SpeedLabs
MATHS

ICSE 8th

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1. If $x \in \{-3, -2, -1, 0, 1, 2, 3\}$, find the solution set of each of the following:

(i) $x+2<1$

Ans. $x+2<1$

$\Rightarrow x \le -1$

Therefore, Solution Set $=\{-3,-2\}$

(ii) $3-5x<-1$

Ans. $3-5x<-1$

$\Rightarrow 5x>4$

$\Rightarrow x>4/5$

Therefore, Solution Set $=\{1,2,3\}$

2. If $x \in N$; find the solution set of each of the following in equation: $N = \{1, 2, 3, \ldots\}$

(i) $3x-8<0$

$\Rightarrow 3x<8$

$\Rightarrow x<\frac{8}{3}$

Solution Set $= \{1, 2\}$

(ii) $\frac{-1}{4} \le \frac{1}{2} - \frac{2}{3}$

Ans. $\frac{-1}{4} \le \frac{1}{2} - \frac{2}{3}$

$\Rightarrow \frac{-3}{4} \le \frac{-x}{3}$

$\Rightarrow \frac{x}{3} \le \frac{3}{4}$

$\Rightarrow x \le \frac{9}{4}$

Solution Set $= \{1, 2\}$

3. If $x \in Z$, find the solution set of the following in equations: $Z = \{\ldots -3, -2, -1, 0, 1, 2, 3, \ldots\}$

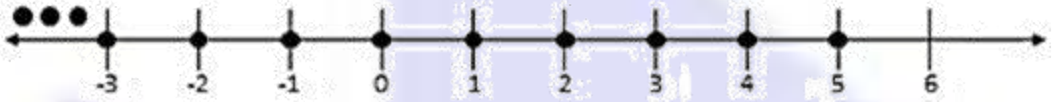
(i) $9x - 7 \leq 25 + 3x$

Ans. $9x - 7 \leq 25 + 3x$

$\Rightarrow 6x \leq 32$

$\Rightarrow x \leq \frac{32}{6}$

Solution Set $= \{\ldots -3, -2, -1, 0, 1, 2, 3, 4, 5 \ldots\}$



(ii) $10 - 2(1 + 4x) < 20$

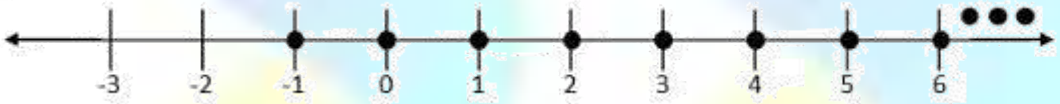
Ans. $10 - 2(1 + 4x) < 20$

$\Rightarrow 10 - 2 - 20 < 8x$

$\Rightarrow 8x > -12$

$\Rightarrow x > -3/2$

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



4. Find the Solution Set of each of the following in equations and represent the solution on a real line.

(i) $1 - 4x \geq -1, x \in N$

Ans. $1 - 4x \geq -1, x \in N$

$\Rightarrow 4x \leq 2$

$\Rightarrow x \leq \frac{1}{2}$

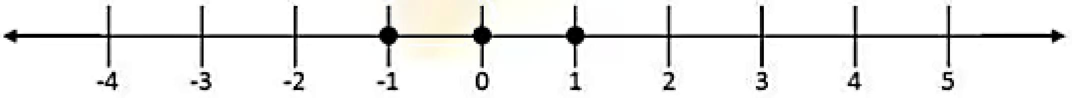
Solution Set $= \phi$

(ii) $-3 \leq 4x + 1 < 9, x \in N$

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

$\Rightarrow -1 \leq x < 2$

Solution set $= \{-1, 0, 1\}$



(iii) $3+\frac{x}{4}<\frac{2x}{3}+5, x\in R$

Ans. $3+\frac{x}{4}<\frac{2x}{3}+5, x\in R$

$\Rightarrow \frac{x}{4}<\frac{2x}{3}+2$

$\Rightarrow \frac{2x}{3}-\frac{x}{4}>-2$

$\Rightarrow 5x>-24$

$\Rightarrow x>\frac{(-24)}{5}$

Solution Set $=\{x\in R : x>\frac{(-24)}{5}\}$

(iv) $\frac{1}{3}(4x-1)+3\le 4+\frac{2}{5}(6x+2)+\frac{4}{5}$

Ans. $\frac{1}{3}(4x-1)+3\le 4+\frac{2}{5}(6x+2)+\frac{4}{5}$

$\Rightarrow \frac{4}{3}x-\frac{1}{3}+3\le 4+\frac{12}{5}x+\frac{4}{5}$

$\Rightarrow \frac{(-32)}{15}\le\frac{16}{15}x$

$\Rightarrow x\ge -2$

Solution Set $=\{x\in R : x\ge -2\}$