



SHIKSHA CLASSES

Sub. : Maths

Answer Paper

Marks : 20

Std. : VIIIth - S.B.

12. Equations in one variable

Q.1 : A) Select the most appropriate Alternative. 02

1) The value of m if $9m - 81 = 0$.

Ans : c) 9

2) One number is thrice the other number. Their sum is 24. What is the equation ?

Ans : b) $x + 3x = 24$

: B) Solve the following. 01

1) Translate the following into mathematical statement :

"A number added to one-fourth of the number is equal to 15"

Ans : Let the number be x

According to the question

$$\text{Number} + \frac{1}{4} \times \text{number} = 15$$

$$\therefore x + \frac{1}{4}x = 15$$

$$\text{Or } x + \frac{x}{4} = 15$$

Q.2 : A) Solve any one of the following. (Activity) 02

1) Fill in the boxes to solve the following equations :

Ans : i) $x - 2 = 7$

$$\therefore x - 2 + \boxed{2} = 7 + \boxed{2}$$

$$\therefore x = \boxed{9}$$

$$\text{ii) } \frac{x}{3} = 4$$

$$\therefore \frac{x}{3} \times \boxed{3} = 4 \times \boxed{3}$$

$$\therefore x = \boxed{12}$$

2) Write correct numbers in the boxes given.

Length is 3 times the breadth

I am a rectangle. My perimeter is 40 cm.	breadth x
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Ans : Perimeter of the rectangle = 40

$$2(\boxed{3}x + \boxed{1}x) = 40$$

$$2 \times \boxed{4}x = 40$$

$$\boxed{8}x = 40$$

$$x = \boxed{5}$$

\therefore Breadth of rectangle = $\boxed{5}$ cm and

Length of rectangle = $\boxed{15}$ cm

: B) Solve any one of the following. 02

1) Solve the following equation :

$$\frac{y}{7} + \frac{y-4}{3} = 2$$

Ans : Multiplying both the sides by 21,

$$\frac{y}{7} \times 21 + \frac{y-4}{3} \times 21 = 2 \times 21$$

$$\therefore 3y + 7(y-4) = 42$$

$$\therefore 3y + 7y - 28 = 42$$

Adding 28 to both the sides,

$$10y - 28 + 28 = 42 + 28$$

$$\therefore 10y = 70$$

Dividing both the sides by 10,

$$\frac{10y}{10} = \frac{70}{10}$$

$$\therefore y = 7.$$

2) Solve the following equation :

$$\frac{b + (b+1) + (b+2)}{4} = 21.$$

Ans : $\therefore b + (b+1) + (b+2) = 21 \times 4$

$$\therefore b + b + 1 + b + 2 = 84$$

$$\therefore 3b + 3 = 84$$

Dividing both the sides by 3,

$$\frac{3b}{3} + \frac{3}{3} = \frac{84}{3}$$

$$\therefore b + 1 = 28$$

$$\therefore b = 28 - 1$$

$$\therefore b = 27.$$

Q.3 : A) Solve any one of the following. (Activity)

1) Ratna has ₹ 200 more than three times the amount Rafik has. If ₹ 300 from the amount with Ratna are given to Rafik, amount with Ratna will be $\frac{7}{4}$ times the amount with Rafik. Find the initial amount with Rafik. To find the initial amount, complete the following activity.

Ans : The amount with Ratna is ₹ 200 more than three times the amount with Rafik.

Let the initial amount with Rafik be ₹ x.

$$\therefore \text{Ratna has } ₹ \boxed{3x + 200}$$

₹ 300 from Ratna are given to Rafik.

\therefore amount remaining with Ratna is

$$\boxed{(3x + 200 - 300)} \\ = ₹ \boxed{(3x - 100)}$$

\therefore now Rafik has ₹ (x + 300).

The amount with Ratna is $\frac{7}{4}$ times the amount with Rafik.

$$\therefore \frac{\text{amount with Ratan}}{\text{amount with Rafik}} = \frac{7}{4}$$

$$\therefore \frac{3x - 100}{x + 300} = \frac{7}{4}$$

$$\therefore 4 \boxed{3x - 100} = 7 \boxed{x + 300}$$

$$\therefore 12x - 400 = 7x + 2100$$

$$\therefore 12x - 7x = \boxed{2500}$$

$$\therefore 5x = \boxed{2500}$$

$$\therefore x = \boxed{500}$$

\therefore initial amount with Rafik is ₹ $\boxed{500}$

2) Fill in the blanks :

Anita's present age is x years.

Her mother is 30 years older than Anita.

\therefore mother's present age is x + 30.

10 years ago, Anita's age was x - 10.

and her mother's age was x + 20.

The ratio of Anita's age to her mother's age, 10 years ago was 1 : 7

$$\therefore \frac{x - 10}{x + 20} = \frac{1}{7}$$

$$\therefore 7(x - 10) = x + 20$$

$$\therefore 7x - 70 = x + 20$$

$$\therefore 7x - x = 20 + 70$$

$$\therefore 6x = 90$$

$$\therefore x = 15$$

Anita's present age is 15 years.

$$\therefore \text{mother's present age is } 15 + 30 = 45 \text{ years.}$$

: B) Solve any one of the following. 03

1) The ratio of weights of copper and zinc in brass (alloy) is 13:7. Find the weight of zinc in a brass utensil weighing 700 gm.

Ans : The ratio of the weights of copper and zinc in brass is 13 : 7.

Let the weight of copper be $13x$ g.

Then the weight of zinc is $7x$ g.

From the given condition,

$$13x + 7x = 700$$

$$\therefore 20x = 700$$

$$\therefore x = \frac{700}{20}$$

$$\therefore x = 35.$$

The weight of zinc is $7x$ g.

$$\therefore \text{the weight of zinc} = 7 \times 35 = 245 \text{ g.}$$

The weight of zinc in a brass utensil is 245 g.

2) A Cricket player scored 180 runs in the first match and 257 runs in the second match. Find the number of runs he should score in the third match, so that the average of runs in the three matches be 230.

Ans : Let the cricketer score x runs in the third match.

The total runs scored by the cricketer
 $= 180 + 257 + x.$

The average of the three matches is 230

$$\therefore \text{the total of three matches}$$

$$= 230 \times 3 = 690$$

$$\therefore 180 + 257 + x = 690$$

$$\therefore x = 690 - 180 - 257$$

$$\therefore x = 253$$

\therefore The cricketer should score 253 runs in the third match.

Q.4 : Solve any one of the following. 04

1) There are 90 multiple choice questions in a test, suppose you get two marks for every correct answer and every question you leave unattempted or answer wrongly, one mark is deducted from your total score of correct answers. If you get 60 marks in the test, then how many questions did you answer correctly ?

Ans : Suppose I answered x questions correctly then.

Number of wrong answers and unattempted questions $= 90 - x$, since, for every correct answer 2 marks are awarded and for every wrong answer or unattempted question one mark is deducted.

$$\therefore \text{Total score} = 2x - (90 - x) \times 1 \\ = 2x - (90 - x)$$

But, the total score is given as 60

$$\therefore 2x - (90 - x) = 60$$

$$\therefore 2x - 90 + x = 60$$

$$\therefore 3x = 60 + 90$$

$$\therefore 3x = 150$$

$$\therefore x = \frac{150}{3}$$

$$\therefore x = 50.$$

$$\therefore \text{Number of correct answer} = 50.$$

2) In a two digit number, The digit at the ten's place is twice the digit at units's place. If the number obtained by interchanging the digits is added to the original number, the sum is 66. Find the original number.

Ans : Let the digit at the units place be x .

The digit at the tens place is twice the digit at the units place.

$$\therefore \text{The digit at the tens place is } 2x.$$

$$\text{The number} = 10 \times 2x + x$$

$$= 20x + x = 21x \quad \text{---(i)}$$

The number obtained by interchanging the digits.

x at tens place and $2x$ at units place

$$\therefore \text{the new number} = 10x + 2x = 12x \text{ ---(ii)}$$

From the given condition.

$$21x + 12x = 66 \quad \dots[\text{From (i) \& (ii)}]$$

$$\therefore 33x = 66$$

$$\therefore x = \frac{66}{33}$$

$$\therefore x = 2$$

The number is $21x = 21 \times 2 = 42$.

The original number is 42.

Q.5 : Solve any one of the following. 03

1) Divide 34 into two parts in such a way

that $\left(\frac{4}{7}\right)^{\text{th}}$ of the part is equal to $\left(\frac{2}{5}\right)^{\text{th}}$

of the other.

Ans : Let one part be x , Then, other part is $34 - x$, it is given that

$\left(\frac{4}{7}\right)^{\text{th}}$ of one part = $\left(\frac{2}{5}\right)^{\text{th}}$ of the other part

$$\therefore \frac{4}{7} \times x = \frac{2}{5} (34 - x)$$

$$\therefore 20x = 14(34 - x)$$

$$\therefore 20x = 14 \times 34 - 14x$$

$$\therefore 20x + 14x = 14 \times 34$$

$$\therefore 34x = 14 \times 34$$

$$\therefore x = \frac{14 \times \cancel{34}}{\cancel{34}}$$

$$\therefore x = 14$$

Hence, the two parts are 14 and $34 - 14 = 20$.

2) Find three consecutive whole numbers whose sum is more than 45 but less than 54.

Ans : The difference between the consecutive

whole numbers is 1.

Let the three consecutive whole numbers be x , $x + 1$ and $x + 2$.

Now, $x + x + 1 + x + 2 > 45$

$$\therefore 3x + 3 > 45$$

$$\therefore 3x > 45 - 3$$

$$\therefore 3x > 42$$

$$\therefore x > 14$$

$$\therefore x = 15, x + 1 = 15 + 1 = 16$$

$$\text{and } x + 2 = 15 + 2 = 17$$

OR

$$x + x + 1 + x + 2 < 54$$

$$3x + 3 < 54$$

$$\therefore 3x < 54 - 3$$

$$\therefore 3x < 51$$

$$\therefore x < 17$$

$$\therefore x = 16,$$

$$x + 1 = 16 + 1 = 17,$$

$$x + 2 = 16 + 2 = 18$$

\therefore The three consecutive whole numbers are 15, 16, 17 or 16, 17, 18.

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