

## MATHS CLASS X

### Continuation of Chapter 4 ( LINEAR INEQUATIONS)

**General direction for the students** :-Whatever be the notes provided , everything must be copied in the Maths Copy and then do the Home work in the same Copy.

#### EXERCISE 4

**Q4.**  $30 - 4(2x - 1) < 30$ , given  $x$  is a positive integer

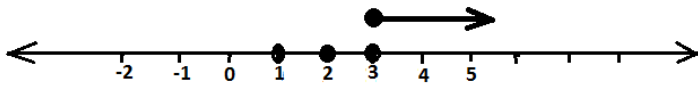
$$\Rightarrow 30 - 8x + 4 < 30$$

$$\Rightarrow -8x < -4$$

$$\Rightarrow 8x > 4 \text{ Note the step.}$$

$$\Rightarrow x > \frac{1}{2}, \text{ given } x \text{ is a positive integer}$$

Solution set={1,2,3,.....}

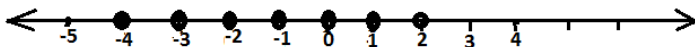


**Q10.** Solve  $2x - 3 < 3$ , given  $A = \{x : x \in I, -4 \leq x \leq 4\}$

$$\Rightarrow 2x < 6$$

$$\Rightarrow x < 3, A = \{-4, -3, -2, -1, 0, 1, 2, 3, 4\}$$

Solution set =  $\{-4, -3, -2, -1, 0, 1, 2\}$



**Q11.** Solve  $\frac{1}{2} + 8x > 5x - \frac{3}{2}$ ,  $x \in \mathbf{Z}$

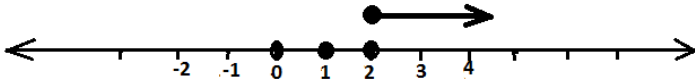
$$\Rightarrow 8x - 5x > -\frac{3}{2} - \frac{1}{2}$$

$$\Rightarrow 3x > -2$$

$$\Rightarrow x > -\frac{2}{3}, x \in Z$$

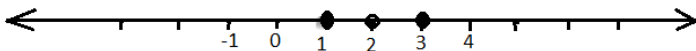
$$\Rightarrow x > -0.666 \dots, x \in Z$$

Solution set={0, 1, 2, 3, .....}



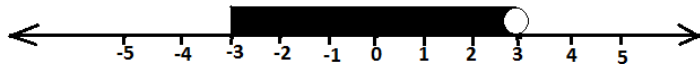
**Q13. Solve**  $-2 \leq \frac{1}{2} - \frac{2x}{3} \leq 1\frac{5}{6}, x \in N$

$\Rightarrow -2 \leq \frac{1}{2} - \frac{2x}{3} \text{ note the step}$ $\Rightarrow -2 \leq \frac{3-4x}{6}$ $\Rightarrow -12 \leq 3-4x$ $\Rightarrow -15 \leq -4x$ $\Rightarrow 15 \geq 4x \text{ note the step}$ $\Rightarrow \frac{15}{4} \geq x$ $\Rightarrow 3\frac{3}{4} \geq x$	$\Rightarrow \frac{1}{2} - \frac{2x}{3} \leq 1\frac{5}{6} \text{ note the step}$ $\Rightarrow \frac{3-4x}{6} \leq \frac{11}{6}$ $\Rightarrow 3-4x \leq 11$ $\Rightarrow -4x \leq 8$ $\Rightarrow 4x \geq -8 \text{ note the step}$ $\Rightarrow x \geq -2$
$\Rightarrow -2 \leq x \leq 3\frac{3}{4}, x \in N$	
Solution set={ 1, 2, 3 }	



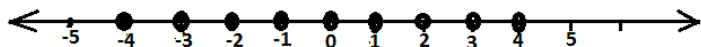
**Q26. Solve**  $-2\frac{2}{3} \leq x + \frac{1}{3} < 3 + \frac{1}{3}, x \in R$

$\Rightarrow -2\frac{2}{3} \leq x + \frac{1}{3} \text{ note the step}$ $\Rightarrow -\frac{8}{3} - \frac{1}{3} \leq x$ $\Rightarrow -3 \leq x$	$\Rightarrow x + \frac{1}{3} < 3 + \frac{1}{3} \text{ note the step}$ $\Rightarrow x < 3 + \frac{1}{3} - \frac{1}{3}$ $\Rightarrow x < 3$
$\Rightarrow -3 \leq x < 3, x \in R$	
Solution set={x: -3 ≤ x < 3, x ∈ R} <span style="float: right;">note the step</span>	



**Q30. Solve  $-2 + 10x \leq 13x + 10 < 24 + 10x$ ,  $x \in Z$**

$\Rightarrow -2 + 10x \leq 13x + 10$ $\Rightarrow -2 - 10 \leq 13x - 10x$ $\Rightarrow -12 \leq 3x$ $\Rightarrow -4 \leq x$	$\Rightarrow 13x + 10 < 24 + 10x$ $\Rightarrow 13x - 10x < 24 - 10$ $\Rightarrow 3x < 14$ $\Rightarrow x < 4\frac{2}{3}$
$\Rightarrow -4 \leq x < 4\frac{2}{3}, x \in Z$	
<b>Solution set = <math>\{-4, -3, -2, -1, 0, 1, 2, 3, 4\}</math></b>	



**Q33.  $-3x + 4 < 2x - 3, x \in N$  and  $4x - 5 < 12, x \in W$**

1<sup>st</sup> part

$$\Rightarrow -3x - 2x < -3 - 4$$

$$\Rightarrow -5x < -7$$

$$\Rightarrow 5x > 7$$

$$\Rightarrow x > 1\frac{2}{5}, x \in N$$

Solution set P =  $\{2, 3, 4, 5, \dots\}$  -----(1)

2<sup>nd</sup> part

$$4x - 5 < 12, x \in W$$

$$\Rightarrow 4x < 17$$

$$\Rightarrow x < 4\frac{1}{4}, x \in W$$

Solution set Q =  $\{0, 1, 2, 3, 4\}$  -----(2)

$$(i) P \cap Q = \{2, 3, 4\}$$

$$(ii) Q - P = \{0, 1\}$$

HOME WORK:-

Exercise 4. Left over questions from the exercise.

Chapter 4 is completed.

Class X Maths