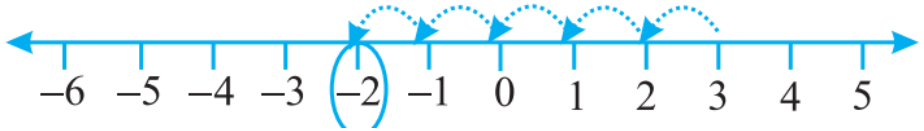
Subtraction of Integers

Subtraction of Integers with the help of a Number line.



Let us find 3-5 on the number line. i.e. 5 less than 3. We start from 3 and then move 5 steps to the left of 3. We reach -2. So we have 3-5 = 3+(-5)= -2

To find -3-2 we start from -3 and move two steps to the left of -3 . We reach -5. So we have (-3)- 2 = -5. We know (-3)+ (-2)= -5. Make your own questions and check whether a-b= a+(-b) , where a and b are any two integers.

We find that

7+(-6) = 7-6 = 1

(-5) -1 =(-5)+(-1) = -6

13- 9 = 13+(-9)

To subtract an integer from another integer it is enough to add the additive inverse of the integer that is being subtracted, to the other integer.

Therefore 9-(-5) = 9+5. If a and b are any two integers a - (-b)= a+ b

[If the sum of two integers is zero, then one integer is called the additive inverse of the other. Eg. 12+(-12)=0 , 12 is the additive inverse of -12 and -12 is the additive inverse of 12]

Examples.

a) Subtract 16 from 7

$7 - 16 = 7+(-16)$

$= \underline{-9}$

b) Subtract 19 from 2.

$2-19 = 2+(-19)$

$= \underline{-17}$

c) $12-(-8)= 12 +8$

$= 20$

d) $16- (-4) = 16+4$

$=20$

e) $(-15)- (-25) = (-15) +25$

$= 10$

f) $(-18)-(-9) = (-18) +9$

$= -9$

When there are more than two integers, we can rearrange the numbers so that the positive integers and the negative integers are grouped together.

Examples:

a) $13-4+9 = 13+9-4$

$=22-4$

$=18$

b) $18-20-40 = 18+[(-20)+(-40)]$

$= 18+(-60)$

$= -42$

c) $(-24)+20-8 = (-24-8)+20$

$= (-32)+20$

$= -12$

d) $(-13)-14+36 = [(-13)+(-14)]+36$

$=(-27)+36$

$= 9$

e) $3-(-4)-(-5) = 3+4+5 = 12$