General instructions for Students: Whatever be the notes provided, everything must be copied in the Mathematics copy and then do the HOMEWORK in the same copy.

CHECK YOUR PROGRESS

1. (v) Solve the equation : $\frac{2x-3}{5x-4} = \frac{2x+1}{5x+20}$

Given : $\frac{2x-3}{5x-4} = \frac{2x+1}{5x+20}$

$\Rightarrow \quad (2x-3)(5x+20) = (2x+1)(5x-4)$

$\Rightarrow \quad 10x^2 + 40x - 15x - 60 = 10x^2 - 8x + 5x - 4$

$\Rightarrow \quad 25x - 60 = -3x - 4$

$\Rightarrow \quad 25x + 3x = -4 + 60$

$\Rightarrow \quad 28x = 54$

$\Rightarrow \quad x = 2$ **Ans.**

5. The numerator of a rational number is 8 less than its denominator. If the numerator is increased by 2 and denominator is decreased by 1, the number obtained is $\frac{1}{2}$. Find the number.

Solution : Let denominator of a rational number $= x$

And its numerator $= x - 8$

$\therefore$ Fraction $= \frac{x-8}{x}$

According to question, $\frac{x-8+2}{x-1} = \frac{1}{2}$

$\Rightarrow \quad \frac{x-6}{x-1} = \frac{1}{2}$

$\Rightarrow \quad 2 \times (x-6) = x - 1$

$\Rightarrow \quad 2x - 12 = x - 1$

$\Rightarrow \quad 2x - x = -1 + 12$

$\Rightarrow \quad x = 11 \qquad \therefore$ Fraction $= \frac{11-8}{11} = \frac{3}{11}$ **Ans.**

8. The digits of two digit number differ by 7. If the digits are interchanged and the resulting number is added to the original number we get 121. Find the original number.

Solution : Let unit's digit be x and ten's digit $x - 7$

$$\text{Original number} = 10(x-7) + x = 11x - 70$$

After interchanging the digits,

$$\text{Unit's digit be } x - 7 \text{ and ten's digit } x$$

$$\text{Resulting number} = 10x + x - 7 = 11x - 7$$

According to question, $11x - 7 + 11x - 70 = 121$

$$\Rightarrow \quad 22x - 77 = 121$$

$$\Rightarrow \quad 22x = 121 + 77$$

$$\Rightarrow \quad 22x = 198 \quad \Rightarrow \quad x = 9$$

$$\therefore \quad \text{Original number} = 11x - 70 = 11(9) - 70 = 29$$

Hence, number is 29 or 92 **Ans.**

13. Solve the inequality and graph its solution on a number line :

$$-\frac{1}{4} \leq \frac{1}{2} - \frac{x}{3} < 2, \quad x \in I$$

Given : $-\frac{1}{4} \leq \frac{1}{2} - \frac{x}{3} < 2$

$$\Rightarrow \quad -\frac{1}{2} - \frac{1}{4} \leq -\frac{1}{2} + \frac{1}{2} - \frac{x}{3} < 2 - \frac{1}{2} \qquad \text{Adding } -\frac{1}{2}$$

$$\Rightarrow \quad -\frac{3}{4} \leq -\frac{x}{3} < \frac{3}{2}$$

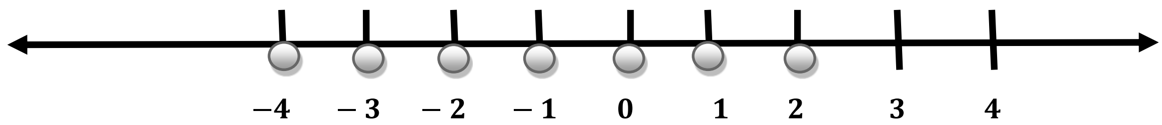
$$\Rightarrow \quad 3 \times \left(\frac{-3}{4}\right) \leq \left(-\frac{x}{3}\right) \times 3 < \frac{3}{2} \times 3 \qquad \text{Multiply by } 3$$

$$\Rightarrow \quad -\frac{9}{4} \leq -x < \frac{9}{2}$$

$$\Rightarrow \quad \frac{9}{4} \geq x > -\frac{9}{2} \qquad \text{Multiply by } -1 \text{ and reverse the symbol}$$

Hence , solution set = $\{-4, \ -3, \ -2, \ -1, \ 0, \ 1, \ 2\}$ **Ans.**

Graphical representation



HOMEWORK

CHECK YOUR PROGRESS

QUESTION NUMBERS : 1(ii), (vi); 3, 7 and 12

MATHS PRACTICAL

Points to remember .

**Read and understand the experiment.*

**In the Maths Practical Copy write down AIM, MATERIAL REQUIRED , METHODOLOGY , TABULAR COLUMN and CONCLUSION on the ruled page. DIAGRAM and CALCULATION on the plane page.*

**Follow the PROCEDURE properly to get the correct conclusion.*

**MATHS PRACTICAL COPY must be a soft cover Lab copy with atleast 50 to 60 pages.*

EXPERIMENT NO . 4

AIM : To identify cuboidal box and to calculate its surface area (Internal & External) and volume (Internal & External) . Also determine the Cube with maximum volume that can be placed in it.

MATERIALS REQUIRED

1. Ruler , 2. Pencil

METHODOLOGY

Surface area of cuboid $= 2(lb + bh + lh)$

Volume of Cuboid $= lbh$

Volume of Cube $= a^3$

PROCEDURE

Select atleast four Cuboidal boxes from the surroundings , measure its length and breadth and height (both internal & external). (eg. Shoe box , Chocolate box, etc.). Calculate its surface area (both Internal & External)and Volume (both Internal & External) with the help of formula. Also calculate the Volume of a Cubical box with maximum volume that can be placed in each of the selected Cuboidal boxes.

OBSERVATION TABLE

Trial No	Name of the objects	Dimensions (cm)						**Surface area (cm^2)**		**Volume (cm^3)**		**Cube**	
		External			**Internal**			**External**	**Internal**	**Internal**	**External**	**edge**	**Volume**
		L	**B**	**H**	**l**	**b**	**h**						
1													
2													
3													
4													

CONCLUSION

Dimension of the Cubical box with maximum volume that can be placed in the cuboidal box is _______________ of the cuboidal box.

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