 2 chocolates is Rs. 48 and the cost of 5 juices and 3 packets of chips is Rs. 55. Find the cost of 1 chocolate, 1 packet of chips, 1 cake and 1 juice.
(A) Rs. 60 (B) Rs. 50
(C) Rs. 30 (D) Rs. 40

- Q12** In a certain match between India and Australia, India won by 10 runs. If India scored 40 more runs, then the runs scored by India would have been $\frac{4}{3}$ th of the runs scored by Australia. Find the total score of India in this match.
(A) 160 (B) 150
(C) 140 (D) 130

- Q13** Aegon's age is two times the sum of the ages of his twin daughters. After 6 years his age will be $\frac{7}{4}$ times the sum of the ages of his two daughters. Find the age of Aegon's each daughter.
(A) 18 (B) 30
(C) 5 (D) 3

- Q14** The electricity bill of a certain establishment is partly fixed and partly varies with the number of units of electricity consumed. When in a certain month 480 units are consumed, the bill is Rs. 1600. In another month, when 550 units are consumed, the bill is Rs. 1810. In another month, when 600 units are consumed, what would be the bill amount?
(A) Rs. 1910 (B) Rs. 2030

- (C) Rs. 2200 (D) Rs. 1960

- Q15** In a two digit number the difference of digits is 2. Five times of the number is equal to the sum of the four times of the number formed by reversing the digits and 7. Find the number if it is given that the ones digit is greater than tens digit.

- (A) 79 (B) 78
(C) 82 (D) 80

- Q16** Vijay's present age is $\frac{1}{4}$ of his father's present age. After 5 years, Vijay's father's age will be thrice of Ashok's age. If Ashok's 7th birthday was celebrated three years ago, then what is Vijay's present age?

- (A) 10 years
(B) $6\frac{1}{4}$ years
(C) $5\frac{2}{3}$ years
(D) 5 years

- Q17** N is a two-digit natural number. When the digits of n are reversed and 2 is subtracted from the number formed, then the number becomes twice as big as N. If the sum of the digits of N is 7, then find the difference of the digits.

- (A) 2 (B) 3
(C) 4 (D) 6

- Q18** Ramesh went to a shop to buy a ceiling fan. The shopkeeper showed him a few samples of two varieties. Variety A had three blades each, and Variety B had four blades each. The number of samples of Variety A was three more than twice the number of samples of Variety B. If there were 89 blades in total, then how many samples did the shopkeeper show him?

- Q19** Five years ago, the age of Amar was five years more than four times the age of Bimal. Six years later, Amar's age will be four years more than



twice the age of Bimal. After how many years from present will their combined age be 50 years?

- Q20** If $2x + 3y + 5z = 68$ and $5x + 7y + 4z = 99$, then find the value of $51x + 69y$.

(A) 555 (B) 623
(C) 669 (D) 223

- Q21** Hemant is observing the purchasing habit of customers at a fruit shop. The first customer buys 5 apples, 11 mangoes and 6 guavas, paying Rs 355. The second buys 12 apples, 4 mangoes and 3 guavas, paying Rs 375. The third customer buys 4 apples, 7 mangoes and 3 guavas, paying Rs 310. If Hemant wants to buy 3 apples from the same shop, how much it will cost him?

(A) Rs. 45 (B) Rs. 50
(C) Rs. 30 (D) Rs. 90

- Q22** Each of the four parties – P, Q, R and S, contested in all the seats in an election. Each seat was won by exactly one of the four parties. Party P lost on 20 seats, Party Q lost on 12 seats, Party R lost on 11 seats and Party S lost on 17 seats. What was the total number of seats being contested in the election?

(A) 57 (B) 38
(C) 20 (D) 26

- Q23** If Sunil purchases 4 scales, 2 whiteners and 3 notebooks, the bill amounts Rs. 120. If he purchases 8 scales, 5 whiteners and 5 notebooks, the bill amounts Rs. 280. How much will Sunil pay if he wants to purchase 8 scales, 6 whiteners and 4 notebooks?

(A) Rs 320 (B) Rs 360
(C) Rs 420 (D) Rs 480

- Q24** In a two-digit number, the sum of the digits is 11. Two times of the number is equal to the sum of the four times of the number formed by reversing the digits and 14. Find the number.

(A) 47 (B) 74
(C) 38 (D) 83

- Q25** A runs from point P to point Q with a speed of V_1 m/s and returns with a speed of V_2 m/s. But B runs the same distance with a speed of V_3 m/s and return with a speed of V_4 m/s if $V_1 : V_2 = 3 : 4$; $V_3 : V_4 = 5 : 4$; $V_1 + V_3 = 45$; $V_2 + V_4 = 44$ then find $V_3 - V_2$.

(A) 10 (B) 18
(C) 5 (D) 11

- Q26** In a shop, the cost of 5 pens, 7 chocolates and 9 ice creams is ₹ 65 and 8 pens, 11 chocolates and 14 ice creams cost ₹ 103. Then how much does 1 pen, 1 chocolate and 1 ice cream cost?

(A) ₹ 13 (B) ₹ 10
(C) ₹ 17 (D) ₹ 11

- Q27** Rahul and Dev are cousins. The sum of their ages 12 years ago was $\frac{2}{3}$ times the sum of their present ages. Currently, Rahul is thrice as old as Dev. What will be the age of Dev after 10 years?

(A) 18 (B) 16
(C) 28 (D) 24

- Q28** Angelika is four times the age of her son. If four years later, Angelika will be four times as old as her daughter, then the difference between the ages of the son and the daughter is _____ years.

(A) 5 (B) 4
(C) 3 (D) 2

Q29



In a farm, there are some pigs and hens. The total number of legs of the hens is 16 lesser than the total number of legs of the pigs. If they have 52 heads in total (pigs + hens), then find their total number of legs.

- (A) 132 (B) 92
(C) 98 (D) 144

Q30 Rohan, along with his friend Raj, goes to a stationary shop and buys 2 scales, 3 colours, and 2 erasers. Raj buys 6 scales, 4 colours, and 6 erasers for double the amount paid by Rohan. What percent of the total amount paid by Rohan was paid for the colours?

- (A) 40% (B) 50%
(C) 60% (D) 75%



Answer Key

Q1 (D)
Q2 (B)
Q3 0
Q4 (A)
Q5 (C)
Q6 (A)
Q7 (B)
Q8 (D)
Q9 (B)
Q10 (C)
Q11 (C)
Q12 (A)
Q13 (B)
Q14 (D)
Q15 (A)

Q16 (A)
Q17 (B)
Q18 27
Q19 5
Q20 (C)
Q21 (D)
Q22 (C)
Q23 (A)
Q24 (D)
Q25 (A)
Q26 (D)
Q27 (C)
Q28 (C)
Q29 (D)
Q30 (C)



Hints & Solutions

Q1 Text Solution:

For the two equations,

$$a_1x + b_1y = c_1$$

$$a_2x + b_2y = c_2$$

Both the equation will have an infinite number of solutions if

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$$

Here,

$$kx + 9y = 15 + 6x$$

$$(k - 6)x + 9y - 15 = 0 \dots\dots (1)$$

Similarly,

$$\text{or, } 20x + (k - 3)y - 25 = 0 \dots\dots (2)$$

For an infinite number of solutions,

$$\frac{k-6}{20} = \frac{15}{25}$$

Thus, $k = 18$.

Q2 Text Solution:

Let the numbers be x and y .

Then, ATQ

$$x + y = 115 \dots\dots (i)$$

$$x - y = 43 \dots\dots(ii)$$

Then, solving we get

$$2x = 158$$

$$x = \frac{158}{2} = 79$$

The numbers are 79 and $(115 - 79 = 36)$

Hence, the required average

$$= \frac{79+36}{2} = 57.5$$

Q3 Text Solution:

The system of the equations can be written as

$$x^2 + 3x + 10 = y$$

$$10 - 3x + y = 0$$

Equating the equations, we have

$$x^2 + 3x + 10 = 3x - 10$$

$$x^2 = -20$$

But no real value exists whose square is a negative number.

Hence, the system has no real solution.

Q4 Text Solution:

Let the number be x .

Correct answer = $\frac{2}{5}$ of x .

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

Wrong answer = $\frac{5x}{2}$

According to the given conditions,

$$\frac{5x}{2} - \frac{2x}{5} = 2877$$

$$\frac{25x - 4x}{10} = 2877$$

$$\frac{21x}{10} = 2877$$

$$x = \frac{10}{21} \times 2877$$

$$x = \frac{10}{21} \times 21 \times 137$$

or, $x = 1370$

Thus, the required number is 1370.

Q5 Text Solution:

Rewriting the equations, we have

$$2x + 3y + 2 = 0$$

$$10x - 15y + 10 = 0$$

Therefore,

$$\frac{2}{10} \neq \frac{3}{-15} \neq \frac{2}{10}$$

$$\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$$

Hence, the system has exactly one real solution at $x = -1$ and $y = 0$.

Option (C) is correct.

Q6 Text Solution:

Let x , y be the number of adult tickets and children's tickets sold.

Then, ATQ,

$$x + y = 550 \dots\dots(i)$$

$$7.50x + 3.50y = 3205 \dots\dots(ii)$$

From (i), we have

$$y = 550 - x \dots\dots(iii)$$

Using (iii) and (ii) we get



$$7.50x + 3.50(550 - x) = 3205$$

$$\Rightarrow x = 320.$$

Again, solving for y we get

$$y = 230$$

Hence, 230 children's tickets were sold.

Q7 Text Solution:

Let the price of the sharpener be Rs. x and the price of the eraser be Rs. y.

Then, ATQ

$$2x + y = 17 \text{ (i)}$$

$$5x + 4y = 50 \text{ (ii)}$$

From the equation (i), we have

$$x = \frac{17-y}{2} \text{ (iii)}$$

Using (iii) and (ii) we have

$$5 \cdot \frac{17-y}{2} + 4y = 50$$

$$\frac{85+3y}{2} = 50$$

Solving for y we get,

$$y = 5$$

Substituting y = 5 into (iii) we get

$$x = \frac{17-5}{2} = 6$$

Hence, the price of the costlier item is the sharpener and its price is Rs. 6.

Q8 Text Solution:

Let the fraction is $\frac{x}{y}$.

Then, ATQ

$$\frac{x+5}{y-5} = \frac{11}{8} \text{ (i)}$$

$$\frac{x-3}{y+7} = \frac{1}{2} \text{ (ii)}$$

From the equation (i), we have

$$x = \frac{11(y-5)}{8} - 5 \text{ (iii)}$$

Using (iii) and (ii) we have

$$\frac{\frac{11(y-5)}{8} - 5 - 3}{y+7} = \frac{1}{2}$$

$$\frac{11y-119}{8(y+7)} = \frac{1}{2}$$

Solving for y, we get

$$y = 21$$

Substituting y = 21, into the equation (iii), we get

$$x = \frac{11(21-5)}{8} - 5 = 17$$

Hence, the difference between the denominator and numerator of the fraction is $21 - 17 = 4$.

Q9 Text Solution:

Let the price of 1 kg apple and 1 dozen bananas be Rs. a and Rs. b respectively.

From the first condition, we get

$$2a + 3b = 94 \text{ (1)}$$

From the second condition, we get

$$3a + 2b = 121 \text{ (2)}$$

Adding equation (1) and equation (2) we get,

$$5(a + b) = 215$$

$$\text{Or, } (a + b) = 43.$$

Thus, the price of 1 kg apple and 1 dozen bananas is Rs. 43.

Q10 Text Solution:

Let the present age of the father be x years and his son be y.

Then, ATQ,

$$x + 3y = 34 \text{ (i)}$$

$$3x + y = 86 \text{ (ii)}$$

From (i), we have

$$x = 34 - 3y \text{ (iii)}$$

Using (ii) and (iii) we have

$$3(34 - 3y) + y = 86$$

$$102 - 8y = 86$$

$$y = 2$$

Therefore, from (iii) we have

$$x = 34 - 3(2) = 28$$

Hence, his father is $(28 - 2) = 26$ years older than his son.

Q11 Text Solution:

Let's say the cost of a single packet of chips, one chocolate, one cake and one juice be Rs w, Rs x, Rs y and Rs z respectively.



According to the question,

$$2w + 3x = 47 \dots\dots\dots (1)$$

$$5y + 2x = 48 \dots\dots\dots (2)$$

$$5z + 3w = 55 \dots\dots\dots (3)$$

Adding equations (1), (2) and (3), we get,

$$5w + 5x + 5y + 5z = 150$$

$$\Rightarrow w + x + y + z = 30$$

Thus, the cost of a single packet of chips, one chocolate, one cake and one juice combined is equal to Rs. 30.

Q12 Text Solution:

Let the number of runs scored by Australia be x .

And the number of runs scored by India is y .

Based on the first condition,

$$y = x + 10 \text{ -----(1)}$$

Based on the second condition,

$$y + 40 = \frac{4}{3} \text{ of } x \text{ -----(2)}$$

Put $y = x + 10$ (from equation (1)) in equation (2), we get

$$(x + 10) + 40 = \frac{4}{3} \text{ of } x$$

$$\text{or, } \frac{1}{3} \text{ of } x = 50$$

$$\text{or, } x = 150$$

$$\text{From equation (1), } y = (x + 10)$$

$$\text{Or, } y = 160 \text{ (since } x = 150)$$

Thus, the total score in India is 160.

Q13 Text Solution:

Let x be the present age of Aegon and the sum of the ages of his daughters is y .

Then, ATQ,

$$x = 2y \dots (i)$$

$$x + 6 = \frac{7}{4} \times (y + 12) \dots (ii)$$

Substituting $x = 2y$ into the equation (ii), we get

$$2y + 6 = \frac{7}{4}(y + 12)$$

$$8y + 24 = 7y + 84$$

$$y = 60$$

Therefore, the age of each daughter is $\frac{60}{2} = 30$ years old.

Q14 Text Solution:

Let the fixed amount be x and the cost of each unit be y .

Then as per the given

$$480y + x = 1600 \dots\dots\dots (1)$$

$$550y + x = 1810 \dots\dots\dots (2)$$

By solving, we get

$$70y = 210$$

$$y = 3$$

$$\text{Hence } x = 160$$

$$\therefore \text{Fixed charges} = 160$$

$$\begin{aligned} \text{Total charges when 600 units are consumed,} \\ = 160 + 600 \times 3 = 1960 \end{aligned}$$

Hence [d] is the correct choice.

Q15 Text Solution:

Let the number be xy .

Given,

$$y - x = 2 \text{ -----(1)}$$

And,

$$5(10x + y) = 4(10y + x) + 7 \text{ -----(2)}$$

$$\text{From (1) we get } x = y - 2$$

$$\text{Putting } x = y - 2 \text{ in equation (2)}$$

$$5(10x + y) = 4(10y + x) + 7$$

$$50x + 5y = 40y + 4x + 7$$

$$46(y - 2) = 35y + 7$$

$$11y = 99$$

$$y = 9$$

$$\text{And } x = y - 2 = 7$$

The number is 79.

Q16 Text Solution:

Let Vijay's father's age be ' x ' years.

$$\text{Vijay's age} = \frac{x}{4} \text{ years}$$

And Vijay's father's age will be thrice of Ashok's age after 5 years.

Let the Ashok's present age be ' a ' years.

$$\text{i.e., } (x + 5) = 3(a + 5) \dots (i)$$



Ashok's 7th birthday was celebrated three years ago.

So Ashok's present age (a) = $7 + 3 = 10$ years

Now, (i) $\Rightarrow x + 5 = 3(10 + 5)$

$x + 5 = 45 \Rightarrow x = 40$.

Vijay's present age = $\frac{x}{4} = 10$ years.

Hence option (a) is correct.

Q17 Text Solution:

Let the two-digit number N be $(10X + Y)$, where X and Y are the digits of N.

When its digits are reversed, it becomes $(10Y + X)$.

When 2 is subtracted from $(10Y + X)$, the number becomes twice as big as $(10X + Y)$.

So, $(10Y + X) - 2 = 2(10X + Y)$

Or, $10Y + X = 20X + 2Y + 2$

Or, $8Y - 19X = 2$ (i)

Also, the sum of the digits is 7.

So, $X + Y = 7$ (ii)

Multiplying equation (ii) with 8, and subtracting equation (i) from it, we get

$27X = 54$

Or, $X = 2$.

Putting $X = 2$ in equation (ii), we get

$Y = 5$.

So, the difference of the digits is 3.

Q18 Text Solution:

Let the number of samples of Variety A be x, and that of Variety B be y.

Then, $x = 2y + 3$ (i)

As Variety A has three blades each and Variety B has four blades each, so the total number of blades should be $3x + 4y$.

So, $3x + 4y = 89$ (ii)

Solving (i) and (ii), Substituting the value of x, we get, $3(2y + 3) + 4y = 89$

Or, $6y + 9 + 4y = 89$

Or, $10y = 80$

Or, $y = 8$

Placing $y = 8$ in (i), we get

$x = 2(8) + 3 = 19$

Hence, the shopkeeper showed him $8 + 19 = 27$ samples.

Q19 Text Solution:

Let the present age of Amar and Bimal be a and b years, respectively.

Five years ago, the age of Amar was 5 years more than 4 times the age of Bimal.

So, $a - 5 = 4(b - 5) + 5$

Or, $a - 5 = 4b - 20 + 5$

Or, $a - 4b = (-10)$ (i)

6 years hence, the age of Amar will be 4 years more than twice the age of Bimal.

So, $a + 6 = 2(b + 6) + 4$

Or, $a + 6 = 2b + 12 + 4$

Or, $a - 2b = 10$ (ii)

Subtracting equation (i) from equation (ii), we get

$(2b) = (20)$

or, $b = 10$

So, $a = (-10) + 4b$

Or, $a = (-10) + 4(10)$

Or, $a = 30$

At present, the combined age of Amar and Bimal is 40 years.

Let's assume after x years their combined age will be 50 years.

So, $a + b + 2x = 50$

Or, $2x = 50 - (a + b)$

Or, $2x = 50 - 40$

Or, $2x = 10$

Or, $x = 5$

Hence, after 5 years, their combined age will be 50 years.



Q20 Text Solution:

$$2x + 3y + 5z = 68$$

$$\Rightarrow z = \frac{68 - 2x - 3y}{5} \dots (i)$$

Again,

$$5x + 7y + 4z = 99$$

$$\text{or, } z = \frac{99 - 5x - 7y}{4} \dots (ii)$$

Comparing the value of z in equation (i) and equation (ii)

$$\frac{68 - 2x - 3y}{5} = \frac{99 - 5x - 7y}{4}$$

$$272 - 8x - 12y = 495 - 25x - 35y$$

$$17x + 23y = 223 \dots (iii)$$

By multiplying the equation (iii) with 3 we get

$$51x + 69y = 669$$

Hence, Option c is correct.

Q21 Text Solution:

According to the Question,

Let the Price of an Apple, Mango and Guava be A, M and G.

$$5A + 11M + 6G = 355 \dots\dots\dots 1$$

$$12A + 4M + 3G = 375 \dots\dots\dots 2$$

$$4A + 7M + 3G = 310 \dots\dots\dots 3$$

By $(2 + 3) - (1)$ so;

$$16A + 11M + 6G = 685$$

$$5A + 11M + 6G = 355$$

$$\text{So, } 11A = 330$$

$$A = 30$$

$$\text{So, } 3A = 90.$$

Q22 Text Solution:

Let the total number of seats be x .

The number of seats won by party P = $x - 20$

The number of seats won by party

$$Q = x - 12$$

The number of seats won by party

$$R = x - 11$$

The number of seats won by party S = $x - 17$

$$\therefore x - 20 + x - 12 + x - 11 + x - 17 = x$$

$$\Rightarrow 4x - x = 60$$

$$\Rightarrow 3x = 60$$

$$\Rightarrow x = 20$$

Q23 Text Solution:

Let the cost of each scale, whitener and notebook be S, W and N respectively.

So, according to the given information,

$$4S + 2W + 3N = 120 \dots\dots\dots (1)$$

$$8S + 5W + 5N = 280 \dots\dots\dots (2)$$

Since there are only two equations and three unknowns, subtracting equation (1) from (2), we get,

$$4S + 3W + 2N = 160$$

Multiplying both sides by 2, we get,

$$8S + 6W + 4N = 320$$

So, the total cost of 8 scales, 6 whiteners and 4 notebooks is Rs. 320.

Q24 Text Solution:

Let be the number xy .

According to the question,

$$x + y = 11 \dots\dots\dots (1)$$

$$\text{And, } 2(10x + y) = 4(10y + x) + 14 \dots\dots\dots (2)$$

$$20x + 2y = 40y + 4x + 14$$

$$16x - 38y = 14$$

$$8x - 19y = 7 \dots\dots\dots (3)$$

We can write equation (1) as, $x = 11 - y$

Now if we put the value of x in equation (3), we will get the value of y .

$$8(11 - y) - 19y = 7$$

$$88 - 8y - 19y = 7$$

$$27y = 81$$

$$y = 3$$

$$\text{Now, } x = 11 - 3 = 8$$

So, the number is 83.

Q25 Text Solution:

$$\text{Let } V1 = 3x \text{ and } V2 = 4x$$

$$\text{and } V3 = 5y \text{ and } V4 = 4y$$



therefore, $3x + 5y = 45$ (i)
 $4x + 4y = 44$
 or,
 $x + y = 11$
 . (ii)
 multiplying equation (ii) with 3 we get
 $3x + 3y = 33$
 (iv)
 subtracting equation (iv) from equation (i)
 we get, $2y = 12$
 or, $y = 6$
 putting the value of y in equation (ii) we get
 $x = 5$
 Hence,
 $V3 - V2 = 5(6) - 4(5) = 30 - 20 = 10$.

Q26 Text Solution:

Let the cost of 1 pen, 1 chocolate and 1 ice cream is ₹ x , ₹ y and ₹ z .

Therefore,

$$5x + 7y + 9z = 65 \text{(1)}$$

$$8x + 11y + 14z = 103 \text{(2)}$$

Since, the coefficients of x , y and z are in A.P. for both the equations.

Then, we can solve it by :

$$5x + 5y + 2y + 5z + 4z = 65$$

$$5(x + y + z) + 2(y + 2z) = 65 \text{(3)}$$

$$\text{Similarly, } 8x + 11y + 14z = 103$$

$$8(x + y + z) + 3(y + 2z) = 103 \text{(4)}$$

$$\text{Let } a = x + y + z \text{ and } b = y + 2z$$

now, both the equation becomes

$$[5a + 2b = 65] \text{(A)}$$

$$[8a + 3b = 103] \text{(B)}$$

On multiplying the equation A by 3 and equation B by 2

$$[15a + 6b = 195] \text{(C)}$$

$$[16a + 6b = 206] \text{(D)}$$

By (D - C) we get,

$$a = 11$$

Since, $a = x + y + z$ (which is the sum of cost of 1 pen, 1 chocolate and 1 ice cream).

Hence, $x + y + z = \text{Rs. } 11$

Q27 Text Solution:

Let the present age of Rahul and Dev is x years and y years respectively.

12 years ago, Rahul's age = $(x - 12)$ years

Dev's age = $(y - 12)$ years

According, to the given condition,

$$(x - 12) + (y - 12) = \frac{2}{3} (x + y)$$

$$\text{Or, } (x + y - 24) = \frac{2}{3} (x + y)$$

$$\text{Or, } 3x + 3y - 72 = 2x + 2y$$

$$\text{Or, } x + y = 72 \text{(1)}$$

It is given that the present age of Rahul is 3 times the present age of Dev.

$$x = 3y \text{(2)}$$

Putting $x = 3y$ in equation(1) we get $4y = 72$

$$\text{Or, } y = 18$$

Present age of Dev = 18 years

After 10 years, Dev's age = $(18 + 10) = 28$ years.

Q28 Text Solution:

Let the present age of Angelika and her son and her daughter is A , s and d respectively.

By the problem

$$A = 4s \text{(1)}$$

Four years later, the age of Angelika and her daughter will be

$(A + 4)$ years and $(d + 4)$ years respectively.

It is given that

$$(A + 4) = 4(d + 4)$$

$$\text{Or, } A + 4 = 4d + 16$$

$$\text{Or, } A - 4d = 12$$

$$\text{Or, } 4s - 4d = 12 \text{ (As, } A = 4s \text{ from (1))}$$

$$\text{Or, } 4(s - d) = 12$$

$$\text{Or, } (s - d) = 3$$

Therefore, the required difference between the ages of the son and the daughter is 3 years.



Q29 Text Solution:

We know that, number of heads is the same as the number of animals.

We also know that pigs have 4 legs, and hens have 2 legs.

So, if we assume the number of pigs to be x , and the number of hens to be y , then

$$x + y = 52 \dots\dots\dots (i)$$

Now, total number of legs of the pigs = $4x$

Total number of legs of the hens = $2y$

$$\text{Therefore, } 4x - 2y = 16$$

$$\text{Or, Simplifying } 2x - y = 8$$

$$\text{Or, } y = 2x - 8 \dots\dots\dots (ii)$$

Substituting the value of y from (ii) to (i), we get

$$x + 2x - 8 = 52$$

$$3x = 60$$

$$x = 20$$

$$\text{Therefore, } y = 52 - 20 = 32$$

Hence, the total number of legs must be

$$20(4) + 32(2) = 144$$

Q30 Text Solution:

Let the costs of scales, colors and erasers be x , y and z respectively.

$$\text{So, } 2x + 3y + 2z = A, \text{ and } 6x + 4y + 6z = 2A$$

$$\Rightarrow 3x + 2y + 3z = A$$

$$\text{From the 2 equations, } 2x + 3y + 2z = 3x + 2y + 3z$$

$$\Rightarrow y = x + z$$

Therefore, the required percentage =

$$\frac{3y}{2x + 3y + 2z} \times 100$$

$$= \frac{3y}{2y + 3y} \times 100$$

$$= \frac{3}{5} \times 100$$

$$= 60\%.$$



[Android App](#)

| [iOS App](#)

| [PW Website](#)