Addition of Integers

We know how to add whole numbers on a number line.
To add two integers on a number line, we follow the following procedure.

1) Draw a number line and mark integers on it.

2) Start from the point representing the first number on the number line.

3) Move as many units as the second number to the
 i) **righ**t of the first number, if the second number is **positive**.
 ii) **left** of the first number, if the second number is **negative**.
iii)Obtain the number representing the point reached in the previous step. This number represents the required sum.
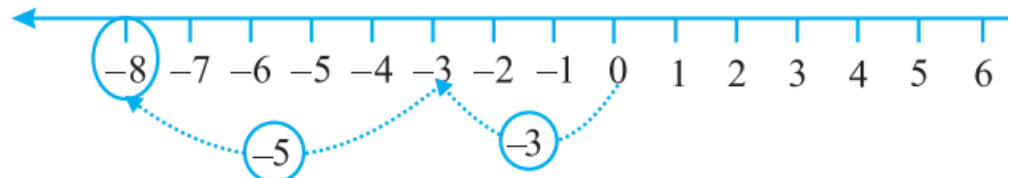
Let us add 3 and 5 on number line.

On the number line we move 3 steps to the right from 0 reaching 3 then we move 5 steps to the right of 3 and reach 8 . Thus we get 3+5=8 .
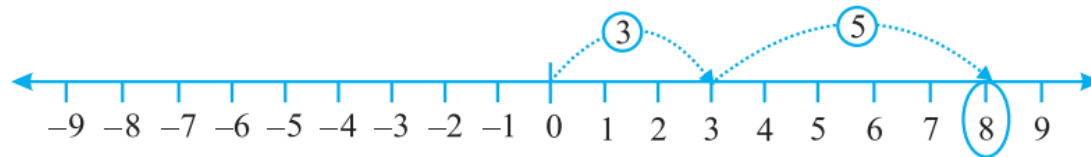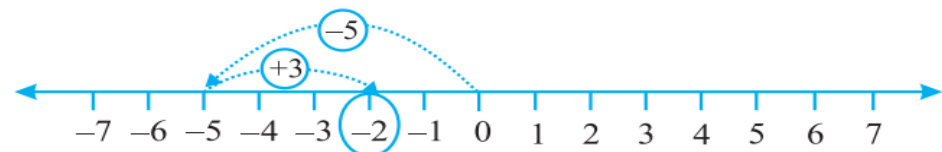
Let us find the sum (-3)+(-5)

On the number line we move 3 steps to the left of 0 reaching -3 and then move 5 steps to the left of -3 and reach -8.

Thus (-3)+(-5)=-8

Let us find the sum of -5 and 3 on the number line. First we move 5 steps to the left of 0 reaching -5 and from this point move 3 steps to the right. We reach point -2.

Thus (-5)+3=-2

1.Find solution of the following additions using a number line:

a) (-2) +6   b. 5+(-4)   c. (-3)+(-2)   d. (-5)+2

Make ten such questions and solve them using the number line.

Now are you able to find the sum of any two integers without using a number line?

2. Find the solution of the following without using number line:

a) 7 +(-24)   b) (-34) + 43   c) (-27)+(-39) d) 64 + (-36)

Check your Answers:

1.a) (-2) +6 =4   b) 5+(-4)=1   c. (-3)+(-2) =-5   d. (-5)+2 =-3

2.a) 7+(-24)= -17 b) (-34)+43= 9 c)(-27)+(-39)= -66 d) 64+(-36)=28

You have found that when you add two positive integers the sum is a positive integer. When you add two negative integers sum is a negative integer. eg 7+9=16

              (-7)+(-9) =-16

 When you add one positive and one negative integer, you must subtract , but answer will take the sign of the bigger integer(ignoring the signs of the numbers decide which is bigger).

36+(-40) =-4

(-52)+ 37 = -15

Absolute value of an integer

The absolute value of an integer is the numerical value of the integer regardless of its sign.

The absolute value of an integer a is denoted by IaI.

The absolute value of 9 is 9,i.e. I9I=9

The absolute value of -9 is 9, i.e. I-9I =9

The absolute value of 0 is 0, i.e. I0I=0

Write the absolute value of the following numbers

a)15   b)-15   c) 27 d) -256   e) 94 f) -4

Answers:-   a) I15I =15   b)I-15I= 15   c) I27I=27

                d) I-256I =256   e)I94I = I94I   e) I-4I=4

 We can say the rules for addition of integers as

1) If we add two integers of **same** sign we will find the **sum**
 of the absolute values of the integers and assign the same sign to the sum.

2) If we add integers of **different** signs we will find the **difference** of the absolute values of the integers and assign the sign of the integer whose absolute value is greater.