Class –VII Mathematics (Ex. 1.1)
Answers

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

Places	Temperature	Places	Temperature
Bangalore	22^oC	Srinagar	-2^oC
Ooty	14^oC	Lahulspiti	-8^oC
Shimla	5^oC		

(b) The temperature of the hottest place Bangalore = 22^oC
The temperature of the coldest place Lahulspiti = -8^oC
Difference = $22^oC - (-8^oC) = 22^oC + 8^oC = 30^oC$

(c) The temperature of Srinagar = -2^oC
The temperature of Lahulspiti = -8^oC
Difference = $-2^oC + (-8^oC) = -2^oC - 8^oC = 6^oC$

(d) The temperature of Srinagar and Shimla = $5^oC + (-2^oC) = 5^oC - 2^oC = 3^oC$
The temperature at Shimla = 5^oC
Therefore, $3^oC < 5^oC$
Thus, temperature of Srinagar and Shimla taken together is less than the temperature at Shimla.
Now, Temperature of Srinagar = -2^oC
Therefore, $3^oC > -2^oC$
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.
Total marks got by Jack = $25 + (-5) + (-10) + 15 + 10$
$= 25 - 15 + 25 = 35$
Thus, 35 marks are got by Jack in a quiz.

3. On Monday, temperature at Srinagar = -5^oC
On Tuesday, temperature dropped = 2^oC
$\therefore$ Temperature on Tuesday = $-5^oC - 2^oC = -7^oC$
On Wednesday, temperature rose up = 4^oC
$\therefore$ Temperature on Wednesday = $-7^oC + 4^oC = -3^oC$
Thus, temperature on Tuesday and Wednesday was -7^oC and -3^oC respectively.

4. Height of a place above the sea level = 5000 m
Floating a submarine below the sea level = 1200 m
$\therefore$ The vertical distance between the plane and the submarine = 5000 + 1200 = 6200 m
Thus, the vertical distance between the plane and the submarine is 6200 m.

5. Deposit amount = ₹ 2,000 and Withdrawal amount = ₹ 1,642
$\therefore$ Balance = 2,000 – 1,642 = ₹ 358
Thus, the balance in Mohan's account after withdrawal is ₹ 358.

6. West ← Û | Û Û → East

C O A B

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, Rital 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 + 19 = 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) $(-8)+(-4)\square(-8)-(-4)$ $\Rightarrow$ $-8-4\square-8+4$

$\Rightarrow$ $-12\square-4$ $\Rightarrow$ $-12\boxed{<}-4$

(b) $(-3)+7-(19)\square15-8+(-9)$ $\Rightarrow$ $-3+7-19\square15-8-9$

$\Rightarrow$ $4-19\square15-17$ $\Rightarrow$ $-15\square-2$

$\Rightarrow$ $-15\boxed{<}-2$

(c) $23-41+11\square23-41-11$ $\Rightarrow$ $-18+11\square23-52$

$\Rightarrow$ $-7\square-29$ $\Rightarrow$ $-7\boxed{>}-29$

(d) $39+(-24)-(15)\square36+(-52)-(-36)$ $\Rightarrow$ $39-24-15\square36-52+36$

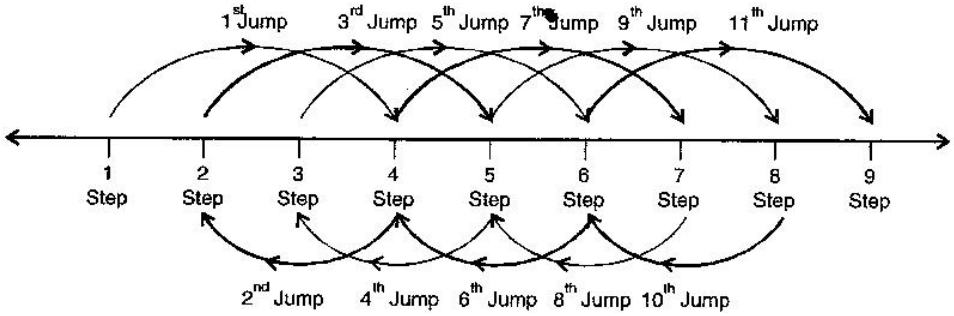
$\Rightarrow$ $39-39\square72-52$ $\Rightarrow$ $0\square20$

$\Rightarrow$ $0\boxed{<}20$

(e) $(-231)+79+51\square(-399)+159+81$ $\Rightarrow$ $-231+130\square-399+240$

$\Rightarrow$ $-101\square-159$ $\Rightarrow$ $-101\boxed{>}-159$

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

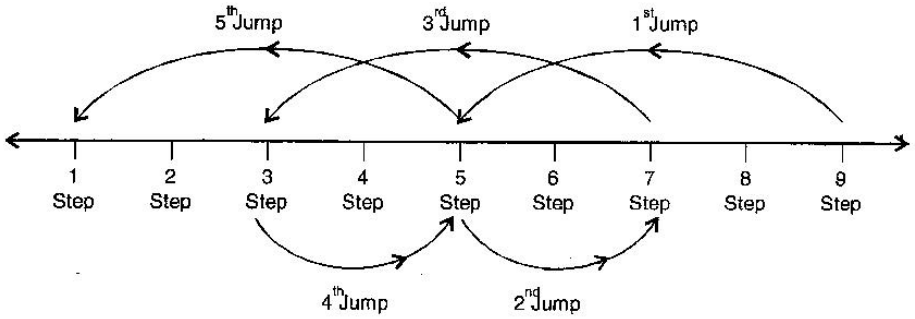
Seventh jump = 4 + 3 = 7 steps Eighth jump = 7 – 2 = 5 steps

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 them 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) $\left[13+(12)\right]+\underline{(-7)}=13+\left[(-12)+(-7)\right]$ [Associative property]

   (v) $(-4)+\left[15+(-3)\right]=[-4+15]+\underline{(-3)}$ [Associative property]

Class –VII Mathematics (Ex. 1.3)
Answers

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

2. (a) 18 x [7 + (–3)] = [18 x 7] + [18 x (–3)]
$\Rightarrow$ 18 x 4 = 126 + (–54)
$\Rightarrow$ 72 = 72
$\Rightarrow$ L.H.S. = R.H.S. Hence verified.
(b) (–21) x [(–4) + (–6)] = [(–21) x (–4)] + [(–21) x (–6)]
$\Rightarrow$ (–21) x (–10) = 84 + 126
$\Rightarrow$ 210 = 210
$\Rightarrow$ L.H.S. = 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) $8\times 53\times(-125)$

$\Rightarrow \quad 53\times\left[8\times(-125)\right]$ [Commutative property]

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

$\Rightarrow \quad -53000$

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

$\Rightarrow \quad 15\times\left[(-25)\times(-4)\times(-10)\right]$ [Commutative property]

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

$\Rightarrow \quad -15000$

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

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

$\Rightarrow \quad \left[(-41)\times100\right]+\left[(-41)\times2\right] \quad \Rightarrow \quad -4100+(-82)$

$\Rightarrow \quad -4182$

(e) $625\times(-35)+(-625)\times65$

$\Rightarrow \quad 625\times\left[(-35)+(-65)\right]$ [Distributive property]

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

$\Rightarrow \quad -62500$

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

$\Rightarrow \quad 7\times50-7\times2$ [Distributive property]

$\Rightarrow \quad 350-14=336$

(g) $(-17)\times(-29) \quad \Rightarrow \quad (-17)\times\left[(-30)+1\right]$ [Distributive property]

$\Rightarrow \quad (-17)\times(30)+(-17)\times1 \quad \Rightarrow \quad 510+(-17)$

$\Rightarrow \quad 493$

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

$\Rightarrow \quad (-57)\times(-19)+57\times1 \quad \Rightarrow \quad 57 \text{ x } 19 + 57 \text{ x } 1$

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

$\Rightarrow \quad 57 \text{ x } 20 = 1140$

6. Given: Present room temperature = 40^oC
Decreasing the temperature every hour = 5^oC

Room temperature after 10 hours = $40^oC + 10 \text{ x } (-5^oC)$

$= 40^oC - 50^oC$

$= -10^oC$

Thus, the room temperature after 10 hours is -10^oC after the process begins.

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

He gets marks for six incorrect questions = 6 x (–2) = –12
Therefore, total scores of Mohan = (4 x 5) + [6 x (–2)]
= 20 – 12 = 8
Thus, Mohan gets 8 marks in a class test.

(ii) Reshma gets marks for five correct questions = 5 x 5 = 25
She gets marks for five incorrect questions = 5 x (–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 x 5 = 10
She gets marks for five incorrect questions = 5 x (–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 x 8 = ₹ 24,000
Loss of selling 5000 bags of grey cement = 5000 x ₹ 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 x 6,400 = x x 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) $(-3) \times \underline{(-9)} = 27$

(b) $5 \times \underline{(-7)} = -35$

(c) $\underline{7} \times (-8) = -56$

(d) $\underline{(-11)} \times (-12) = 132$

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

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

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

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

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

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. = $\left[12\div(-4)\right]+(12\div 2)$

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

Since, L.H.S. ≠ 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. = $-10\div(1+1)$

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

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

$= -10 - 10 = -20$

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

Hence verified.

3. (a) $369 \div \underline{1} = 369$ (b) $(-75) \div \underline{75} = (-1)$

(c) $(-206) \div \underline{(-206)} = 1$ (d) $(-87) \div \underline{(-1)} = 87$

(e) $\underline{(-87)} \div 1 = -87$ (f) $\underline{(-48)} \div 48 = -1$

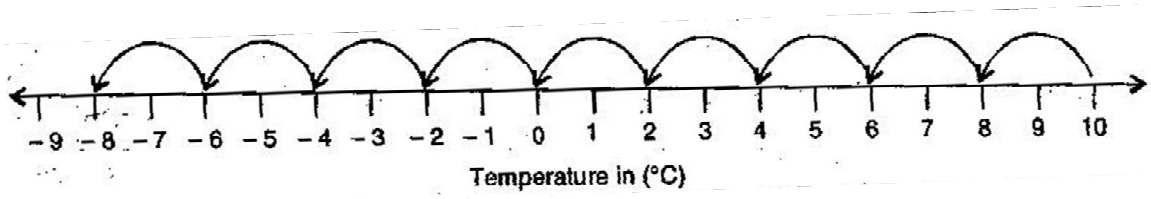
(g) $20 \div \underline{(-10)} = -2$ (h) $\underline{(-12)} \div (4) = -3$

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^oC = 1 hour

The temperature decreases $1^oC = \frac{1}{2}$ hour

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

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

Thus, at 9 pm the temperature would be 8^oC below 0^oC.

6. (i) Marks given for one correct answer = 3

Marks given for 12 correct answers = 3 x 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 x 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 m – (–350) m = 10 + 350 = 360 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.