**CHAPTER-6**

**INTEGERS**

**CLASS-6**

**IMPORTANT POINTS TO REMEMBER:**

**INTEGERS:** The collection of whole numbers and negative numberslike 0, 1, 2, 3, 4, 5...

–1, – 2, – 3,–4, –5... is called integers.

 Integers are of two types:

Positive Integers: In this collection 1, 2, 3, 4, 5 ... are said to be positive integers.

Negative Integers: Collection of – 1, – 2, – 3 ... are said to be negative integers.

**Representation of integers on a number line:**

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Draw a line and mark some points at equal distance on it as shown in the figure. Mark a point as zero on it. Points to the right of zero are positive integers and are marked + 1, + 2, + 3, etc. or simply 1, 2, 3 etc. Points to the left of zero are negative integers and are marked – 1, – 2, – 3 etc.

**Ordering of integers :**

The number placed on the right of the number line is larger than the number placed on the left of the number line.

**Addition and Subtraction of Integers :**

1. You add when you have two positive numbers like (+3) + (+2) = +5 [= 3 + 2]. You also add when you have two negative numbers, but the answer will take a minus (–) sign like (–2) + (–1) = – (2+1) = –3.
2. when you have 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).

**Addition and Subtraction of Integers on number line :**

1. Let us add 3 and 5 on number line.



 On the number line, we first 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

1. Let us add – 3 and – 5 on the number line.



 On the number line, we first move 3 steps to the left of 0 reaching – 3, then

 we move 5 steps to the left of – 3 and reach – 8. (Fig 6.5) Thus, (– 3) + (– 5) = – 8.

 We observe that when we add two positive integers, their sum is a positive integer.

 When we add two negative integers, their sum is a negative integer.

1. Suppose we wish to find the sum of (+ 5) and (– 3) on the number line First we move to the right of 0 by 5 steps reaching 5. Then we move 3 steps to the left of 5 reaching 2.



Thus, (+ 5) + (– 3) = 2

1. Similarly, 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 then from this point we move 3 steps to the right. We reach the point – 2.



Thus, (– 5) + (+3) = – 2.

**Additive Inverse:**

 Numbers such as 3 and – 3, 2 and – 2, when added to each other give the sum

 zero. They are called **additive inverse** of each other.

 

**Questions for practice**

 **Level -1**

1. Using the integers indicate the following:
2. 4 km to south
3. A gain of Rs 5000
4. 4 units to the right of zero on number line
5. 3 km below sea level
6. 20oc below 0oc
7. Use the sign $<and >$

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1. Which integer is neither negative nor positive.
2. 0 (b) 1 (c) 100 (d) 1000
3. The successor of -111 is
4. -112 (b) -110 (c) -10 (d) -111
5. The predecessor of 0 is
6. 1 (b) 10 (c) -1 (d) -2
7. Find the integer which is 5 more than -8.
8. Fill in the blanks
9. -45 + ………………. = 0
10. 0 - ………………….. = 240
11. 180 + ………………. = 0
12. -100 + ………………. = - 200
13. The sum of a number and its opposite is equal to
14. 0 (b) 10 (c) -10 (d) 100
15. Each negative integer is smaller than
16. -10 (b) 0 (c) -1 (d) -2
17. Write the smallest positive integer ?

**Level- 2**

1. Use a number line to find
2. Successor of -11
3. Predecessor of 0
4. Write four integers which lie
5. Immediately to the right of +4
6. Immediately to the left of -4 on a number line.
7. Write the following integers in the increasing order.
8. 2 ,-3 ,7, 8,0,-6
9. -240, 612,-315,-10,420,-18
10. Write the following integers in the decreasing order.
11. 45, -25, -27, 90, 110, -40
12. -230, -720, -275, 345, 0, 118
13. Check whether it is true or false :
14. 0 is the smallest integer.
15. All whole numbers are part of integers.
16. Every integer is either positive or negative.
17. All natural numbers are positive integers.
18. If –a is a negative integer, a is also a negative integer.

**Level-3**

1. Add the following integers using a number line
2. 5 + (-2) (b) -3 +(-6) (c) -3 + 5 (d) 3 + (-2) + 1
3. -4 + (-2) +6
4. Add the following without using number line.
5. 18 + 11 (b) -18 +11 (c) 18 + (-11) (d) -18+(-11)
6. Use the number line write the integer which is
7. 4 more than 5 (ii) 6 more than -5 (iii) 3 less than 2 (iv) 5 less than -3
8. A man walked 20 km east from a point A and then turned west and walked 30km .How far from point A was the man finally?
9. The sum of two integers is -60. If one them is -150, find other.
10. Geetika gets 50 marks more and Nidhi gets 35 marks less than the marks required to pass . Find the difference between their marks .

**WORKSHEET**

1. **Write successor of the number -1?**
2. **Write the predecessor of the number 0**
3. **Write the integers between -3 and -7**
4. **Which of the following is true?**
5. **0** $< -8$ **(ii) 0** $> $**- 8 (iii) 4** $< -4$ **(iv) 0** $> $**6**
6. **(-1) + (-2) =?**
7. **Which of the following statement is false?**
8. **0 is neither a negative integer nor a positive integer.**
9. **Zero is less than every positive integer.**
10. **0 is larger than every negative integer.**
11. **Farther a number from 0 on the left, larger is its value.**
12. **Find the value of : 37 + (-5) + (-60) + (-9)**
13. **While selling fruits, the vendor had a profit of Rs 45 on Tuesday, a loss of Rs 20 on Wednesday and a loss of Rs 10 on Thursday. Find the net profit on loss in three days.**