In both the cases, we get –10.

i.e., $(-5) + [(-3) + (-2)] = [(-5) + (-2)] + (-3)$

Similarly consider –3 , 1 and –7.

$(-3) + [1 + (-7)] = -3 +$ $=$

$[(-3) + 1] + (-7) = -2 +$ $=$

Is $(-3) + [1 + (-7)]$ same as $[(-3) + 1] + (-7)$?

Take five more such examples. You will not find any example for which the sums are different. This shows that *addition is associative for integers*.

In general for any integers a, b and c, we can say

$$a + (b + c) = (a + b) + c$$

1.3.5 Additive Identity

When we add zero to any whole number, we get the same whole number. Zero is an additive identity for whole numbers. Is it an additive identity again for integers also?

Observe the following and fill in the blanks:

(i) $(-8) + 0 = -8$ (ii) $0 + (-8) = -8$

(iii) $(-23) + 0 =$ (iv) $0 + (-37) = -37$

(v) $0 + (-59) =$ (vi) $0 +$ $= -43$

(vii) $-61 +$ $= -61$ (viii) $+ 0 =$

The above examples show that zero is an additive identity for integers.

You can verify it by adding zero to any other five integers.

In general, for any integer a

$$a + 0 = a = 0 + a$$

Try These

1. Write a pair of integers whose sum gives

(a) a negative integer (b) zero

(c) an integer smaller than both the integers. (d) an integer smaller than only one of the integers.

(e) an integer greater than both the integers.

2. Write a pair of integers whose difference gives

(a) a negative integer. (b) zero.

(c) an integer smaller than both the integers. (d) an integer greater than only one of the integers.

(e) an integer greater than both the integers.