1. Solve the following equations:
(i) 2 (3 – 2x) = 13
(ii) (3 / 5) y – 2 = (7 / 10)
Solution:
(i) Given
2 (3 – 2x) = 13
6 – 4x = 13
Transposing 6 to R.H.S. we get,
- 4x = 13 - 6
- 4x = 7
We get,
x = (7 / - 4)
x = (- 7 / 4)

(ii) (3 / 5) y – 2 = (7 / 10)
Multiplying both sides by 5, we get,
3y – 10 = (7 / 10) × 5
3y – 10 = (7 / 2)
Transposing -10 to R.H.S. we get,
3y = (7 / 2) + 10
On taking L.C.M. we get,
3y = {(7 + 20) / 2}
3y = (27 / 2)
y = {27 / (2 × 3)}
We get,
y = (9 / 2)
y = $4\frac{1}{2}$

2.
(i) (x / 2) = 5 + (x / 3)
(ii) 2 {x – (3 / 2)} = 11
Solution:
(i) (x / 2) = 5 + (x / 3)
On multiplying both sides by 6, we get,
6 × (x / 2) = 6 {5 + (x / 3)}
3x = 30 + 2x
Transposing 2x to L.H.S. we get,
3x – 2x = 30

We get,
x = 30

(ii) 2 {x – (3 / 2)} = 11
2x – 3 = 11
Transposing -3 to R.H.S. we get,
2x = 11 + 3
2x = 14
We get,
x = (14 / 2)
x = 7

3.
(i) 7 (x – 2) = 2 (2x – 4)
(ii) 21 – 3(x – 7) = x + 20
Solution:
(i) 7 (x – 2) = 2 (2x – 4)
7x – 14 = 4x – 8
On transposing 4x to L.H.S. and -14 to R.H.S. we get,
7x – 4x = - 8 + 14
3x = 6
x = (6 / 3)
x = 2

(ii) 21 – 3 (x – 7) = x + 20
21 – 3x + 21 = x + 20
On further calculation, we get,
42 – 3x = x + 20
On transposing x to L.H.S. and 42 to R.H.S. we get,
- 3x – x = 20 – 42
- 4x = -22
x = (22 / 4)
We get,
x = (11 / 2)
x = $5\frac{1}{2}$

4. If 7 is added to five times a number, the result is 57. Find the number.
Solution:

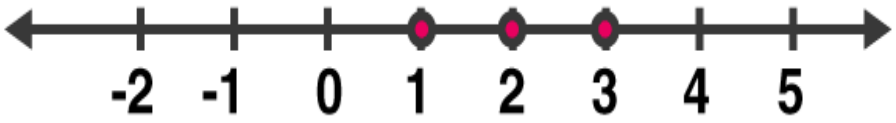
Let the required number be x
Five times of this number = 5x
If 7 is added, then the number becomes = 7 + 5x
As per the given condition,
7 + 5x = 57
5x = 57 – 7
5x = 50
x = (50 / 5)
We get,
x = 10
Therefore, the required number = 10

5. Find a number, such that one-fourth of the number is 3 more than 7.
Solution:
Let the required number = x
According to the condition,
(1 / 4) x – 3 = 7
Transposing -3 to R.H.S. we get,
(1 / 4) x = 7 + 3
(1 / 4) x = 10
x = 10 × 4
We get,
x = 40
Therefore, the required number is 40

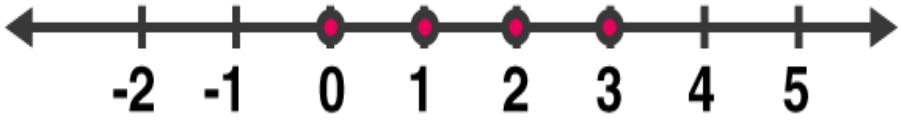
6. If the replacement set is (-5, -3, -1, 0, 1, 3, 4), find the solution set of:
(i) x < -2
(ii) x > 1
(iii) x ≥ -1
(iv) -5 < x < 3
(v) -3 ≤ x < 4
(vi) 0 ≤ x < 7
Solution:
Given
Replacement set = {-5, -3, -1, 0, 1, 3, 4}
(i) The solution set of x < -2 = {-5, -3}
(ii) The solution set of x > 1 = {3, 4}
(iii) The solution set of x ≥ -1 = {-1, 0, 1, 3, 4}
(iv) The solution set of -5 < x < 3 = {-3, -1, 0, 1}

(v) The solution set of $-3 \leq x < 4 = \{-3, -1, 0, 1, 3\}$
(vi) The solution set of $0 \leq x < 7 = \{0, 1, 3, 4\}$

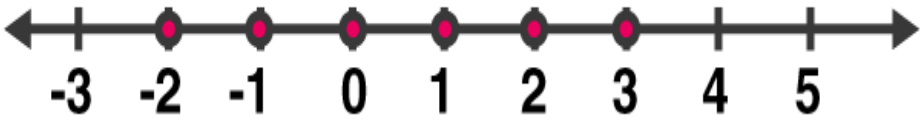
7. Represent the following inequations graphically:
(i) $x \leq 3, x \in N$
(ii) $x < 4, x \in W$
(iii) $-2 \leq x < 4, x \in I$
(iv) $-3 \leq x \leq 2, x \in I$
Solution:
Given
$x \leq 3, x \in N$
Therefore,
The solution set = {1, 2, 3}
The solution set is shown be thick dots on the number line below



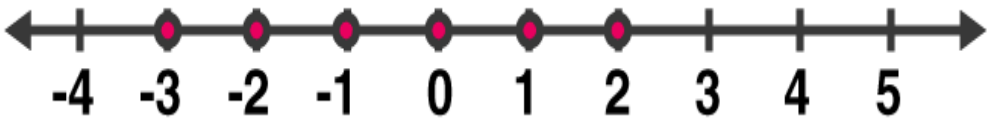
(ii) $x < 4, x \in W$
Therefore,
The solution set = {0, 1, 2, 3}
The solution set is shown by thick dots on the number line below



(iii) $-2 \leq x < 4, x \in I$
Therefore,
The solution set = {-2, -1, 0, 1, 2, 3}
The solution set is shown by thick dots on the number line below



(iv) $-3 \leq x \leq 2, x \in I$
Therefore,
The solution set = {-3, -2, -1, 0, 1, 2}
The solution set is shown by thick dots on the number line below


-4 -3 -2 -1 0 1 2 3 4 5