

Chapter-5 - Negative numbers and Integer

Exercise 5.1

Q.1 Write the opposite of the following:

- | | |
|--------------------------------|------------------------------|
| (i) Increase in population | (iv) Deposited money in bank |
| (ii) Earning Money | (v) Going North |
| (iii) Gaining a weight of 4 kg | (vi) A loss of Rs. 4000 |
| (vii) 25 | (viii) -15 |

Solution (i) Decrease of Population

- | | |
|------------------------------------|-------------------------|
| (ii) Withdrawing money from a bank | |
| (iii) Spending money | (iv) Going South |
| (v) Losing a weight of 4 kg | (vi) A gain of Rs. 4000 |
| (vii) -25 | (viii) +15 |

Q.2 Indicate the following by using Integers.

- | | |
|-----------------------------|-----------------------------|
| (i) 25° above zero | (iv) 5° below zero |
| (ii) A profit of Rs 800 | (v) A deposit of Rs. 2500 |
| (iii) 3 km above sea level | (vi) 2 km below sea level |

Solution (i) $+25^{\circ}$

(ii) -5°

(iii) +800

(iv) -2500

(v) +3

(vi) -2

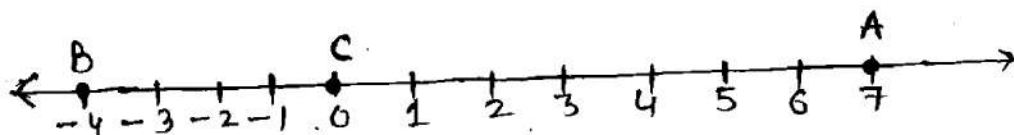
Q.3 Mark the following integers on number line.

(i) 7

(ii) -4

(iii) 0

Solution:



Q.4 Which number in each of the following pairs is smaller?

(i) 0, -4

(ii) -3, 12

(iii) 8, 13

(iv) -15, -27

Solution (i) $-4 < 0$, as -4 lies left to the zero.

(ii) $-3 < 12$ as -3 lies left to the 12.

(iii) $8 < 13$ as 8 lies left to the 13.

(iv) $-27 < -15$ as -27 lies left to the -15 on number line.

Q.5 Which number in each of the following pair is larger?

(i) 3, -4

(ii) -12, -8

(iii) 0, 7

(iv) 12, -18

Solution: As we know that a number lies right to the other number on number line is always greater. By using this concept.

(i) $3 > -4$

(ii) $-8 > -12$

(iii) $7 > 0$

(iv) $12 > -18$

Q6 write all integers between

(i) -7 and 3 (ii) -2 and 2 (iii) -4 and 0

(iv) 0 and 3

Solution (i) Integers between -7 and 3 are
-6, -5, -4, -3, -2, -1, 0, 1, 2

(ii) Integers between -2 and 2 are, -1, 0, 1

(iii) Integers between -4 and 0 are; -3, -2, -1

(iv) Integers between 0 and 3 are 1 and 2

Q7 How many Integers are between?

(i) -4 and 3 (ii) 5 and 12 (iii) -9 and -2

(iv) 0 and 5

Solution: (i) Integers between -4 and 3 are
-3, -2, -1, 0, 1, 2

∴ Total 6 Integers are there.

(ii) Integers between 5 and 12 are:

6, 7, 8, 9, 10, 11

∴ Total 6 Integers are there.

(iii) Integers between -9 and -2 are:

-8, -7, -6, -5, -4, -3

∴ Total 6 Integers are there.

(iv) Integers between 0 and 5 are:

1, 2, 3, 4

∴ There are total 4 integers between 0 and 5.

Q8 Replace * in each of the following by < or > so that the statement is true:

(i) $2 * 5$

(ii) $0 * 3$

(iii) $0 * -7$

(iv) $-18 * 15$

(v) $-235 * -532$

(vi) $-20 * 20$

Solution: (i) $2 < 5$ (ii) $0 < 3$ (iii) $0 > -7$

(iv) $-18 < 15$

(v) $-235 > -532$

(vi) $-20 < 20$

Q9 Write the following integers in increasing order

(i) $-8, -5, 0, -12, 1, -9, 15$

(ii) $-106, 107, -320, -7, 185$

Solution: The increasing order of above numbers is as follows:

(i) $-12, -9, -8, 0, 1, 5, 15$

(ii) $-320, -106, -7, 107, 185$

Q10 Write the following numbers in decreasing order.

(i) $-15, 0, -2, -9, 7, 6, -5, 8$ (ii) $-154, 123, -205, -89, -74$

Solution: The decreasing order of integers is as follows.

(i) 8, 7, 6, 0, -2, -5, -9, -15

(ii) 123, -74, -89, -154, -205

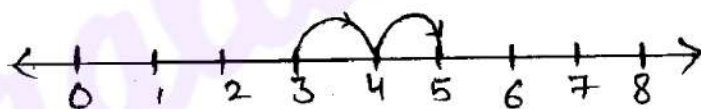
Q.11 using the number line, write the integers which is

(i) 2 more than 3 (ii) 5 less than 3

(iii) 4 more than -9

Solution: (i) 2 more than 3.

To find the required integer, we move 2 steps ~~with~~ Right side of 3.



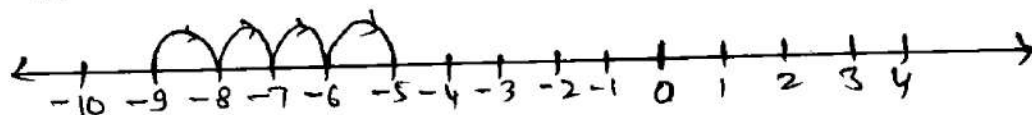
∴ required integer is 5.

(ii) 5 less than 3: we move 5 steps left side of 3.



∴ hence 5 less than 3 is -2

(iii) 4 more than -9: we move 4 steps right side of -9.



∴ 4 more than -9 is -5.

Q.12 Write the absolute value of each of the following:

(i) 14 (ii) -25 (iii) 0 (iv) -125

(v) -248 (vi) $a-7$, If a is greater than 7

(vii) $a-7$, If $a-2$ is less than 7.

(viii) $a+4$, If a is greater than -4

(ix) $a+4$, If a is less than -4

(x) $| -3 |$

(xi) $-|-5|$

(xii) $|12-5|$

Solution: As, we know that absolute value of any integer is defined as

$$|a| = \begin{cases} a & \text{if } a > 0 \\ -a & \text{if } a < 0 \end{cases}$$

(i) $|14| = 14$ ($\because 14 > 0$)

(ii) $|-25| = -(-25) = 25$ ($\because -25 < 0$)

(iii) $|0| = 0$

(iv) $|-125| = -(-125) = 125$ ($\because -125 < 0$)

(v) $|-248| = -(-248) = 248$ ($\because -248 < 0$)

(vi) In $a-7$, If $a > 7$ then $a-7$ is a positive integer

$\therefore |a-7| = a-7$

(vi) The absolute value of $a-7$, if $a-2$ is less than 7 is

$$|a-7| = -(a-7) \text{ where } a-2 < 7$$

(vii) In $a+4$, if $a > -4$, then $a+4$ is a positive integer, then

$$|a+4| = a+4$$

(ix) The absolute value of $a+4$, if a is less than -4 is

$$|a+4| = -(a+4), \text{ where } a < -4$$

$$(x) |1-3| = 3$$

$$(xi) -|-5| = |-5| = 5$$

$$(xii) |12-5| = |7| = 7$$

Q.13 (i) Write 4 negative integers less than -10

(ii) Write 6 negative integers just greater than -12

Solution (i) The 4 negative integers less than -10 are $-11, -12, -13, -14$

(ii) Negative integers just greater than -12 are $-11, -10, -9, -8, -7, -6$

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Q14 Which of the following statements are true?

- (i) The smallest integer is zero
- (ii) The opposite of zero is zero
- (iii) Zero is not an integer.
- (iv) 0 is larger than every negative integer.
- (v) The absolute value of an integer is greater than the integer.
- (vi) A positive integer is greater than its opposite.
- (vii) Every negative integer is less than every natural number.
- (viii) 0 is the smallest positive integer.

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

(iv) True (v) False (vi) True (vii) True

(viii) False