Exercise 5.3

Q1. Find the additive inverse of each of the following integers.

(i) 52 (ii) −176 (iii) 0 (iv) 1

Sol: As, we know that additive inverse of any integer 'a' is −a. therefore.

(i) Additive inverse of 52 is −52

(ii) Additive inverse of −176 is −(−176) = 176

(iii) Additive inverse of 0 is 0.

(iv) Additive inverse of 1 is −1.

Q.2 Find the successor of each of the following integers:

(i) −42 (ii) −1 (iii) 0 (iv) −200

(v) −99

Solution (i) Successor of −42 is −42+1 = −41

(ii) −1+1 = 0, is a successor of −1

(iii) 0+1 = 1, is a successor of 0

(iv) −200+1 = −199, is a succesor of −200

(v) −99+1 = −98, is a succesor of −99

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Q.3 Find the predecessor of each of the following integers:

(i) 0 (ii) 1 (iii) −1 (iv) −125

(v) 1000

Solution: (i) Predecessor of 0 is $0-1=-1$

(ii) Predecessor of 1 is $1-1=0$

(iii) Predecessor of −1 is $-1-1=-2$

(iv) Predecessor of −125 is $-125-1=-126$

(v) Predecessor of 1000 is $1000-1=999$

Q.4 Which of the following statements are true.

(i) The sum of a number and its opposite is zero.

(ii) The sum of two negative integers is a positive integer.

(iii) The sum of a negative integers and a positive integer is always a negative integer.

(iv) The successor of −1 is 1

(v) The sum of three different integers can never be zero.

Solution (i) True (ii) False (iii) False

(iv) False (v) False.

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Q.5 Write all integers whose absolute values are less than 5.

Solution : $-4, -3, -2, -1, 0, 1, 2, 3, 4$

Q.6 : Which of the following is false

(i) $|4+2| = |4| + |2|$ (ii) $|2-4| = |2| + |4|$

Sol : (i) $|4+2| = |4| + |2|$.

$\Rightarrow |6| = 4+2$

$\Rightarrow 6 = 6$

$\therefore$ It is true.

(ii) $|2-4| = |2| + |4|$

LHS $\Rightarrow |-2| = 2$

RHS $|2| + |4| = 2+4 = 6$

$\therefore$ LHS $\neq$ RHS

Here, it is false

(iii) $|4-2| = |4| - |2|$

$\Rightarrow |2| = 4-2$

$\Rightarrow 2 = 2$

$\therefore$ LHS = RHS

$\therefore$ It is a true statement.

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(iv) $|(-2)+(-4)| = |-2|+|-4|$

$\Rightarrow |-2-4| = 2+4$

$\Rightarrow |-6| = 6$

$\Rightarrow 6 = 6$

$\therefore$ It is a true statement.

Q.7 Complete the following table:

+	−6	−4	−2	0	2	4	6
6							
4							
2							
0							
−2							
−4							
−6							

From the above table

(i) Write all the pairs of integers whose sum is 0.

(ii) Is $(-4)+(-2) = (-2)+(-4)$?

(iii) Is $0+(-6) = -6$?

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Sol

+	−6	−4	−2	0	2	4	6
6	0	2	4	6	8	10	12
4	−2	0	2	4	6	8	10
2	−4	−2	0	2	4	6	8
0	−6	−4	−2	0	2	4	6
−2	−8	−6	−4	−2	0	2	4
−4	−10	−8	−6	−4	−2	0	2
−6	−12	−10	−8	−6	−4	−2	0

(i) Pairs of Integers whose sum is zero are

$(6,-6)$ $(4,-4)$ $(2,-2)$ $(0,0)$ $(-2,2)$ $(-4,4)$ $(-6,6)$

(ii) from above table

$(-4)+(-2) = (-2)+(-4)$, yes, it is true

(iii) Is $0+(-6) = -6$?

Yes, as 0 is additive identity, so

$0+(-6) = -6$

Q.8 · Find an Integer x such that

(i) $x+1=0$ (ii) $x+5=0$ (iii) $-3+x=0$

(iv) $x+(-8)=0$ (v) $7+x=0$ (vi) $x+0=0$

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Solution: As we know that if sum of any two integers is '0' then they are additive inverse of each other. also additive inverse of integer 'a' is '−a'. here in:

(i) $x = -1$ (ii) $x = -5$ (iii) $x = 3$

(iv) $x = 8$ (v) $x = -7$ (vi)

(vii) ∵ additive inverse of 0 is 0. hence $x = 0$

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