



Name: _____ Class: VII Sub: Math

Class -VII Mathematics (Ex. 1.1)

Answers

1. (a) The temperature of the places marked on it is:

Places	Temperature	Places	Temperature
Bangalore	22°C	Srinagar	-2°C
Ooty	14°C	Lahulspiti	-8°C
Shimla	5°C		

- (b) The temperature of the hottest place Bangalore = 22°C

The temperature of the coldest place Lahulspiti = -8°C

$$\text{Difference} = 22^\circ\text{C} - (-8^\circ\text{C}) = 22^\circ\text{C} + 8^\circ\text{C} = 30^\circ\text{C}$$

- (c) The temperature of Srinagar = -2°C

The temperature of Lahulspiti = -8°C

$$\text{Difference} = -2^\circ\text{C} + (-8^\circ\text{C}) = -2^\circ\text{C} - 8^\circ\text{C} = -6^\circ\text{C}$$

- (d) The temperature of Srinagar and Shimla = 5°C + (-2°C) = 5°C - 2°C = 3°C

The temperature at Shimla = 5°C

Therefore, 3°C < 5°C

Thus, temperature of Srinagar and Shimla taken together is less than the temperature at Shimla.

Now, Temperature of Srinagar = -2°C

Therefore, 3°C > -2°C

No, it is not less than the temperature at Srinagar.

2. Jack's scores in five successive rounds are 25, -5, -10, 15 and 10.

$$\text{Total marks got by Jack} = 25 + (-5) + (-10) + 15 + 10$$

$$= 25 - 5 - 10 + 15 + 10 = 35$$

Thus, 35 marks are got by Jack in a quiz.

3. On Monday, temperature at Srinagar = -5°C

On Tuesday, temperature dropped = 2°C

$$\therefore \text{Temperature on Tuesday} = -5^\circ\text{C} - 2^\circ\text{C} = -7^\circ\text{C}$$

On Wednesday, temperature rose up = 4°C

$$\therefore \text{Temperature on Wednesday} = -7^\circ\text{C} + 4^\circ\text{C} = -3^\circ\text{C}$$

Thus, temperature on Tuesday and Wednesday was -7°C and -3°C respectively.

4. Height of a place above the sea level = 5000 m

Floating a submarine below the sea level = 1200 m

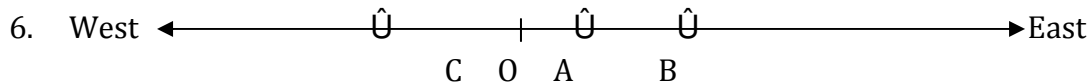
$$\therefore \text{The vertical distance between the plane and the submarine} = 5000 + 1200 = 6200 \text{ m}$$

Thus, the vertical distance between the plane and the submarine is 6200 m.

5. Deposit amount = ₹ 2,000 and Withdrawal amount = ₹ 1,642

$$\therefore \text{Balance} = 2,000 - 1,642 = ₹ 358$$

Thus, the balance in Mohan's account after withdrawal is ₹ 358.



According to the number line, Rita moves towards east is represented by a positive integer. But she moves in opposite direction means Rita moves west, is represented by negative integer.

Distance from A to B = 20 km

Distance from B to C = 30 km

Distance from A to C = 20 - 30 = -10 km

Thus, Rita is at final position from A to C is -10 km.

7. (i) Taking rows $5 + (-1) + (-4) = 5 - 5 = 0$
 $(-5) + (-2) + 7 = -7 + 7 = 0$
 $0 + 3 + (-3) = 3 - 3 = 0$
 Taking columns $5 + (-5) + 0 = 5 - 5 = 0$
 $(-1) + (-2) + 3 = -3 + 3 = 0$
 $(-4) + 7 + (-3) = 7 - 7 = 0$
 Taking diagonals $5 + (-2) + (-3) = 5 - 5 = 0$
 $(-4) + (-2) + 0 = -6$

This box is not a magic square because all the sums are not equal.

(ii) Taking rows $1 + (-10) + 0 = 1 - 10 = -9$
 $(-4) + (-3) + (-2) = -7 - 2 = -9$
 $(-6) + 4 + (-7) = -2 - 7 = -9$
 Taking columns $1 + (-4) + (-6) = 1 - 10 = -9$
 $(-10) + (-3) + 4 = -13 + 4 = -9$
 $0 + (-2) + (-7) = 0 - 9 = -9$
 Taking diagonals $1 + (-3) + (-7) = 1 - 10 = -9$
 $0 + (-3) + (-6) = -9$

This box is magic square because all the sums are equal.

8. (i) Given: $a = 21, b = 18$

We have $a - (-b) = a + b$

Putting the values in L.H.S. = $a - (-b) = 21 - (-18) = 21 + 18 = 39$

Putting the values in R.H.S. = $a + b = 21 + 18 = 39$

Since, L.H.S. = R.H.S

Hence, verified.

(ii) Given: $a = 118, b = 125$

We have $a - (-b) = a + b$

Putting the values in L.H.S. = $a - (-b) = 118 - (-125) = 118 + 125 = 243$

Putting the values in R.H.S. = $a + b = 118 + 125 = 243$

Since, L.H.S. = R.H.S

Hence, verified.

(iii) Given: $a = 75, b = 84$

We have $a - (-b) = a + b$

Putting the values in L.H.S. = $a - (-b) = 75 - (-84) = 75 + 84 = 159$

Putting the values in R.H.S. = $a + b = 75 + 84 = 159$

Since, L.H.S. = R.H.S

Hence, verified.

(iv) Given: $a = 28, b = 11$

We have $a - (-b) = a + b$

Putting the values in L.H.S. = $a - (-b) = 28 - (-11) = 28 + 11 = 39$

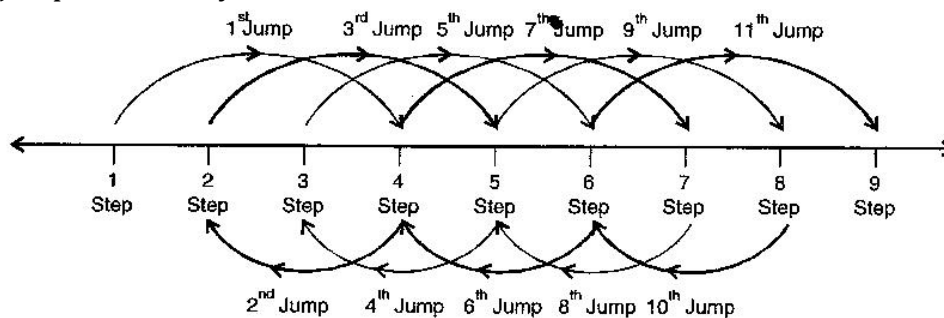
Putting the values in R.H.S. = $a + b = 28 + 11 = 39$

Since, L.H.S. = R.H.S

Hence, verified.

9. (a) $(-8) + (-4) \square (-8) - (-4) \Rightarrow -8 - 4 \square -8 + 4$
 $\Rightarrow -12 \square -4 \Rightarrow -12 \square < -4$
- (b) $(-3) + 7 - (19) \square 15 - 8 + (-9) \Rightarrow -3 + 7 - 19 \square 15 - 8 - 9$
 $\Rightarrow 4 - 19 \square 15 - 17 \Rightarrow -15 \square -2$
 $\Rightarrow -15 \square < -2$
- (c) $23 - 41 + 11 \square 23 - 41 - 11 \Rightarrow -18 + 11 \square 23 - 52$
 $\Rightarrow -7 \square -29 \Rightarrow -7 \square > -29$
- (d) $39 + (-24) - (15) \square 36 + (-52) - (-36) \Rightarrow 39 - 24 - 15 \square 36 - 52 + 36$
 $\Rightarrow 39 - 39 \square 72 - 52 \Rightarrow 0 \square 20$
 $\Rightarrow 0 \square < 20$
- (e) $(-231) + 79 + 51 \square (-399) + 159 + 81 \Rightarrow -231 + 130 \square -399 + 240$
 $\Rightarrow -101 \square -159 \Rightarrow -101 \square > -159$

10. (i) He jumps 3 steps down and jumps back 2 steps up. Following number ray shows the jumps of monkey:



First jump = $1 + 3 = 4$ steps

Second jump = $4 - 2 = 2$ steps

Third jump = $2 + 3 = 5$ steps

Fourth jump = $5 - 2 = 3$ steps

Fifth jump = $3 + 3 = 6$ steps

Sixth jump = $6 - 2 = 4$ steps

Seventh jump = $4 + 3 = 7$ steps

Eighth jump = $7 - 2 = 5$ steps

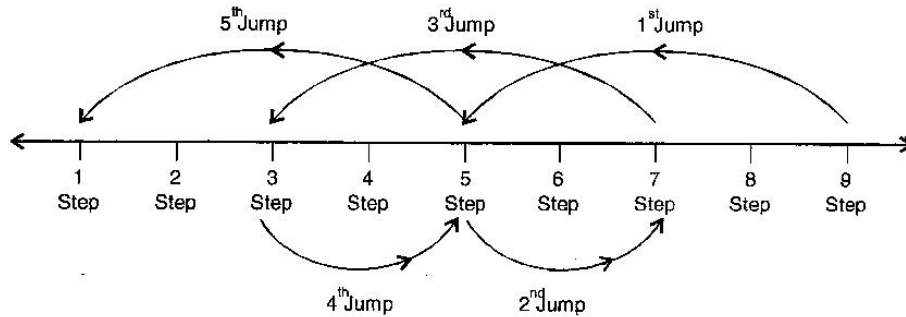
Ninth jump = $5 + 3 = 8$ steps

Tenth jump = $8 - 2 = 6$ steps

Eleventh jump = $6 + 3 = 9$ steps

He will reach ninth steps in 11 jumps.

- (ii) He jumps four steps and then jumps down 2 steps. Following number ray shows the jumps of monkey:



Thus monkey reach back on the first step in fifth jump.

- (iii) (a) $-3 + 2 - 3 + 2 - 3 + 2 - 3 + 2 - 3 + 2 - 3 + 2 - 3 + 2 - 3 + 2 = -8$
(b) $4 - 2 + 4 - 2 + 4 - 2 + 4 - 2 = 8$

Thus, sum 8 in (b) represents going up by eight steps.

Class -VII Mathematics (Ex. 1.2)

Answers

1. (a) One such pair whose sum is -7 : $-5 + (-2) = -7$
(b) One such pair whose difference is -10 : $-2 - 8 = -10$
(c) One such pair whose sum is 0 : $-5 + 5 = 0$
2. (a) $-2 - (-10) - 2 + 10 = 8$
(b) $(-7) + 2 = -5$
(c) $(-2) - 1 = -2 - 1 = -3$
3. Team A scored $-40, 10, 0$
Total score of Team A = $-40 + 10 + 0 = -30$
Team B scored $10, 0, -40$
Total score of Team B = $10 + 0 + (-40) = 10 + 0 - 40 = -30$
Thus, scores of both teams are same.
Yes, we can add integers in any order due to commutative property.
4. (i) $(-5) + (-8) = (-8) + \underline{(-5)}$ [Commutative property]
(ii) $-53 + \underline{0} = -53$ [Zero additive property]
(iii) $17 + \underline{(-17)} = 0$ [Additive identity]
(iv) $[13 + (12)] + \underline{(-7)} = 13 + [(-12) + (-7)]$ [Associative property]
(v) $(-4) + [15 + (-3)] = [-4 + 15] + \underline{(-3)}$ [Associative property]
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Class -VII Mathematics (Ex. 1.3)

Answers

1. (a) $3 \times (-1) = -3$ (b) $(-1) \times 225 = -225$
(c) $(-21) \times (-30) = 630$ (d) $(-316) \times (-1) = 316$
(e) $(-15) \times 0 \times (-18) = 0$ (f) $(-12) \times (-11) \times (10) = 132 \times 10 = 1320$
(g) $9 \times (-3) \times (-6) = 9 \times 18 = 162$ (h) $(-18) \times (-5) \times (-4) = 90 \times (-4) = -360$
(i) $(-1) \times (-2) \times (-3) \times 4 = (-6 \times 4) = -24$ (j) $(-3) \times (-6) \times (2) \times (-1) = (-18) \times (-2) = 36$

2. (a) $18 \times [7 + (-3)] = [18 \times 7] + [18 \times (-3)]$
 $\Rightarrow 18 \times 4 = 126 + (-54)$
 $\Rightarrow 72 = 72$
 $\Rightarrow \text{L.H.S.} = \text{R.H.S.}$

Hence verified.

- (b) $(-21) \times [(-4) + (-6)] = [(-21) \times (-4)] + [(-21) \times (-6)]$
 $\Rightarrow (-21) \times (-10) = 84 + 126$
 $\Rightarrow 210 = 210$
 $\Rightarrow \text{L.H.S.} = \text{R.H.S.}$

Hence verified.

3. (i) $(-1) \times a = -a$, where a is an integer.

(ii) (a) $(-1) \times (-22) = 22$

(b) $(-1) \times 37 = -37$

(c) $(-1) \times 0 = 0$

4. $(-1) \times 5 = -5$

$(-1) \times 4 = -4$

$(-1) \times 3 = -3$

$(-1) \times 2 = -2$

$(-1) \times 1 = -1$

$(-1) \times 0 = 0$

$(-1) \times (-1) = 1$

Thus, we can conclude that this pattern shows the product of one negative integer and one positive integer is negative integer whereas the product of two negative integers is a positive integer.

5. (a) $26 \times (-48) + (-48) \times (-36)$

$\Rightarrow (-48) \times [26 + (-36)]$

[Distributive property]

$\Rightarrow (-48) \times (-10)$

$\Rightarrow 480$

- (b) $8 \times 53 \times (-125)$
-

$$\Rightarrow 53 \times [8 \times (-125)] \quad \text{[Commutative property]}$$

$$\Rightarrow 53 \times (-1000)$$

$$\Rightarrow -53000$$

$$(c) 15 \times (-25) \times (-4) \times (-10)$$

$$\Rightarrow 15 \times [(-25) \times (-4) \times (-10)] \quad \text{[Commutative property]}$$

$$\Rightarrow 15 \times (-1000)$$

$$\Rightarrow -15000$$

$$(d) (-41) \times (102)$$

$$\Rightarrow -41 \times [100 + 2] \quad \text{[Distributive property]}$$

$$\Rightarrow [(-41) \times 100] + [(-41) \times 2] \quad \Rightarrow -4100 + (-82)$$

$$\Rightarrow -4182$$

$$(e) 625 \times (-35) + (-625) \times 65$$

$$\Rightarrow 625 \times [(-35) + (-65)] \quad \text{[Distributive property]}$$

$$\Rightarrow 625 \times (-100)$$

$$\Rightarrow -62500$$

$$(f) 7 \times (50 - 2)$$

$$\Rightarrow 7 \times 50 - 7 \times 2 \quad \text{[Distributive property]}$$

$$\Rightarrow 350 - 14 = 336$$

$$(g) (-17) \times (-29) \quad \Rightarrow \quad (-17) \times [(-30) + 1] \quad \text{[Distributive property]}$$

$$\Rightarrow (-17) \times (30) + (-17) \times 1 \quad \Rightarrow 510 + (-17)$$

$$\Rightarrow 493$$

$$(h) (-57) \times (-19) + 57$$

$$\Rightarrow (-57) \times (-19) + 57 \times 1 \quad \Rightarrow 57 \times 19 + 57 \times 1$$

$$\Rightarrow 57 \times (19 + 1) \quad \text{[Distributive property]}$$

$$\Rightarrow 57 \times 20 = 1140$$

6. Given: Present room temperature = 40°C

Decreasing the temperature every hour = 5°C

Room temperature after 10 hours = $40^\circ\text{C} + 10 \times (-5^\circ\text{C})$

$$= 40^\circ\text{C} - 50^\circ\text{C}$$

$$= -10^\circ\text{C}$$

Thus, the room temperature after 10 hours is -10°C after the process begins.

7. (i) Mohan gets marks for four correct questions = $4 \times 5 = 20$

He gets marks for six incorrect questions = $6 \times (-2) = -12$

Therefore, total scores of Mohan = $(4 \times 5) + [6 \times (-2)]$
 $= 20 - 12 = 8$

Thus, Mohan gets 8 marks in a class test.

(ii) Reshma gets marks for five correct questions = $5 \times 5 = 25$

She gets marks for five incorrect questions = $5 \times (-2) = -10$

Therefore, total score of Resham = $25 + (-10) = 15$

Thus, Reshma gets 15 marks in a class test.

(iii) Heena gets marks for two correct questions = $2 \times 5 = 10$

She gets marks for five incorrect questions = $5 \times (-2) = -10$

Therefore, total score of Resham = $10 + (-10) = 0$

Thus, Reshma gets 0 marks in a class test.

8. Given: Profit of 1 bag of white cement = ₹ 8

And Loss of 1 bag of grey cement = ₹ 5

(a) Profit on selling 3000 bags of white cement = $3000 \times 8 = ₹ 24,000$

Loss of selling 5000 bags of grey cement = $5000 \times ₹ 5 = ₹ 25,000$

Since Profit < Loss

Therefore, his total loss on selling the grey cement bags = Loss – Profit
 $= 25,000 - 24,000$
 $= ₹ 1,000$

Thus, he has lost of ₹ 1,000 on selling the grey cement bags.

(b) Let the number of bags of white cement be x .

According to question, Loss = Profit

$\therefore 5 \times 6,400 = x \times 8$

$\Rightarrow x = \frac{5 \times 6400}{8} = 5000$ bags

Thus, he must sell 4000 white cement bags to have neither profit nor loss.

9. (a) $(-3) \times (-9) = 27$

(b) $5 \times (-7) = -35$

(c) $7 \times (-8) = -56$

(d) $(-11) \times (-12) = 132$

Class -VII Mathematics (Ex. 1.4)

Answers

1. (a) $(-30) \div 10 = (-30) \times \frac{1}{10} = \frac{-30 \times 1}{10} = -3$

(b) $50 \div (-5) = 50 \times \left(\frac{-1}{5}\right) = \frac{50 \times (-1)}{5} = -10$

(c) $(-36) \div (-9) = (-36) \times \left(\frac{-1}{9}\right) = \frac{(-36) \times (-1)}{9} = \frac{36}{9} = 4$

(d) $(-49) \div 49 = (-49) \times \frac{1}{49} = \frac{-49}{49} = -1$

(e) $13 \div [(-2) + 1] = 13 \div (-1) = 13 \times \left(\frac{-1}{1}\right) = -13$

(f) $0 \div (-12) = 0 \times \left(\frac{-1}{12}\right) = \frac{0}{12} = 0$

(g) $(-31) \div [(-30) \div (-1)] = (-31) \div (-30 - 1) = (-31) \div (-31) = (-31) \times \left(\frac{-1}{31}\right) = \frac{31}{31} = 1$

(h) $[(-36) \div 12] \div 3 = \left[(-36) \times \frac{1}{12}\right] \times \frac{1}{3} = \left(\frac{-36}{12}\right) \times \frac{1}{3} = (-3) \times \frac{1}{3} = \frac{-3}{3} = -1$

(i) $[(-6) + 5] \div [(-2) + 1] = (-6 + 5) \div (-2 + 1) = (-1) \div (-1) = (-1) \times \left(\frac{-1}{1}\right) = 1$

2. (a) Given: $a \div (b + c) \neq (a \div b) + (a \div c)$

$a = 12, b = -4, c = 2$

Putting the given values in L.H.S. = $12 \div (-4 + 2)$

$$= 12 \div (-2) = 12 \div \left(\frac{-1}{2}\right) = \frac{-12}{2} = -6$$

Putting the given values in R.H.S. = $[12 \div (-4)] + (12 \div 2)$

$$= \left(12 \times \frac{-1}{4}\right) + 6 = -3 + 6 = 3$$

Since, L.H.S. \neq R.H.S.

Hence verified.

(b) Given: $a \div (b + c) \neq (a \div b) + (a \div c)$

$a = -10, b = 1, c = 1$

Putting the given values in L.H.S. = $-10 \div (1 + 1)$

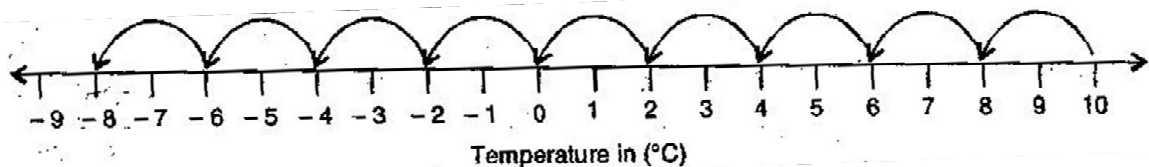
$$= -10 \div (2) = -5$$

$$\begin{aligned} \text{Putting the given values in R.H.S.} &= [-10 \div 1] + (-10 \div 1) \\ &= -10 - 10 = -20 \end{aligned}$$

Since, L.H.S. \neq R.H.S.
Hence verified.

3. (a) $369 \div 1 = 369$ (b) $(-75) \div 75 = (-1)$
 (c) $(-206) \div (-206) = 1$ (d) $(-87) \div (-1) = 87$
 (e) $(-87) \div 1 = -87$ (f) $(-48) \div 48 = -1$
 (g) $20 \div (-10) = -2$ (h) $(-12) \div (4) = -3$
4. (i) $(-6) \div 2 = -3$ (ii) $9 \div (-3) = -3$
 (iii) $12 \div (-4) = -3$ (iv) $(-9) \div 3 = -3$
 (v) $(-15) \div 5 = -3$

5. Following number line is representing the temperature:



The temperature decreases $2^{\circ}\text{C} = 1$ hour

The temperature decreases $1^{\circ}\text{C} = \frac{1}{2}$ hour

The temperature decreases $18^{\circ}\text{C} = \frac{1}{2} \times 18 = 9$ hours

Total time = 12 noon + 9 hours = 21 hours = 9 pm

Thus, at 9 pm the temperature would be 8°C below 0°C .

6. (i) Marks given for one correct answer = 3
 Marks given for 12 correct answers = $3 \times 12 = 36$
 Radhika scored 20 marks.
 Therefore, Marks obtained for incorrect answers = $20 - 36 = -16$
 Now, marks given for one incorrect answer = -2
 Therefore, number of incorrect answers = $(-16) \div (-2) = 8$
 Thus, Radhika has attempted 8 incorrect questions.
- (ii) Marks given for seven correct answers = $3 \times 7 = 21$
 Mohini scores = -5
-

Marks obtained for incorrect answers = $-5 - 21 = -26$

Now, marks given for one incorrect answer = -2

Therefore, number of incorrect answers = $(-26) \div (-2) = 13$

Thus, Mohini has attempted 13 incorrect questions.

7. Starting position of mine shaft is 10 m above the ground but it moves in opposite direction so it travels the distance (-350) m below the ground.

So total distance covered by mine shaft = $10 \text{ m} - (-350) \text{ m} = 10 + 350 = 360 \text{ m}$

Now, time taken to cover a distance of 6 m by it = 1 minute

So, time taken to cover a distance of 1 m by it = $\frac{1}{6}$ minute

Therefore, time taken to cover a distance of 360 m = $\frac{1}{6} \times 360 = 60$ minutes = 1 hour

(Since 60 minutes = 1 hour)

Thus, in one hour the mine shaft reaches -350 below the ground.

Class 7 Maths Integers

Introduction

Natural Numbers

- Numbers that come naturally to us are Natural numbers. For example, 1,2,3, 4,...

Count the number of fingers in your hand 1,2,3,4.....10, these are natural numbers.



What exist below 1?

Suppose you have 5 chocolates and now you give one chocolate to one of your friend, now you are left with four, similarly you distribute remaining four to other friends, hence you are left with no chocolate or zero chocolate.



Whole Numbers

- Numbers starting from 0,1,2,3,4,5,6..... are called Whole numbers

Note: The whole numbers start with 0 while natural numbers start with 1,2,3,4..

What exist below 0?

- The numbers below 0 are -1, -2, -3,-4,-5,-6,-7.....

Examples: Suppose you borrow one chocolate from your elder brother then you will have one chocolate and that should be counted as -1.

In the Antarctica region the temperature goes well below 0, the temperature usually over there is -10



Class 7 Maths Integers

What are integers

What are integers?

Collection of all positive(1,2,3,4) and negative numbers(-1,-2,-3..) including 0 are the **integers**.

Note: 0 is neither a positive nor a negative integer.

Question: Which number is larger?

10 or 18

-10 or 18

-10 or -18

Solution:

a) 18 is larger than 10.

b) 18 is larger than -10

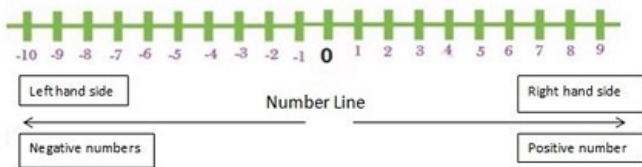
c) -10 is larger than -18,

These can be proved on a number line

Class 7 Maths Integers

Integer on number Line

Integer on number Line



Note: The numbers on right hand side are always bigger than the numbers on the left hand side.

For example:

$25 > 15$ (as 25 lies more on right hand side).

$-25 < 15$ (as 15 lies more on right hand side).

$-15 > -25$ (as -15 lies more on right hand side).

- To represent a number on number line we mark the circle on the number line, suppose you need to represent -2, 0 and 2 on number line you put circle over the number.



Rules for Operation on number line

- To Add a +ve number, move right
- To Add a -ve number, move left
- To Subtract a +ve number, move left
- To Subtract a -ve number, move right

Ex: $5+(-3) = 2$ (From 5 move 3 jumps on left side, we get 2).

$4+(-5)=-1$ (From 4 move 5 jumps on left side, we get -1).

$0+(-8)=-8$ (From 0 move 8 jumps on left side, we get -8)

$6+8= 14$ (From 6 move 8 jumps on left side, we get 14)

Tip: Subtract the number put the sign of bigger number.

Class 7 Maths Integers

Properties of Integer

Properties of Integer

Closure Property:

- For any two integers a and b, a+b is always an integer
- For any two integers a and b, a-b is always an integer
- Hence, Addition and Subtraction follows closure property.

Example: $1+(-15)=14$

$$1+15=16$$

$$2-(-5)=7$$

$$2-5=-3$$

Commutative Property: For any two integers a and b, $a+b=b+a$

But, this is NOT true for Subtraction.

i.e. $a-b \neq b-a$.

Example:

Statement 1	Statement 2	Inference
$3 + 4 = 7$	$4 + 3 = 7$	Both statements are equal
$-15 + (-10) = -25$	$(-10) + (-15) = -25$	Both statements are equal
$3 + 12 = 15$	$12 + 3 = 15$	Both statements are equal
$3 - (-5) = 9$	$-5 - 3 = -8$	Both statements are different
$2 - 5 = -3$	$5 - 2 = 3$	Both statements are different

- **Associative Property:**

For three integers a, b and c, $[a+b]+c = a+[b+c]$

But, this law doesn't hold true for Subtraction.

i.e. $a-(b-c) \neq (a-b)-c$

Example:

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Statement 1	Statement 2	Result
$2+[5+3]=10$	$[2+5]+3=10$	Both statements are equal
$8+[-2+(-3)]=3$	$[8+(-2)]+(-3)=3$	Both statements are equal
$8-[-(-2)-(-3)] = 8-(-2+3) = 7$	$[8-(-2)]-(-3) = 10-(-3) = 13$	Both statements are different

Multiplication of an integer

Multiplication of positive and negative integer

- We should remember when we multiply,
- $a \times b = ab$ i.e two positive integer when multiply gives positive integer.
- $(-a) \times (-b) = ab$ i.e two negative integer when multiply gives positive number.
- $(-a) \times b = -ab$ i.e one positive and one negative integer when multiply gives negative number.

Tip: Find the product then a give sign according to the case mentioned above.

Question: Multiply the following numbers

$$(-2) \times (-3)$$

$$(-3) \times 6$$

$$2 \times 4$$

$$4 \times (-6)$$

Solution: a. $(-2) \times (-3) = 6$

b. $(-3) \times 6 = -18$

c. $2 \times 4 = 8$

d. $4 \times (-6) = -24$

Tip: Multiply the numbers then put the sign accordingly

Multiplication of three or more integers

- Negative-positive-negative gives positive result
Example: $-2 \times 3 \times (-4) = 24$
- Negative-Negative-Negative gives Negative result
Example: $-2 \times (-3) \times (-4) = -24$
- Negative-positive-negative gives positive result
Example: $-2 \times 3 \times (-4) = 24$

Note: If the numbers of negative sign is even then the sign is positive and if the number of negative sign is odd then the sign of a number is negative.

Multiplication by 0:



Any number when multiplied with 0 always gives 0 value.

Example: $0 \times 6 = 0$

$$0 \times 5 = 0$$

$$0 \times (-2) = 0$$

Multiplicative Identity(1):

When we multiply 1 with the number the result will be the number itself i.e. $ax1=a$.

Example: $1 \times 3 = 3$

$$2 \times 1 = 2$$

$$3 \times 1 = 3$$

$$-10 \times 1 = -10$$

Note: When we multiply -1 with the number the sign changes.

Example: $2 \times -1 = -2$

$$-2 \times -1 = 2$$

Class 7 Maths Integers

Multiplication Property

Multiplication Property:

- **Closure under Multiplication:** If we multiply two integers "a, b" the product of two integers will always be an integer. The below example proves that.

Statement-1	Inference
$2 \times 3 = 6$	Result is Integer
$3 \times (-7) = -21$	Result is Integer
$-2 \times (-10) = 20$	Result is Integer

- **Commutative of Multiplication:**

For any two integers a and b, $axb = bxa$.

Example:

Statement 1	Statement 2	Inference
$3 \times (-4) = -12$	$(-4) \times 3 = -12$	Both statements are equal
$(-15) \times (-10) = 150$	$(-10) \times (-15) = 150$	Both statements are equal
$(-30) \times 12 = -360$	$12 \times (-30) = -360$	Both statements are equal

- **Associative property of Multiplication:**

If you are multiplying three integers a, b and c, $(a \times b) \times c = a \times (b \times c)$

Example:

Statement 1	Statement 2	Inference
$[(-3) \times (-2)] \times 5 = 30$	$(-3) \times [(-2) \times 5] = 30$	Both statements are equal
$[(7) \times (-6)] \times 4 = -168$	$7 \times [(-6) \times 4] = -168$	Both statements are equal

$[(7) \times (3)] \times 2 = 42$	$7 \times [(3) \times 2] = 42$	Both statements are equal
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◦ **Distributive Property:**

For three integers a, b and c,

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

$$a \times (b - c) = a \times b - a \times c$$

Example:

Statement 1	Statement 2	Inference
$18 \times [7 + (-3)] = 72$	$[18 \times 7] + [18 \times (-3)] = 72$	Both statements are equal
$(-21) \times [(-4) + (-6)] = 210$	$[(-21) \times (-4)] + [(-21) \times (-6)] = 210$	Both statements are equal
$18 \times [7 - 6] = 18$	$[18 \times 7] - [18 \times (6)] = 18$	Both statements are equal

Class 7 Maths Integers

Division of an Integer

Division of an Integer:

Division refers to splitting into equal parts.

Example Dividing 4 ice-creams into two parts,



We get,



2 ice-creams in each part

i.e $4/2=2$

Division of a negative integer by a positive integer

When we divide a positive integer by a negative integer, we first divide them as whole numbers and then put a minus sign (-) before the quotient. That is, we get a negative integer.

In general, for any two positive integers a and b

$$a \div (-b) = (-a) \div b \quad \text{where } b \neq 0$$

Example: $12 \div (-2) = -6$

$-6 \div 2 = -3$

Division by zero(0)

◦ When we divide a number by zero the result is undefined i.e. $a \div 0 = \text{undefined}$

◦ When 0 is divided by any number the result is zero(0) itself

Example: $5 \div 0 = \text{undefined}$

$$0 \div 7 = 0$$

$$0 \div (-2) = 0$$

Division by one(1)



When we divide a number by 1 the result is the number itself

Example: $27 \div 1 = 27$

$-12 \div 1 = -12$

$20 \div 1 = 20$

Class 7 Maths Integers

Division Property

Division Property:

- Commutative Property: In Division "a b b a". Hence, division does not follow Commutative Property
Example: $-15 \div 3 = -5$ But, $3 \div 15 = 1/5$ they are not equal
- Associative Property: Division does not follow Associative Property.

Example: $15 \div [(-3) \div (-3)] = 15 \div 1 = 5$

But, $[15 \div (-3)] \div (-3) = 5/3$ Both statements are not equal

- Distributive Property: For three integers "a [b+ c] a b + c".
Hence division does not follow Distributive Property.

Example: $15 \div [3+2] = 15 \div 5 = 3$

But, $15 \div 15 \div 2 = 5 \div 15/2$

Both statements are not equal