



# Integers

## Exercise 4A

Q1

**Answer :**

- (i) A decrease of 8
- (ii) A gain of Rs 7
- (iii) Losing a weight of 5 kg
- (iv) 10 km below the sea level
- (v)  $5^{\circ}\text{C}$  above the freezing point
- (vi) A withdrawal of Rs 100
- (vii) Spending Rs 500
- (viii) Going 6' m to the west
- (ix) The opposite of 24 is -24.
- (x) The opposite of -34 is 34.

Q2

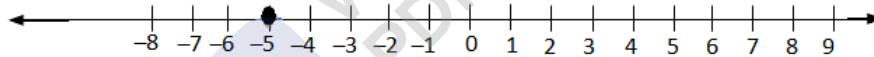
**Answer :**

- (i) +Rs 600
- (ii) -Rs 800
- (iii)  $-7^{\circ}\text{C}$
- (iv) -9
- (v) +2 km
- (vi) -3 km
- (vii) + Rs 200
- (viii) -Rs 300

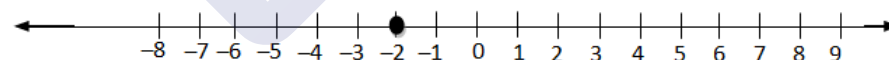
Q3

**Answer :**

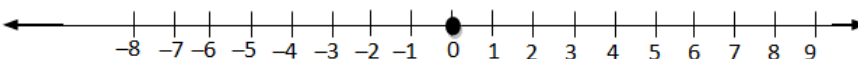
(i) -5



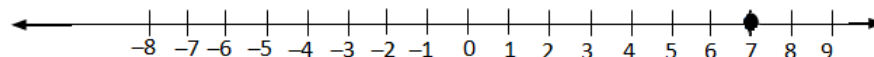
(ii) -2



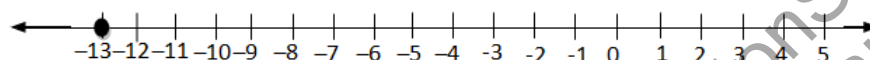
(iii) 0



(iv) 7



(v) -13





Q4

**Answer :**

(i) 0, -2  
 $0 > -2$

This is because zero is greater than every negative integer.

(ii) -3, -5  
 $-3 > -5$

Since 3 is smaller than 5, -3 is greater than -5.

(iii) -5, 2  
 $2 > -5$

This is because every positive integer is greater than every negative integer.

(iv) -16, 8  
 $8 > -16$

This is because every positive integer is greater than every negative integer.

v) -365, -913  
 $-365 > -913$

Since 365 is smaller than 913, -365 is greater than -913.

vi) -888, 8  
 $8 > -888$

This is because every positive integer is greater than every negative integer.

Q5

**Answer :**

i)  $-7 < 6$

This is because every positive integer is greater than every negative integer.

ii)  $-1 < 0$

This is because zero is greater than every negative integer.

iii)  $-27 < -13$

Since 27 is greater than 13, -27 is smaller than -13.

iv)  $-26 < 17$

This is because every positive integer is greater than every negative integer.

v)  $-603 < -317$

Since 603 is greater than 317, -603 is smaller than -317.

vi)  $-777 < 7$

This is because every positive integer is greater than every negative integer.



Q6

**Answer :**

i) 1, 2, 3, 4, 5

ii) -4, -3, -2, -1

iii) -2, -1, 0, 1, 2

iv) -6

Q7

**Answer :**i)  $0 < 7$ 

This is because 0 is less than any positive integer.

ii)  $0 > -3$ 

This is because 0 is greater than any negative integer.

iii)  $-5 < -2$ 

Since 5 is greater than 2, -5 is smaller than -2.

iv)  $-15 < 13$ 

This is because every positive integer is greater than every negative integer.

v)  $-231 < -132$ 

Since 231 is greater than 132, -231 is smaller than -132.

vi)  $-6 < 6$ 

This is because every positive integer is greater than every negative integer.

Q8

**Answer :**i)  $-7 < -2 < 0 < 5 < 8$ ii)  $-100 < -23 < -6 < -1 < 0 < 12$ iii)  $-501 < -363 < -17 < 15 < 165$ iv)  $-106 < -81 < -16 < -2 < 0 < 16 < 21$ 

Q9

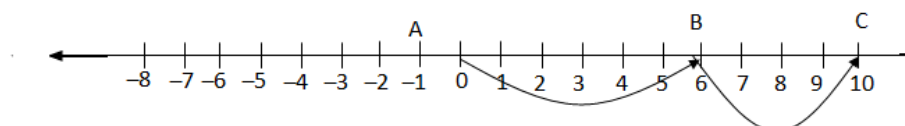
**Answer :**i)  $36 > 7 > 0 > -3 > -9 > -132$ ii)  $51 > 0 > -2 > -8 > -53$ iii)  $36 > 0 > -5 > -71 > -81$ iv)  $413 > 102 > -7 > -365 > -515$ 

Q10

**Answer :**

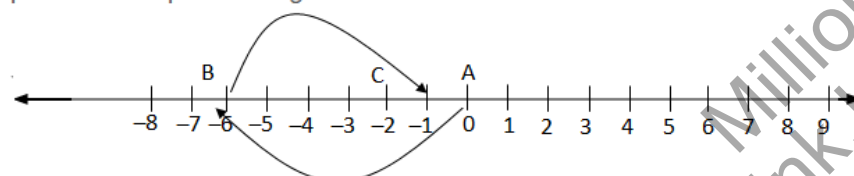
i) 4 more than 6

We want an integer that is 4 more than 6. So, we will start from 6 and proceed 4 steps to the right to obtain 10.



ii) 5 more than -6

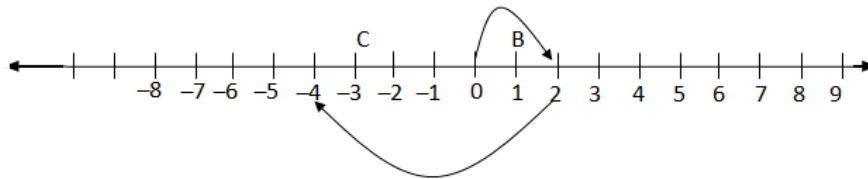
We want an integer that is 5 more than -6. So, we will start from -6 and proceed 5 steps to the right to obtain -1.





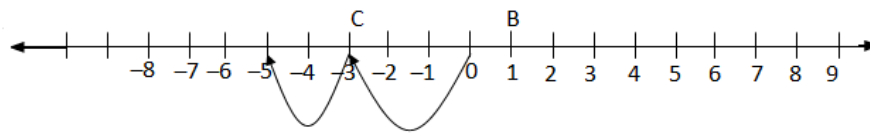
iii) 6 less than 2

We want an integer that is 6 less than 2. So, we will start from 2 and proceed 6 steps to the left to obtain -4.



iv) 2 less than -3

We want an integer that is 2 less than -3. So, we will start from -3 and proceed 2 steps to the left to obtain -5



vi) True

This is because all negative integers are to the left of 0.

vii) True

This is because natural numbers are positive and every positive integer is greater than every negative integer.

viii) False

This is because the successor of -187 is equal to -186  $(-186 + 1)$ . In succession, we move from the left to the right along a number line.

ix) False

This is because the predecessor of -215 is -216  $(-216 - 1)$ . To find the predecessor, we move from the right to the left along a number line.

Q12

**Answer :**

i) The value of  $|-9|$  is 9

ii) The value of  $|-36|$  is 36

iii) The value of  $|0|$  is 0

iv) The value of  $|15|$  is 15

v) The value of  $|-3|$  is 3

$\therefore -|-3| = -3$

vi)  $7 + |-3|$

$= 7 + 3$  (The value of  $|-3|$  is 3)

$= 10$

vii)  $|7 - 4|$

$= |3|$

$= 3$  (The value of  $|3|$  is 3)

viii)  $8 - |-7|$

$= 8 - 7$  (The value of  $|-7|$  is 7)

$= 1$

Q13

**Answer :**

i) Every negative integer that is to the right of -7 is greater than -7.

So, five negative integers that are greater than -7 are -6, -5, -4, -3, -2 and -1.

ii) Every negative integer that is to the left of -20 is less than -20.

So, five negative integers that are less than -20 are -21, -22, -23, -24 and -25.

# Integers

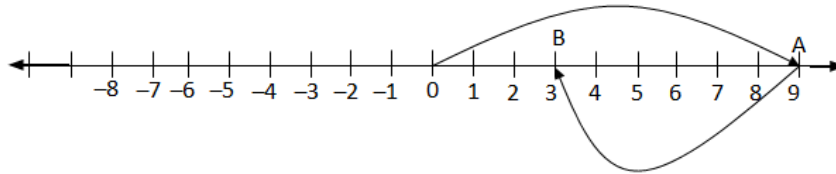
## Exercise 4B



Q1

**Answer :**

i) On the number line, we start from 0 and move 9 steps to the right to reach a point A. Now, starting from A, we move 6 steps to the left to reach point B.



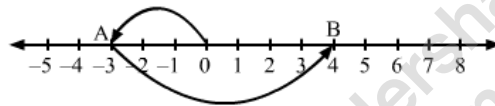
B represents the integer 3.

$$\therefore 9 + (-6) = 3$$

(ii) On the number line, we start from 0 and move 3 steps to the left to reach point A. Now, starting from A, we move 7 steps to the right to reach point B.

B represents the integer 4.

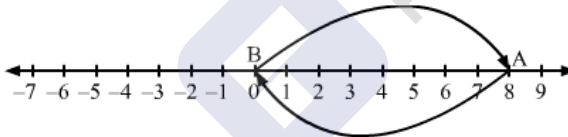
$$\therefore (-3) + 7 = 4$$



(iii) On the number line, we start from 0 and move 8 steps to the right to reach point A. Now, starting from A, we move 8 steps to the left to reach point B.

B represents the integer 0.

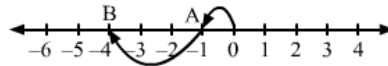
$$\therefore 8 + (-8) = 0$$





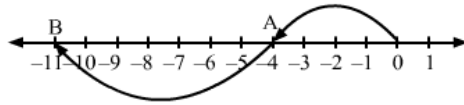
(iv) On the number line, we start from 0 and move 1 step to the left to reach point A. Now, starting from A, we move 3 steps to the left to reach point B. B represents the integer -4.

$$\therefore (-1) + (-3) = -4$$



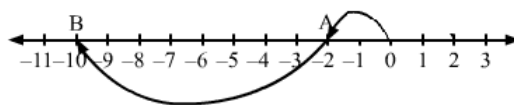
(v) On the number line, we start from 0 and move 4 steps to the left to reach point A. Now, starting from A, we move 7 steps to the left to reach point B. B represents the integer -11.

$$\therefore (-4) + (-7) = -11$$



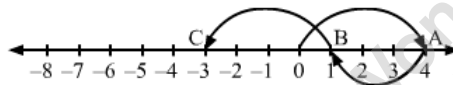
(vi) On the number line, we start from 0 and move 2 steps to the left to reach point A. Now, starting from A, we move 8 steps to the left to reach point B. B represents the integer -10.

$$\therefore (-2) + (-8) = -10$$



(vii) On the number line, we start from 0 and move 3 steps to the right to reach point A. Now, starting from A, we move 2 steps to the left to reach point B. Again, starting from B, we move 4 steps to the left to reach point C. C represents the integer -3.

$$\therefore 3 + (-2) + (-4) = -3$$



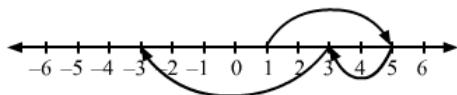
(viii) On the number line, we start from 0 and move 1 step to the left to reach point A. Now, starting from A, we move 2 steps to the left to reach point B. Again, starting from B, we move 3 steps to the left to reach point C. C represents the integer -6.

$$\therefore (-1) + (-2) + (-3) = -6$$



(ix) On the number line, we start from 0 and move 5 steps to the right to reach point A. Now, starting from A, we move 2 steps to the left to reach point B. Again, starting from B, we move 6 steps to the left to reach point C. C represents the integer -3.

$$\therefore 5 + (-2) + (-6) = -3$$





$$\begin{aligned} & \text{(iv)} \\ & (-13) + 25 \\ & = -13 + 25 \\ & = 12 \end{aligned}$$

$$\begin{aligned} & \text{(v)} \\ & 8 + (-17) \\ & = 8 - 17 \\ & = -9 \end{aligned}$$

$$\begin{aligned} & \text{(v)} \\ & 2 + (-12) \\ & = 2 - 12 \\ & = -10 \end{aligned}$$

Q4

**Answer :**

$$\begin{array}{r} \text{i)} \\ -206 \\ +98 \\ \hline -108 \end{array}$$

Since we are adding a negative number with a positive number,  
we shall subtract the smaller number, i.e. 98 from the greater number, i.e. 206  
 $206 - 98 = 108$

Since the greater number is negative, the sign of the result will be negative.  
So, the answer will be  $-108$

$$\begin{array}{r} \text{ii)} \\ 178 \\ -69 \\ \hline 109 \end{array}$$

Since we are adding a negative number with a positive number,  
we shall subtract the smaller number, i.e. 69, from the greater number, i.e. 178  
 $178 - 69 = 109$

Since the greater number is positive, the sign of the result will be positive.  
So, the answer will be 109

$$\begin{array}{r} \text{(iii)} \\ 312 \\ -103 \\ \hline 209 \end{array}$$

Since we are adding a negative number with a positive number,  
we shall subtract the smaller number, i.e. -103, from the greater number, i.e.  
312

$$312 - 103 = 209$$

Since the greater number is positive, the sign of the result will be positive.  
So, the answer will be 209

$$\begin{array}{r} \text{(iv)} \\ -493 \\ +289 \\ \hline -204 \end{array}$$

Since we are adding a negative number with a positive number,  
we shall subtract the smaller number, i.e. 289, from the greater number, i.e.  
493.

$$493 - 289 = 204$$

Since the greater number is negative, the sign of the result will be negative.  
So, the answer will be -204



(vi)  $-36$  and  $100$

$$\begin{array}{r} 100 \\ -36 \\ \hline 64 \end{array}$$

(vii)  $3002$  and  $-888$

$$\begin{array}{r} 3002 \\ -888 \\ \hline 2114 \end{array}$$

(viii)  $-18$ ,  $+25$  and  $-37$

$$\begin{aligned} &25 + (-18) + (-37) \\ &= 25 - (18 + 37) \\ &= 25 - 55 \\ &= -30 \end{aligned}$$

(ix)  $-312$ ,  $39$  and  $192$

$$\begin{aligned} &39 + 192 + (-312) \\ &= 39 + 192 - 312 \\ &= 231 - 312 \\ &= -81 \end{aligned}$$

(x)  $-51$ ,  $-203$ ,  $36$  and  $-28$

$$\begin{aligned} &36 + (-51) + (-203) + (-28) \\ &= 36 - (51 + 203 + 28) \\ &= 36 - 282 \\ &= -246 \end{aligned}$$

Q6

**Answer :**

(i)  $-57 + 57 = 0$

So, the additive inverse of  $-57$  is  $57$ .

(ii)  $183 - 183 = 0$

So, the additive inverse of  $183$  is  $-183$ .

(iii)  $0 + 0 = 0$

So, the additive inverse of  $0$  is  $0$ .

(iv)  $-1001 + 1001 = 0$

So, the additive inverse of  $-1001$  is  $1001$ .

(v)  $2054 - 2054 = 0$

So, the additive inverse of  $2054$  is  $-2054$

Q7

**Answer :**

(i) The successor of  $201$ :

$$201 + 1 = 202$$

(ii) The successor of  $70$ :

$$70 + 1 = 71$$

(iii) The successor of  $-5$ :

$$-5 + 1 = -4$$

(iv) The successor of  $-99$ :

$$-99 + 1 = -98$$

(v) The successor of  $-500$ :

$$-500 + 1 = -499$$

Q8

**Answer :**

(i) The predecessor of 120:

$$120 - 1 = 119$$

(ii) The predecessor of 79:

$$79 - 1 = 78$$

(iii) The predecessor of -8:

$$-8 - 1 = -9$$

(iv) The predecessor of -141:

$$-141 - 1 = -142$$

(v) The predecessor of -300:

$$-300 - 1 = -301$$

Q9

**Answer :**

$$(i) (-7) + (-9) + 12 + (-16)$$

$$= 12 - (7 + 9 + 16)$$

$$= 12 - 32$$

$$= -20$$

$$(ii) 37 + (-23) + (-65) + 9 + (-12)$$

$$= 37 + 9 - (23 + 65 + 12)$$

$$= 46 - 100$$

$$= -54$$

$$(iii) (-145) + 79 + (-265) + (-41) + 2$$

$$= 79 + 2 - (145 + 265 + 41)$$

$$= 81 - 451$$

$$= -370$$

$$(iv) 1056 + (-798) + (-38) + 44 + (-1)$$

$$= 1056 + 44 - (798 + 38 + 1)$$

$$= 1100 - 837$$

$$= -263$$

Q10

**Answer :**

Let the distance covered in the direction of north be positive and that in the direction of south be negative.

Distance travelled to the north of Patna = 60 km

Distance travelled to the south of Patna = -90 km

Total distance travelled by the car = 60 + (-90)

$$= -30 \text{ km}$$

The car was 30 km south of Patna.

Q11

**Answer :**

Total cost price = Price of pencils + Price of pens

$$= 30 + 90 + 25$$

$$= \text{Rs } 145$$

Total amount sold = Price of pen + Price of pencils

$$= 20 + 70$$

$$= 90$$

Selling price - costing price = 90 - 145

$$= -55$$

The negative sign implies loss.

Hence, his net loss was Rs 55.

Q12

**Answer :**

(i) True

For example:  $-2 + (-1) = -3$ 

(ii) False

It can be negative or positive.

For example:  $-2 + 3 = 1$  gives a positive integer, but  $-5 + 2 = -3$  gives a negative integer.

(iii) True

For example:  $100 + (-100) = 0$ 

(iv) False

For example:  $(-5) + 2 + 3 = 0$ 

(v) False

 $|-5| = 5$  and  $|-3| = 3$ ,  $5 > 3$ 

(vi) False

 $|8 - 5| = 3$  $|8| + |-5| = 8 + 5$  $= 13$  $\therefore |8 - 5| \neq |8| + |-5|$ 

Q13

**Answer :**(i)  $a + 6 = 0$  $\Rightarrow a = 0 - 6$  $\Rightarrow a = -6$ (ii)  $5 + a = 0$  $\Rightarrow a = 0 - 5$ (iii)  $a + (-4) = 0$  $\Rightarrow a = 0 - (-4)$  $\Rightarrow a = 4$ (iv)  $-8 + a = 0$  $\Rightarrow a = 0 + 8$  $\Rightarrow a = 8$



# Integers

## Exercise 4C

Q1

**Answer :**

(i)  $-34 - 18$

$= -52$

(ii)  $25 - (-15)$

$= 25 + 15$

$= 40$

(iii)  $-28$  from  $-43$

$= -43 - (-28)$

$= -43 + 28$

$= -15$

(iv)  $68$  from  $-37$

$= -37 - 68$

$= -105$

(v)  $219$  from  $0$

$= 0 - 219$

$= -219$

(vi)  $-92$  from  $0$

$= 0 - (-92)$

$= 0 + 92$

$= 92$



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$$\begin{aligned} & \text{(vii) } -135 \text{ from } -250 \\ &= -250 - (-135) \\ &= -250 + 135 \\ &= -115 \end{aligned}$$

$$\begin{aligned} & \text{(viii) } -2768 \text{ from } -287 \\ &= -287 - (-2768) \\ &= 2768 - 287 \\ &= 2481 \end{aligned}$$

$$\begin{aligned} & \text{(ix) } 6240 \text{ from } -271 \\ &= -271 - (6240) \\ &= -271 - 6240 \\ &= -6511 \end{aligned}$$

$$\begin{aligned} & \text{(x) } -3012 \text{ from } 6250 \\ &= 6250 - (-3012) \\ &= 6250 + 3012 \\ &= 9262 \end{aligned}$$

Q2

**Answer :**

Sum of  $-1050$  and  $813$ :

$$\begin{aligned} & -1050 + 813 \\ &= -237 \end{aligned}$$

Subtracting the sum of  $-1050$  and  $813$  from  $-23$ :

$$\begin{aligned} & -23 - (-237) \\ &= -23 + 237 \\ &= 214 \end{aligned}$$

Q3

**Answer :**

Sum of  $138$  and  $-250$ :

$$\begin{aligned} & 138 + (-250) \\ &= 138 - 250 \\ &= -112 \end{aligned}$$

Sum of  $136$  and  $-272$ :

$$\begin{aligned} &= 136 + (-272) \\ &= 136 - 272 \\ &= -136 \end{aligned}$$

Subtracting the sum of  $-250$  and  $138$  from the sum of  $136$  and  $-272$ :

$$\begin{aligned} & -136 - (-112) \\ &= -136 + 112 \\ &= -24 \end{aligned}$$

Q4

**Answer :**

Adding  $33$  and  $-47$ :

$$\begin{aligned} & 33 + (-47) \\ &= 33 - 47 \\ &= -14 \end{aligned}$$

Subtracting  $-84$  from  $-14$ :

$$\begin{aligned} & -14 - (-84) \\ &= -14 + 84 \\ &= 70 \end{aligned}$$

Q5

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**Answer :**Difference of  $-8$  and  $-68$ :

$$\begin{aligned} & -8 - (-68) \\ &= -8 + 68 \\ &= 60 \end{aligned}$$

Adding  $-36$  to  $60$ :

$$\begin{aligned} & -36 + 60 \\ &= 24 \end{aligned}$$

Q6

**Answer :**

$$\begin{aligned} & \text{(i) } [37 - (-8)] + [11 - (-30)] \\ &= (37 + 8) + (11 + 30) \\ &= 45 + 41 \\ &= 86 \end{aligned}$$

$$\begin{aligned} & \text{(ii) } [-13 - (-17) + [-22 - (-40)]] \\ &= (-13 + 17) + (-22 + 40) \\ &= 4 + 18 \\ &= 22 \end{aligned}$$

Q7

**Answer :**

No, they are not equal.

$$\begin{aligned} & 34 - (-72) \\ &= 34 + 72 \\ &= 106 \end{aligned}$$

$$\begin{aligned} & (-72) - 34 \\ &= -72 - 34 \\ &= -106 \end{aligned}$$

Since  $106$  is not equal to  $-106$ , the two expressions are not equal.

Q8

**Answer :**Let the other integer be  $x$ .

According to question, we have:

$$\begin{aligned} x + 170 &= -13 \\ \Rightarrow x &= -13 - 170 \\ \Rightarrow x &= -183 \end{aligned}$$

Thus, the other integer is  $-183$ .

Q9

**Answer :**Let the other integer be  $x$ .

According to question, we have:

$$\begin{aligned} x + (-47) &= 65 \\ \Rightarrow x - 47 &= 65 \\ \Rightarrow x &= 65 + 47 \\ \Rightarrow x &= 112 \end{aligned}$$

Thus, the other integer is  $112$ .

Q10

**Answer :**

(i) True

An integer added to an integer gives an integer.

(ii) True

An integer subtracted from an integer gives an integer.

(iii) False

$$-8 - (-7)$$

$$= -8 + 7$$

$$= -1$$

Since 14 is greater than 1, -1 is greater than -14.

(iv) True

$$-5 - 2 = -7$$

Since 8 is greater than 7, -7 is greater than -8.

$$-7 > -8$$

(v) False

L.H.S.

$$(-7) - 3 = -10$$

R.H.S.

$$(-3) - (-7)$$

$$= (-3) + 7$$

$$= 4$$

 $\therefore$  L.H.S.  $\neq$  R.H.S.

Q11

**Answer :**

Let us consider the height above the sea level as positive and that below the sea level as negative.

 $\therefore$  Height of point A from sea level = 5700 m

Depth of point B from sea level = -39600 m

Vertical distance between A and B = Distance of point A from sea level - Distance of point B from sea level

$$= 5700 - (-39600)$$

$$= 45300 \text{ m}$$

Q12

**Answer :**Initial temperature of Srinagar at 6 p.m. =  $1^{\circ}\text{C}$ Final temperature of Srinagar at midnight =  $-4^{\circ}\text{C}$ 

Change in temperature = Final temperature - Initial temperature

$$= (-4 - 1)^{\circ}\text{C}$$

$$= -5^{\circ}\text{C}$$

So, the temperature has changed by  $-5^{\circ}\text{C}$ .

The negative sign indicates that the temperature has fallen.

So, the temperature has fallen by  $5^{\circ}\text{C}$ .



# Integers

## Exercise 4D

Q1

**Answer :**

$$\begin{aligned} \text{(i) } 15 \text{ by } 9 \\ &= 15 \times 9 \\ &= 135 \end{aligned}$$

$$\begin{aligned} \text{(ii) } 18 \text{ by } -7 \\ &= -(18 \times 7) \\ &= -126 \end{aligned}$$

$$\begin{aligned} \text{(iii) } 29 \text{ by } -11 \\ &= -(29 \times 11) \\ &= -319 \end{aligned}$$

$$\begin{aligned} \text{(iv) } -18 \text{ by } 13 \\ &= -(18 \times 13) \\ &= -234 \end{aligned}$$

$$\begin{aligned} \text{(v) } -56 \text{ by } 16 \\ &= -(56 \times 16) \\ &= -896 \end{aligned}$$

$$\begin{aligned} \text{(vi) } 32 \text{ by } -21 \\ &= -(32 \times 21) \\ &= -672 \end{aligned}$$

$$\begin{aligned} \text{(vii) } -57 \text{ by } 0 \\ &= -(57 \times 0) \\ &= 0 \end{aligned}$$

$$\begin{aligned} \text{(viii) } 0 \text{ by } -31 \\ &= -(0 \times 31) \\ &= 0 \end{aligned}$$



$$\begin{aligned} \text{(ix)} \quad & -12 \text{ by } -9 \\ & = (-12) \times (-9) \\ & = 108 \end{aligned}$$

$$\begin{aligned} \text{(x)} \quad & (-746) \text{ by } (-8) \\ & = (-746) \times (-8) \\ & = 5968 \end{aligned}$$

$$\begin{aligned} \text{(xi)} \quad & 118 \text{ by } -7 \\ & = 118 \times (-7) \\ & = -826 \end{aligned}$$

$$\begin{aligned} \text{(xii)} \quad & -238 \text{ by } -143 \\ & = (-238) \times (-143) \\ & = 34034 \end{aligned}$$

Q2

**Answer :**

$$\begin{aligned} \text{(i)} \quad & (-2) \times 3 \times (-4) \\ & = [(-2) \times 3] \times (-4) \\ & = (-6) \times (-4) \\ & = 24 \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad & 2 \times (-5) \times (-6) \\ & = [2 \times (-5)] \times (-6) \\ & = (-10) \times (-6) \\ & = 60 \end{aligned}$$

$$\begin{aligned} \text{(iii)} \quad & (-8) \times 3 \times 5 \\ & = [(-8) \times 3] \times 5 \\ & = (-24) \times 5 \\ & = -120 \end{aligned}$$

$$\begin{aligned} \text{(iv)} \quad & 8 \times 7 \times (-10) \\ & = [8 \times 7] \times (-10) \\ & = 56 \times (-10) \\ & = -560 \end{aligned}$$

$$\begin{aligned} \text{(v)} \quad & (-3) \times (-7) \times (-6) \\ & = [(-3) \times (-7)] \times (-6) \\ & = 21 \times (-6) \\ & = -126 \end{aligned}$$

$$\begin{aligned} \text{(vi)} \quad & (-8) \times (-3) \times (-9) \\ & = [(-8) \times (-3)] \times (-9) \\ & = 24 \times (-9) \\ & = -216 \end{aligned}$$

Q3

**Answer :**

$$\begin{aligned} \text{(i)} \quad & 18 \times (-27) \times 30 \\ & = (-27) \times [18 \times 30] \\ & = (-27) \times 540 \\ & = -14580 \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad & (-8) \times (-63) \times 9 \\ & = [(-8) \times (-63)] \times 9 \\ & = 504 \times 9 \\ & = 4536 \end{aligned}$$

$$\begin{aligned} \text{(iii)} \quad & (-17) \times (-23) \times 41 \\ & = [(-17) \times (-23)] \times 41 \\ & = 391 \times 41 \\ & = 16031 \end{aligned}$$

$$\begin{aligned} \text{(iv)} \quad & (-51) \times (-47) \times (-19) \\ & = [(-51) \times (-47)] \times (-19) \\ & = 2397 \times (-19) \\ & = -45543 \end{aligned}$$

Q4

**Answer :**

(i)

L.H.S.

$$\begin{aligned} &= 18 \times [9 + (-7)] \\ &= 18 \times [9 - 7] \\ &= 18 \times 2 \\ &= 36 \end{aligned}$$

R.H.S.

$$\begin{aligned} &= 18 \times 9 + 18 \times (-7) \\ &= 162 - (18 \times 7) \\ &= 162 - 126 \\ &= 36 \end{aligned}$$

 $\therefore \text{L.H.S} = \text{R.H.S}$ 

Hence, verified.

$$\text{(ii)} \quad (-13) \times [(-6) + (-19)] = (-13) \times (-6) + (-13) \times (-19)$$

L.H.S.

$$\begin{aligned} &= (-13) \times [(-6) + (-19)] \\ &= (-13) \times [-6 - 19] \\ &= (-13) \times (-25) \\ &= 325 \end{aligned}$$

R.H.S.

$$\begin{aligned} &= (-13) \times (-6) + (-13) \times (-19) \\ &= 78 + 247 \\ &= 325 \end{aligned}$$

 $\therefore \text{L.H.S} = \text{R.H.S}$ 

Hence, verified.

Q5

**Answer :**

$\times$	-3	-2	-1	0	1	2	3
-3	9	6	3	0	-3	-6	-9
-2	6	4	2	0	-2	-4	-6
-1	3	2	1	0	-1	-2	-3
0	0	0	0	0	0	0	0
1	-3	-2	-1	0	1	2	3
2	-6	-4	-2	0	2	4	6
3	-9	-6	-3	0	3	6	9

Q6

**Answer :**

(i) The product of a positive integer and a negative integer is negative.

True

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

False

The product of two negative integers is always a positive integer.

(iii) The product of three negative integers is a negative integer.

True(iv) Every integer when multiplied by  $(-1)$  gives its multiplicative inverse.FalseEvery integer when multiplied by  $(1)$  gives its multiplicative inverse.

Q7

**Answer :**(i)  $(-9) \times 6 + (-9) \times 4$ Solution:

Using the distributive law:

$$(-9) \times 6 + (-9) \times 4$$

$$= (-9) \times (6+4)$$

$$= (-9) \times 10$$

$$= -90$$

(ii)  $8 \times (-12) + 7 \times (-12)$ Solution:

Using the distributive law:

$$8 \times (-12) + 7 \times (-12)$$

$$= (-12) \times (8+7)$$

$$= (-12) \times 15$$

$$= -180$$



$$(iii) 30 \times (-22) + 30 \times (14)$$

Solution:

Using the distributive law:

$$\begin{aligned} & 30 \times (-22) + 30 \times (14) \\ &= 30 \times [(-22) + 14] \\ &= 30 \times [-22 + 14] \\ &= 30 \times (-8) \\ &= -240 \end{aligned}$$

$$(iv) (-15) \times (-14) + (-15) \times (-6)$$

Solution:

$$(-15) \times (-14) + (-15) \times (-6)$$

Using the distributive law:

$$\begin{aligned} &= (-15) \times [(-14) + (-6)] \\ &= (-15) \times [-14 - 6] \\ &= (-15) \times (-20) \\ &= 300 \end{aligned}$$

$$(v) 43 \times (-33) + 43 \times (-17)$$

Solution:

$$43 \times (-33) + 43 \times (-17)$$

Using the distributive law:

$$\begin{aligned} &= (43) \times [(-33) + (-17)] \\ &= (43) \times [-33 - 17] \\ &= 43 \times (-50) \\ &= -2150 \end{aligned}$$

$$(vi) (-36) \times (72) + (-36) \times 28$$

Solution

$$(-36) \times (72) + (-36) \times 28$$

Using the distributive law:

$$\begin{aligned} &= (-36) \times (72 + 28) \\ &= (-36) \times 100 \\ &= -3600 \end{aligned}$$

$$(vii) (-27) \times (-16) + (-27) \times (-14)$$

Solution:

$$(-27) \times (-16) + (-27) \times (-14)$$

Using the distributive law:

$$\begin{aligned} &= (-27) \times [(-16) + (-14)] \\ &= (-27) \times [-16 - 14] \\ &= (-27) \times [-30] \\ &= 810 \end{aligned}$$



# Integers

## Exercise 4E

Q1

**Answer :**

(i) 85 by  $-17$

$$= \frac{-85}{17}$$
$$= -5$$

(ii)  $-72$  by  $18$

$$= \frac{-72}{18}$$
$$= -4$$

(iii)  $-80$  by  $16$

$$= \frac{-80}{16}$$
$$= -5$$

(iv)  $-121$  by  $11$

$$= \frac{-121}{11}$$
$$= -11$$

(v)  $108$  by  $-12$

$$= \frac{108}{-12}$$
$$= -9$$

(vi)  $-161$  by  $23$

$$= \frac{-161}{23}$$
$$= -7$$

(vii)  $-76$  by  $-19$

$$= \frac{-76}{-19}$$
$$= 4$$

(viii)  $-147$  by  $-21$

$$= \frac{-147}{-21}$$
$$= 7$$

(ix)  $-639$  by  $-71$

$$= \frac{-639}{-71}$$
$$= 9$$

(x)  $-639$  by  $-71$

$$= \frac{-639}{-71}$$
$$= 9$$

(x)  $-15625$  by  $-125$

$$= \frac{-15625}{-125}$$
$$= 125$$

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(xi) 2067 by  $-1$

$$\begin{aligned} &= \frac{2067}{-1} \\ &= -2067 \end{aligned}$$

(xii) 1765 by  $-1765$

$$\begin{aligned} &= \frac{1765}{-1765} \\ &= -1 \times \frac{1765}{1765} \\ &= -1 \times 1 \\ &= -1 \end{aligned}$$

(xiii) 0 by  $-278$

$$\begin{aligned} &= \frac{0}{-278} \\ &= 0 \end{aligned}$$

(xiv) 3000 by  $-100$

$$\begin{aligned} &= \frac{3000}{-100} \\ &= -30 \end{aligned}$$

Q2

**Answer :**

- (i)  $80 \div (-16) = -5$
- (ii)  $(-84) \div (12) = -7$
- (iii)  $(-125) \div (-5) = 25$
- (iv)  $(0) \div (372) = 0$
- (v)  $(-186) \div 1 = -186$
- (vi)  $(-34) \div 17 = -2$
- (vii)  $(-165) \div 165 = -1$
- (viii)  $(-73) \div -1 = 73$
- (ix)  $1 \div (-1) = -1$

Q3

**Answer :**

- (i) True
- (ii) False

This is because we cannot divide any integer by 0. If we do so, we get the quotient as infinity.

- (iii) True
- (iv) False

This is because the division of any two negative integers always gives a positive quotient.

- (v) True
- (vi) True
- (vii) True
- (viii) True
- (ix) False

This is because the division of any two negative integers always gives a positive quotient.



# Integers

## Exercise 4F

Q1

**Answer :**

(b)  $-4 < -3$

Since 4 is greater than 3,  $-4$  is less than  $-3$ .

Q2

**Answer :**

(c)  $-5$

2 less than  $-3$  means the following:

$$= -3 - 2$$

$$= -5$$

Q3

**Answer :**

c)  $-1$

4 more than  $-5$  means the following:

$$= -5 + 4$$

$$= -1$$

Q4

**Answer :**

(a)  $-9$

2 less than  $-7$  means the following:

$$= -7 - 2$$

$$= -9$$

Q5

**Answer :**

(b) 10

$$7 + |-3|$$

$$= 7 + (+3) \text{ (The absolute value of } -3 \text{ is } 3.)$$

$$= 7 + 3$$

$$= 10$$

Q6

**Answer :**

(c) -77

$$(-42) + (-35)$$

$$= -42 - 35$$

$$= -77$$

Q7

**Answer :**

(b) -31

$$(-37) + 6$$

$$= -37 + 6$$

$$= -31$$

Q8

**Answer :**

(c) 22

$$49 + (-27)$$

$$= 49 - 27$$

$$= 22$$

Q9

**Answer :**

(c) -17

In succession, we move from the left to the right of the number line.

Q10

**Answer :**

(b) -17

To find the predecessor of a number, we move from the right to the left of a number line.

Q11

**Answer :**

(a) 5

If we add the additive inverse of a number to the number, we get 0.

$$-5 + 5 = 0$$

Q12

**Answer :**

(b) -7

$$-12 - (-5)$$

$$= -12 + 5$$

$$= -7$$

Q13

**Answer :**

$$(b) 13.5 - (-8)$$

$$= 13.5 + 8$$

$$= 21.5$$

Q14

**Answer :**(c)  $-55$ Let  $x$  be the other integer.

$$x + 30 = -25$$

$$\Rightarrow x = -25 - 30$$

$$\Rightarrow x = -55$$

Q15

**Answer :**(a)  $25$ Let the other integer be  $x$ 

$$x + (-5) = 20$$

$$\Rightarrow x - 5 = 20$$

$$\Rightarrow x = 25$$

Q16

**Answer :**(b)  $-21$ Let the other integer be  $x$ .

$$x + 8 = -13$$

$$\Rightarrow x = -13 - 8$$

$$\Rightarrow x = -21$$

Q17

**Answer :**(b)  $8$ 

$$0 - (-8)$$

$$= 0 + 8$$

$$= 8$$

Q18

**Answer :**(c)  $0$ 

$$8 + (-8)$$

$$= 8 - 8$$

$$= 0$$

Q19

**Answer :**(c)  $1$ 

$$(-6) + 4 - (-3)$$

$$= -6 + 4 + 3$$

$$= -6 + 7$$

$$= 1$$

Q20

**Answer :**(c)  $10$ 

$$6 - (-4)$$

$$= 6 + 4$$

$$= 10$$

Q21

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**Answer :**(a)  $-20$ 

$$(-7) + (-9) + 12 + (-16)$$

$$= -7 - 9 + 12 - 16$$

$$= -20$$

Q22

**Answer :**(c)  $-12$ 

$$-4 - 8$$

$$= -12$$

Q23

**Answer :**(c)  $3$ 

We have:

$$-6 - (-9)$$

$$= -6 + 9$$

$$= 3$$

Q24

**Answer :**(c)  $15$ 

We have:

$$10 - (-5)$$

$$= 10 + 5$$

$$= 15$$

Q25

**Answer :**(b)  $-54$ 

We have:

$$(-6) \times 9$$

$$= -(6 \times 9)$$

$$= -54$$

Q26

**Answer :**(a)  $-90$ 

$$(-9) \times 6 + (-9) \times 4$$

Using distributive law:

$$(-9) \times (6 + 4)$$

$$= (-9) \times (10)$$

$$= -90$$

Q27

**Answer :**(b)  $-4$ 

$$36 \div (-9)$$

$$36 \div 9 = 369 \times (-1) = 1(-1) \times 369 = -1 \times 4 = -4$$