*** Choose The Right Answer From The Given Options.** [11]

1. Which of the following is not an integer?

   (A) 0 (B) -1 (C) -1.5 (D) 1

   Ans. : (C) -1.5

2. Which of the following group of numbers is non-negative integers?

   (A) {....., -2, -1, 0} (B) {0, 1, 2, 3,.....}

   (C) {1, 2, 3, 4,.....} (D) {.....,-5, -4, -3, -2, -1}

   Ans. : (B) {0, 1, 2, 3,.....}

3. The number of integers between 1 and -1 is:

   (A) 1 (B) 2 (C) 3 (D) many

   Ans.: (A) 1

4. The predecessor of (-1) is:

   (A) -2 (B) -1 (C) 0 (D) 1

   Ans.: (A) -2

5. The successor of (-1) is:

   (A) -2 (B) 2 (C) 1 (D) 0

   Ans. : (D) 0

6. Which even integer lies between -1 and -4?

   (A) -2 (B) -3 (C) -4 (D) 0

   Ans. : (A) -2
   Explanation:
   Integers lying between -1 and – 4 are: -2,-3. and Here, – 2 is an even integer.

7. he number of odd integer between – 7 and 3 are

   (A) 9 (B) 3 (C) 4 (D) 5

   Ans. : (C) 4
   Explanation:
   Odd integer between – 7 and 3 are – 5, -3,-1,1

8. Find the value of |-8| + |7|.

   (A) -1 (B) 15 (C) 1 (D) -15

   Ans. : (B) 15
   Explanation: |-8| + |7|
   = 8 + 7 = 15

9. The expression -8 + 13 and -13 + 8 have the same value (True/False)

Ans. : False

Explanation:

– 8 + 13 $\neq$ -13 + 8

5 $\neq$ – 5

10. Samir earned a profit of ₹ 10 by selling pens and had a loss of Rs. 5 by selling pencils. Find the total profit or loss incurred by Samir.

(A) Profit of ₹ 15 (B) Loss of ₹ 15 (C) Loss of ₹ 5 (D) Profit of ₹ 5

Ans. : (D) Profit of ₹ 5

Explanation:

Profit is more than the loss, So net profits is 10 – 5 = ₹ 5

11. Sita and Gita visited Leh and Tawang respectively during winter. Sita reported that she had experienced $-4^{\circ}C$ on Sunday, while Gita reported that she had experienced $-2^{\circ}C$ on the same day. Which statement is true?

(A) Leh was cooler than Tawang. (B) Leh was hotter than Tawang.

(C) Leh was as cool as Tawang (D) Tawang was cooler than Leh.

Ans. : (A) Leh was cooler than Tawang.

Explanation:

Leh was -4° and Tawang was -2°. -4 < -2

So Leh was the cooler than Tawang.

*** a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.** [2]

12. Assertion (A): The successor of – 1 is 0.

Reason (R): Successor is the number which comes after a number.

(A) Both 'A' and 'R' are true and R is the correct ex-planation of A

(B) Both 'A' and 'R' are true but R is not the correct explanation of 'A'

(C) 'A' is true and 'R' is false

(D) 'A' is false and 'R' is true

Ans. : (A) Both 'A' and 'R' are true and R is the correct ex-planation of A

Explanation:

The number that comes after a given number is called successor and the successor of -1 is 0.

13. Assertion (A): Zero is greater than every negative integer.

Reason (R): We put positive sign with zero.

(A) Both 'A' and 'R' are true and R is the correct ex-planation of A

(B) Both 'A' and 'R' are true but R is not the correct explanation of 'A'

(C) 'A' is true and 'R' is false

(D) 'A' is false and 'R' is true

Ans. : (C) 'A' is true and 'R' is false

Explanation:

Zero comes to the right of negative numbers on number line. Hence, it is greater and we do not put any sign with zero as 'O' is neither positive nor negative.

*** State Whether The Following Sentences Are True Or False.** **[4]**

14. Zero is the smallest integer.

Ans. : False

15. -10 is smaller than -7.

Ans. : True

16. The sum of two negative integers is a positive integer.

Ans. : False

17. The sum of a negative integer and a positive integer is always a negative integer.

Ans. : False

*** Fill In The Blanks With Correct Alternative.** **[14]**

18. A negative integer is always _____ than zero.

Ans. : smaller

19. The greatest negative integer is _____

Ans. : -1

20. The integer _____ is neither positive nor negative.

Ans. : 0

21. The natural numbers are called _____ integers.

Ans. : positive

22. ....., -3, -2, -1 are called _____ integers.

Ans. : negative

23. The smallest positive integer is _____

Ans. : 1

24. Zero is _____ than every positive integer.

Ans. : less

25. Whole numbers together with negative numbers form _____

Ans. : integers

26. The successor of greatest negative integer is _____ which is neither positive nor negative.

Ans. : zero

27. Every positive integer is _____ than every negative integer.

Ans. : greater

28. If _____ is represented by '+' sign, then loss is represented by '-ve' sign.

Ans. : profit

29. If 'going up' is represented by '+ve' sign, then _____ is represented by '-ve' sign.

Ans. : going down

30. If the temperature above 0° is '+ve' then the temperature _____ is '-ve'.

Ans. : below 0°

31. If the depositing money in the bank is '+ve', then _____ is '-ve'.

Ans. : withdrawing money

*** Answer The Following Questions In One Sentence.[1 Marks Each]** **[55]**

32. Write all integers between
    (i) -4 and 6
    (ii) -3 and 3

Ans. : (i) -3, -2, -1, 0, 1, 2, 3, 4, 5
(ii) -2, -1, 0, 1, 2

33. Using the number line, write the integer which is 9 less than 2.

Ans. : -7

34. Write 5 negative integers more than -14.

Ans. : -13, -12, -11, -10, -9

35. Write the successor of each of the following:
    (i) -527
    (ii) 703

Ans. : (i) -526
(ii) 704

36. Find the additive inverse of -1001 and 0.

Ans. : 1001 and 0

37. Write the predecessor of each of the following:
    (i) -376
    (ii) -68
    (iii) 120

Ans. : (i) -377
(ii) -69

(iii) 119

38. Write two integers whose sum is 6 and the difference is also 6.

Ans. : 6 and 0

39. Evaluate the following by using tokens.

(i) -3 + 8
(ii) 8 + (-2)
(iii) 4 – (-2)
(iv) 6 – (-5)
(v) 7 + (-3)
(vi) (-3) – (+5)

Ans. : (i) 5
(ii) 6
(iii) 6
(iv) 11
(v) 4
(vi) -8

40. Compare the following by filling the boxes with >, < or = signs.

(i) (-4) + (-8) ☐ (-4) − (-8)

(ii) (-18) − (-12) ☐ (-28) + (-14)

(iii) 40 − (-15) ☐ 48 + (-18)

(iv) (-22) − (-30) ☐ (-12) − (-24)

(v) (-18) − (-30) ☐ (-28) − (-40)

Ans. : (i) $(-4)+(-8)<(-4)-(-8)$
(ii) $(-18)-(-12)>(-28)+(-14)$
(iii) $40-(-15)>48+(-18)$
(iv) $(-22)-(-30)<(-12)-(-24)$
(v) $(-18)-(-30)=(-28)-(-40)$

41. Add (-2056) + 6890.

Ans. : (-2056) + 6890 = 4834

42. Find the sum of -8, 23, -32, -17 and -63.

Ans. : -97

43. A car travelled 120 km to the north of Patna and then 190 km to the south from there. How far from Patna was the car finally?

Ans. : 70 km south

44. The sum of two integers is -113. If one of the integers is 140, find the other.

Ans. : -253

45. Subtract -3012 from 6250.

Ans. : 9262

46. Find: (-17) – 28 – (-25)

Ans. : -20

47. Find the sum of: (-39) + (+4) + (-16) + (+3)

Ans. : -48

48. Evaluate the following:
(i) 126 – 314 + 235 – (123)
(ii) (184 – 304) – (84 + 116)

Ans. : (i) -76 (ii) -320

49. Evaluate these expression:
(-1) + (+ 4) = _____

Ans. : 5

50. Evaluate these expression:
(+ 4) + (+ 1) = _____

Ans. : 5

51. Evaluate these expression:
(+ 4) + (- 3) = _____

Ans. : 1

52. Evaluate these expression:
(-1) + (+ 2) = _____

Ans. : 1

53. Evaluate these expression:
(- 1) + (+ 1) = _____

Ans. : 0

54. Evaluate these expression:
0 + (+ 2) = _____

Ans. : 2

55. Evaluate these expression:
0 + (- 2) = _____

Ans. : -2

56. Evaluate these expression:
(+1) + (+4) = _____

Ans. : Target floor = (+1) + (+4) = +5

57. Evaluate these expression:
(+4) + (+1) = _____

Ans. : Target floor = (+4) + (+1) = +5

58. Evaluate these expression:
(+4) + (-3) + (-2) = _____

Ans. : Target floor = (+4) + (-3) + (-2)
= 4 + (-5)
= -1

59. Evaluate these expression:
(-1) + (+2) + (-3) = _____

Ans. : Target floor = (-1) + (+2) + (-3)
= (-4) + (2)
= -2

60. Compare the numbers using the building of fun and fill in the boxes with < or >.
-2 _____ + 5

Ans. : Floor – 2 is lower than the floor + 5.
So, – 2 < + 5

61. Compare the numbers using the building of fun and fill in the boxes with < or >.
-5 _____ + 4

Ans. : Floor – 5 is lower than the floor + 4.
So, – 5 < + 4

62. Compare the numbers using the building of fun and fill in the boxes with < or >.
-5 _____ – 3

Ans. : Floor – 5 is lower than the floor – 3.
So, – 5 < – 3

63. Compare the numbers using the building of fun and fill in the boxes with < or >.
+6 _____ – 6

Ans. : Floor + 6 is higher than the floor – 6.
So, + 6 > – 6

64. Compare the numbers using the building of fun and fill in the boxes with < or >.
0 _____ – 4

Ans. : Floor 0 is higher than the floor – 4.
So, 0 > – 4

65. Compare the numbers using the building of fun and fill in the boxes with < or >.
0 _____ +4

Ans. : Floor 0 is lower than the floor + 4.
So, 0 < + 4

66. Compare the numbers and fill in the boxes with < or >.
-10 _____ -12

Ans. : -10 > -12

67. Compare the numbers and fill in the boxes with < or >.
+17 _____ -10

Ans. : +17 > -10

68. Compare the numbers and fill in the boxes with < or >.
0 _____ -20

Ans. : 0 > - 20

69. Compare the numbers and fill in the boxes with < or >.
+9 _____ - 9

Ans. : + 9 > - 9

70. Compare the numbers and fill in the boxes with < or >.
-25 _____ -7

Ans. : - 25 < - 7

71. Compare the numbers and fill in the boxes with < or >.
+15 _____ -17

Ans. : +15 > -17

72. Mark the following floors of the building shown on the right.
(a) -7
(b) -4
(c) +3
(d) -10

Ans. : Floors -7, -4, +3, and -10 of the building are marked on the line given on previous page.

73. Complete these expressions.
(+1) – (+4) = _____

Ans. : (+1) – (+4) = 1 – 4 = -3

74. Complete these expressions.
(0) – (-2) = _____

Ans. : (0) – (+2) = 0 – 2 = -2

75. Complete these expressions.
(+4) – (+1) = _____

Ans. : (+4) – (+1) = 4 – 1 = 3

76. Complete these expressions.
(0) – (-2) = _____

Ans. : (0) – (-2) = 0 + 2 = 2

77. Complete these expressions.
(+4) – (-3) = _____

Ans. : (+4) – (-3) = 4 + 3 = 7

78. Complete these expressions.
(-4) – (-3) = _____

Ans. : (-4) – (-3) = -4 + 3 = -1

79. Complete these expressions.
(-1) – (+2) = _____

Ans. : (-1) – (+2) = -1 – 2 = -3

80. Complete these expressions.
(-2) – (-2) = _____

Ans. : (-2) – (-2) = -2 + 2 = 0

81. Complete these expressions.
(-1) – (+1) = _____

Ans. : (-1) – (+1) = -1 – 1 = -2

82. Complete these expressions.
(+3) – (-3) = _____

Ans. : (+3) – (-3) = 3 + 3 = 6

83. Write down the 3 marked negative numbers.

Ans. : -3, -2, -1

84. Leh in Ladakh gets very cold during winter. The following is a table of temperature readings taken during different times of the day/night in Leh on a day in November. Match the temperature with the appropriate time of the

day/night.

Temperature
14°C
8°C
-2°C
-4°C

Time
02:00 am
11:00 pm
02:00 pm
11:00 am

Ans. : 14°C → 02: 00 PM
8°C → 11:00 AM

85. Give three numbers such that their sum is – 8.

Ans. : Three numbers whose sum is – 8, are – 2, – 5, -1.

86. There are two dice whose faces have these numbers: -1,2,- 3, 4, – 5, 6. The smallest possible sum upon rolling these dice is – 10 = (- 5) + (- 5) and the largest possible sum is 12 = (6) + (6). Some numbers between (- 10) and (+ 12) are not possible to get by adding numbers on these two dice. Find those numbers.

Ans. : The required numbers are – 9, 0, 7, 9 and 11.

*** Questions With Calculation.[2 Marks Each]** **[56]**

87. You start from Floor + 2 and press – 3 in the lift. Where will you reach? Write an expression for this movement.

Ans. : The starting floor is (+ 2)
and the number on the button pressed is (- 3).
∴ The target floor (+2) + (- 3) = + 2 – 3 = -1

88. Starting from different floors, find the movements required to reach Floor -5. For example, if I start at Floor +2, I must press -7 to reach Floor -5. The expression is (+2) + (-7) = -5.
Find more starting positions and the movements needed to reach Floor -5 and write the expressions.

Ans. : Other such expressions are:
(+3) + (-8) = -5
(+4) + (-9) = -5
(+5) + (-10) = -5
(+6) + (-11) = -5
And there could be infinite such expressions.

89. Complete these expressions.
(+40) +_____ = +200

Ans. : Let (+40) + x = +200
⇒ +x = 200 – 40 = 160

∴ (+40) + (+160) = +200

90. Complete these expressions.
(+40) +_____ = -200

Ans. : Let (+40) + x = -200
⇒ x = -200 – 40 = -240
∴ (+40) + (-240) = -200

91. Complete these expressions.
(-50)+_____ = +200

Ans. : Let (-50) + x = +200
⇒ x = +200 – (-50) = +250
∴ (-50) + (+250) = +200

92. Complete these expressions.
(-50) +_____ = -200

Ans. : Let (-50) + x = -200
⇒ x = -200 – (-50) = -150
∴ (-50) + (-150) = -200

93. Complete these expressions.
(-200) – (-40) =_____

Ans. : Let (-200) – (-40) = x
⇒ (-200) – (-40) = -160 = x
∴ (-200) – (-40) = -160

94. Complete these expressions.
(+200) – (+40) =_____

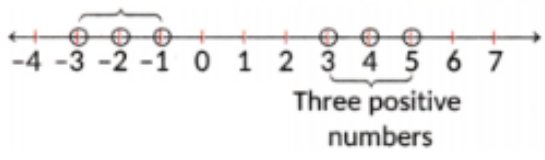
Ans. : Let (+200) – (+40) = x
⇒ +160 = x
∴ (+200) – (+40) = +160

95. Complete these expressions.
(-200) – (+40) =_____

Ans. : Let (-200) – (+40) = x
⇒ (-200) + (-40) = -240 = x
∴ (-200) + (-40) = -240

96. Mark 3 positive numbers and 3 negative numbers on the number line above.

Ans. :



97. Is 2 > -3? Why? Is -2 < 3? Why?

Ans. : Represent the numbers 2, -3, -2 and 3 on a number line.

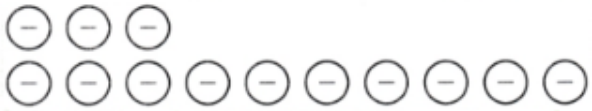
2 is to the right of-3 on the number line.

So, 2 > -3.

And, -2 is to the left of 3 on the number line. So, -2 < 3.

98. Evaluate the using tokens:
(-3) – (+10)

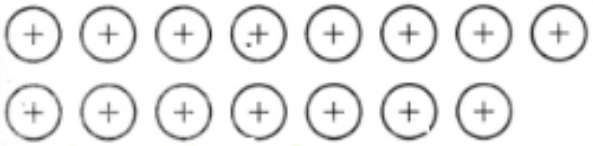
Ans. :



$\therefore \quad (-3) - (+10) = -13$

99. Evaluate the using tokens:
(+8) – (-7)

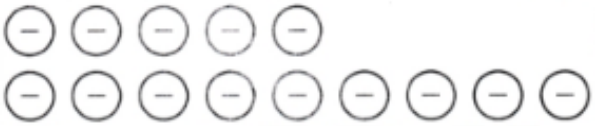
Ans. :



$\therefore \quad (+8) - (-7) = 15$

100. Evaluate the using tokens:
(-5) – (+9)

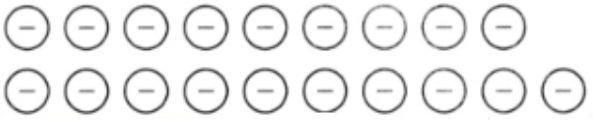
Ans. :



$\therefore \quad (-5) - (+9) = -14$

101. Evaluate the using tokens:
(-9) – (+10)

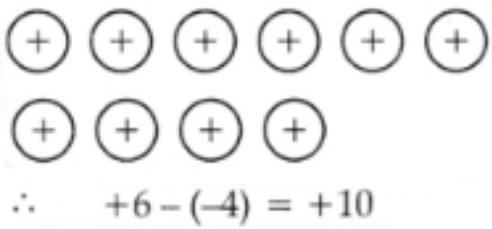
Ans. :



$\therefore \quad (-9) - (+10) = -19$

102. Evaluate the using tokens:
(+6) – (-4)

Ans. :



$\therefore \quad +6-(-4) = +10$

103. Evaluate the using tokens:
(-2) – (+7)

Ans. :

$\therefore \quad (-2)-(+7) = -9$

104. Why is it generally better to try and maintain a positive balance in your bank account? What are circumstances under which it many be worthwhile to temporarily have a negative balance?

Ans. : Maintaining a positive balance ensures you avoid fees or interest charges. In situations like making an investment that will quickly pay off a profit, a temporary negative balance might be worthwhile.

105. Which is the highest point in this geographical cross-section? Which is the lowest point?

Ans. : Identify the point on the graph that reaches the height point above sea level. Point A shows the highest point. Similarly find the point that is the lowest, considering points below sea level as well. Point D shows the lowest point.

106. Can you write the points A, B,....., and G in a sequence of decreasing order of heights? Can you write the points in a sequence of increasing order of heights?

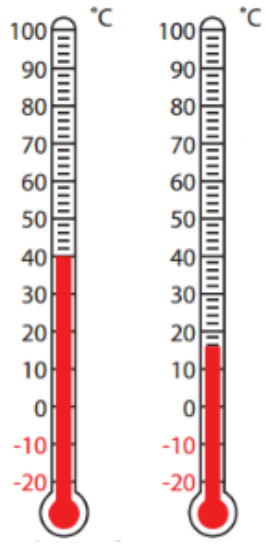
Ans. : Based on the heights we determined in question 1, arrange the points from highest to lowest (decreasing order) A > E > C > G > F > B > D and then from lowest to highest (increasing order) D < B < F < G < C < E < A.

107. What is the highest point above sea level on Earth? What is its height?

Ans. : The highest point above sea level on Earth is the peak of Mount Everest. It stands at approximately 29,032 feet or 8,848 metres above sea level.

108. Do you know that there are some places in India where temperatures can go below 0°C? Find out the places in India where temperatures sometimes go below 0°C. What is common among these places? Why does it become colder there and

not in other places?



Ans. : Thangu Valley (North Sikkim), Leh, Ladakh, Spiti Valley. Dras Valley, Sinchen, etc. All these are high altitude places.
Therefore, it becomes colder there and not in other places.

109. Do the calculations for the second grid above and find the border sum.

5	−3	−5
0		−5
−8	−2	7

Ans. : 5 + (-3) + (-5) = -3
(-8) + (-2) + 7 = -3
5 + 0 + (-8) = -3
(-5) + (-5) + 7 = -3

110. Which other grids can be filled in multiple ways? What could be the reason?

Ans. : We can also fill up the grid 1 in multiple ways. Any grid with 3 or fewer prefilled numbers can be filled in multiple ways.

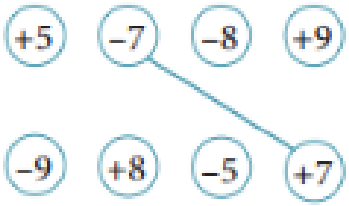
111. Complete the sequences:
(-40), (-34), (-28), (-22) _____, _____, _____

Ans. : In this sequence, each consecutive number is obtained by adding 6 to the previous number.
The required sequence is -40, -34, -28, -22, -16, -10, -4,.....

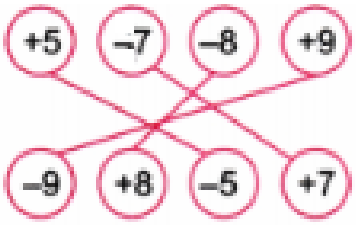
112. This string has a total of 100 tokens arranged in a particular pattern. What is the value of the string?

Ans. : The group of 5 tokens hasthe value, (+3) + (-2) = +1
There will be 20 such groups in a string of 100 tokens.
So, the total value will be +20.

113. Connect the inverses by drawing lines.



Ans. :



114. Take a look at the 'infinite lift' above. Does it remind you of a number line? In what ways?

Ans. : A number line is a way of representing numbers visually on a straight line. For instance, the number line has arrows at the end to represent this, idea of having no bounds. The symbol used to represent infinity is ∞.

*** Questions With Calculation.[3 Marks Each]** **[69]**

115. If Floor A = -12, Floor D = -1 and Floor E = +1 in the building shown on the right as a line, find the numbers of Floors B, C, F, G and H.

Ans. : Floor B is 9 floors lower than Floor 0.
So, the number of Floor B is -9.
Floor C is 6 floors lower than Floor 0.
So, the number of Floor C is -6.
Floor F is 2 floors higher than Floor 0.
So, the number of Floor F is +2.
Floor G is 6 floors higher than Floor 0.
So, the number of Floor G is +6.
Floor H is 11 floors higher than Floor 0.
So, the number of Floor H is +11.

116. Try to subtract – 3 – (+ 5).
How many zero pairs will you have to put in? What is the result?

Ans. : You have – 3 (3 negative tokens). Subtracting + 5 means you need to remove 5 positive tokens.
Add 5 zero pairs to introduce 5 positive tokens that can be removed.
Remove the 5 positive tokens.
After removing these, you are left with 3 original negative tokens and 5 additional negative tokens.
3 original negative tokens + 5 additional negative tokens
= 8 negative tokens
So, the result is – 8 and you needed to add 5 zero pairs to perform the subtraction.
– 3 – (+ 5) = – 8

117. Suppose you start with 0 rupees in your bank account, and then you have credits of ₹ 30, ₹ 40, and ₹ 50, and debits of ₹ 40, ₹ 50, and ₹ 60. What is your bank account balance now?

Ans. : Here, Credits = ₹ 30 + ₹ 40 + ₹ 50 = ₹ 120
and Debits = ₹ 40 + ₹ 50 + ₹ 60 = ₹ 150
∴ Balance = Credits – Debits
= ₹ 120 – ₹ 150
= – ₹30
Therefore, your bank account balance is – ₹ 30.

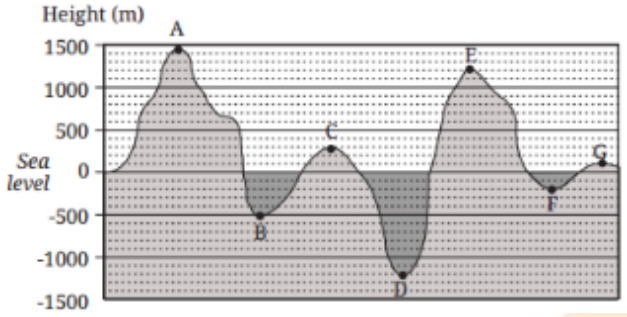
118. Suppose you start with 0 rupees in your bank account, and then you have debits of ₹1, 2, 4, 8, 16, 32, 64, and 128, and then a single credit of ₹ 256. What is your bank account balance now?

Ans. : Consider 'credits' as positive numbers and 'debits' as negative numbers.
Total credits = +256
Total debits = (-1) + (-2) + (-4) + (-8) + (-16) + (-32) + (-64)+ (-128) =-255
Account balance = Total credits + Total debits = (+256) + (-255) = +1
Hence, the account balance is ₹ 1.

119. Looking at the geographical cross-section fill in the respective heights:

A ☐ B ☐ C ☐ D ☐

E ☐ F: ☐ G ☐



Ans. : A = +1500 m

B = -500 m

C = +300 m

D = -1200 m

E = +1200 m

F = -200 m

G = +100 m

120. What is the lowest point with respect to sea level on land or on the ocean floor? What is its height? (This height should be negative).

Ans. : The lowest point on land with respect to sea level is the shoreline of the Dead Sea, which is approximately 1,410 feet (430 metres) below sea level. In terms of height, we can write it as approximately -1,410 feet or -430 metres.

But the lowest point on the ocean floor is the Challenger Deep in the Mariana Trench, which is about 36,070 feet or 10,994 metres below sea level. In terms of height, we can write it as -36070 feet or -10994 metres.

121. Complete the grids to make the required border sum:

–10		
		–5
9		

Border sum is +4

6	8	
		–5
	–2	

Border sum is –2

7		
		–5

Border sum is –4

Ans. :

–10	0	14
5		–5
9	0	–5

6	8	–16
11		–5
–19	–2	19

7	–9	–2
–1		–5
–10	3	3

122. For the last grid above, find more than one way of filling the numbers to get the border sum -4.

Ans. : There are multiple ways to fill the last grid with a border sum of -4, here are two examples:

7	–19	8
–2		–5
–9	12	–7

7	6	–17
8		–5
–19	5	18

123. Make a border integer square puzzle and challenge your classmates.

Ans. : Here's the puzzle:

–5	?	7
?	?	?
4	–3	?

Border sum: 2

124. Write all the integers between the given pairs, in increasing order.
(a) 0 and -7
(b) -4 and 4
(c) -8 and -15
(d) -30 and -23

Ans. : (a) -6, -5, -4, -3, -2, -1
(b) -3, -2, -1, 0, 1, 2, 3
(c) -14, -13, -12, -11, -10, -9
(d) -29, -28, -27, -26, -25, -24

125. Solve these:

8 – 13	(-8) – (13)	(-13) – (-8)	(-13) + (-8)
8 + (-13)	(-8) – (-13)	(13) - 8	13 – (-8)

Ans. :

8 – 13 = -5	(-8) – (13) = -21	(-13) – (-8) = -5	(-13) + (-8) = -21
8 + (-13) = -5	(-8) – (-13) = 5	(13) - 8 = 5	13 – (-8) = 21

126. Find the years below.
(a) From the present year, which year was it 150 years ago?
(b) From the present year, which year was it 2200 years ago?
(Hint Recall that there was no year 0.)
(c) What will be the year 320 years after 680 BCE?

Ans. : (a) 1874
(b) 176 BCE

(c) 360 BCE

127. Complete the sequence:
3, 4, 2, 5, 1, 6, 0, 7, _____, _____, _____

Ans. : Identify the Differences Between Consecutive Terms:
3 to 4: +1
4 to 2: -2
2 to 5: +3
5 to 1: -4
1 to 6: +5
6 to 0: -6
0 to 7: +7
So, now 7 – 8 = -1
-1 + 9 = 8
8 – 10 = -2
Therefore, the required numbers are -1, 8 and -2
3, 4, 2, 5, 1, 6, 0, 7, -1, 8, -2

128. Complete the sequence:
_____, _____, 12, 6, 1, (-3), (-6), _____, _____, _____

Ans. : The numbers to the right of 12 are decreasing as per the following rule:
12 to 6 = -6
6 to 1 = -5
1 to -3 = -4
-3 to -6 = -3
So, further, they should decrease as follows:
-6 – 2 = -8
-8 – 1 = -9
Now, the numbers to the left of 12 should each increase as follows:
12 + 7 = 19
19 + 8 = 27
27, 19, 12, 6, 1, (-3), (-6), -8, -9, -9

129. Here are six integer cards: (+1), (+7), (+18), (-5), (-2), (-9).
You can pick any of these and make an expression using addition(s) and subtraction(s).
Here is an expression: (+18) + (+1) – (+7) – (-2) which gives a value (+14).
Now, pick cards and make an expression such that its value is closer to (-30).

Ans. : Let's try to create an expression that gets as close to (-30) as possible using the given cards: (+1, +7, +18, -5, -2, -9).
One possible expression is: (-9) + (-5) + (-2) + (-18) + (+1)
Let's calculate the value step by step:
1. (-9) + (-5) = -14

2. -14 + (-2) = -16
3. -16 + (-18) = -34
4. -34 + (+1) = -33

Hence, the value of this expression is (-33), which is quite close to (-30).

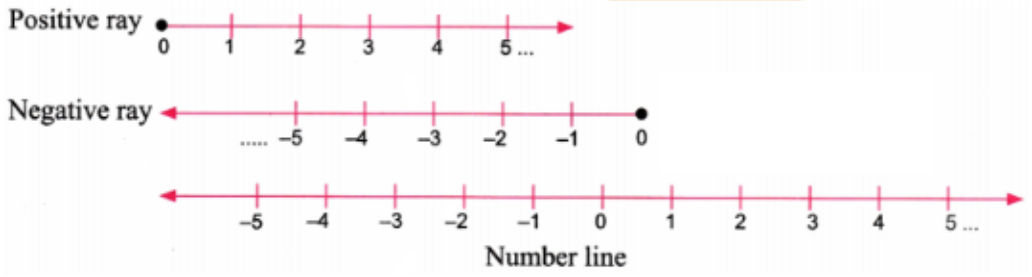
130. Can you explain each of Brahmagupta's rules in terms of Bela's buildings of fun, or in terms of a number line?

Ans. : self

131. Can there be a number less than 0? Can you think of any way to have less than 0 of something?

Ans. : Negative Numbers: Less than zero.

Yes, there can be numbers less than 0. These numbers are called negative numbers. [While it might seem impossible to have less than nothing, but negative numbers are used in many real-world situations.]



132. What do you press to go four floors up? What do you press to go three floors down?

Ans. : If you press the '+' button once then you will go up one floor and if you press the '-' button once then you will go down 1 floor.

Hence to go four floors up you must press the '+' button four times which we write as + + + + or +4.

Now to go three floors down you must press the button three times which we write as – – – or -3.

133. Number all the Floors in the Building of Fun.

Ans. : Let's mark numbers on all the Floors in the Building of Fun.

134. Start from the Food Court and press +2 in the lift Where will you reach? _____

Ans. : Here, Target floor = Starting floor + Movement

∴ The starting floor is +1 (Food Court) and the number of button presses is +2.

Therefore, floor = starting floor + movement

= (+1) + (+2)

= +3 (Book Store)

135. Write the inverses of these numbers:

+4, -4, -3, 0, +2, -1

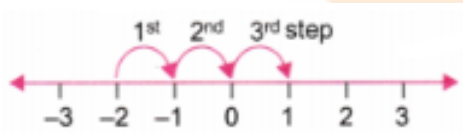
Ans. : The additive inverse of +4 = -(+4) = -4.
The additive inverse of -4 = -(-4) = +4.
The additive inverse of -3 = -(-3) = +3.
The additive inverse of zero (0) is zero itself
The additive inverse of +2 = -(+2) = -2.
The additive inverse of -1 = -(-1) = +1.

136. Evaluate 15 – 5, 100 – 10, and 74 – 34 from this perspective.

Ans. : (a) There are 15 pens in the shop. I take away 5 pens. How many pens are left in the shop?
Then 15 – 5 = 10
(b) There are loo books on the shelf. I take away 10 books. How many are left on the shelf?
Then 100 – 10 = 90
(c) There are 74 books on the shelf. I take away 34 books. How many are left on the shelf?
Then 74 – 34 = 40

137. In the other exercises that you did above, did you notice that subtracting a negative number was the same as adding the corresponding positive number?

Ans. : Subtracting a number is the same as adding it's opposite. So subtracting a positive number is like adding a negative number – you move to the left on the number line. Subtracting a negative number is like adding a positive number – you move to the right on the number line.
For example: Subtract -2 – (-3)
Start at -2 and move 3 units to the right.

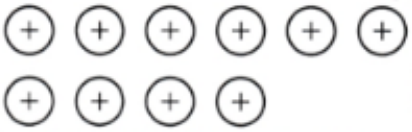


So, -2 – (-3) = +1

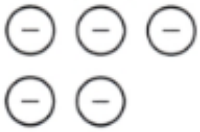
*** Questions With Calculation.[5 Marks Each]** **[35]**

138. Complete the additions using tokens.
(a) (+6) + (+4)
(b) (-3) + (-2)
(c) (+5) + (-7)
(d) (-2) + (+6)

Ans. :

(a) 

$\therefore (+6) + (+4) = +10$

(b) 

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

(c) 

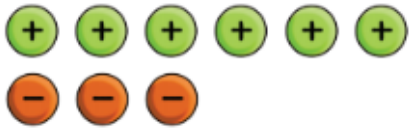
$\therefore (+5) + (-7) = -2$

(d) 

$\therefore (-2) + (+6) = +4$

139. Cancel the zero pairs in the following two sets of tokens. On what floor is the lift attendant in each case? What is the corresponding addition statement in each case?

a. 

b. 

Ans. : (a) From the picture we see that we can remove three pairs.

This cancels out to 0.

Remaining tokens = 

Since two negative tokens is remaining, the lift attendant is on the second floor below the ground floor.

The corresponding addition statement is (+3) + (-5) = (-2)

(b) From the picture we see that we can remove three pairs.

This cancels out to 0.

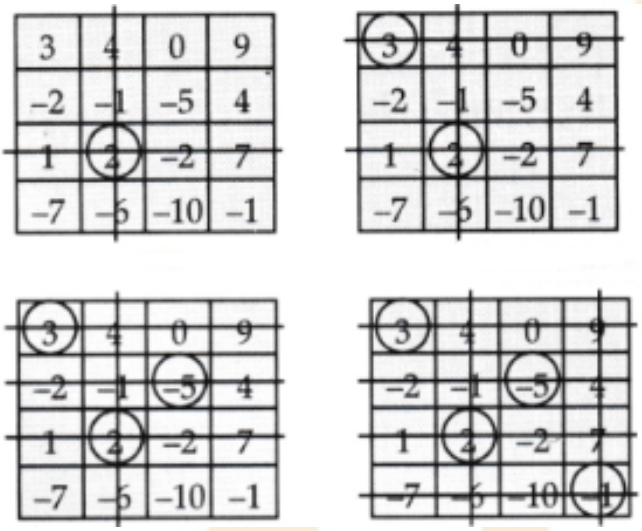
Remaining tokens = 

Since three positive tokens are remaining, the lift attendant is on the third floor above the ground floor.

The corresponding addition statement is (+6) + (-3) = (+3)

140. Try afresh, choose different numbers this time. What sum did you get? Was it different from the first time? Try a few more times!

Ans. :



Sum is 2 + 3 + (-5) + (-1) = 5 – 5 – 1 = -1

It is the same as the first time.

Try yourself.

141. The sum of two positive integers is always positive but a (positive integer) – (positive integer) can be positive or negative. What about

(a) (Positive) – (Negative)

(b) (Positive) + (Negative)

(c) (Negative) + (Negative)

(d) (Negative) – (Negative)

Ans. : (a) (Positive) – (Negative):

Subtracting a negative number is the same as adding its positive counterpart. So, this will always be positive.

For example, 5 – (-3) = 5 + 3 = 8.

(b) (Positive) + (Negative):

This depends on the magnitudes of the numbers. If the positive number is larger, the result is positive; if the negative number is larger, the result is negative.

For example,

7 + (-4) = 3 (positive)

4 + (-7) = -3 (negative)

(c) (Negative) + (Negative):

Adding two negative numbers always results in a negative number.

For example, -2 + (-3) = -5.

(d) (Negative) – (Negative):

This is like adding the positive counterpart of the second number to the first negative number.

If the first negative number is larger in magnitude, the result is negative.

However, if the first negative number is smaller than the second negative number, then it is positive.

For example,

7 + (4) = 3 (positive)

4 + (-7) = -3 (negative)

142. Give your examples of each rule.

Ans. : Rules for Addition:

1. The sum of two positives is positive.

3 + 4 = 7

2. The sum of two negatives is negative.

(-4) + (-6) = -10

3. To add a positive number and a negative number, subtract the smaller number (without the sign) from the greater number (without the sign), and place the sign of the greater number to obtain the result.

(-3) + 4 = 1

4. The sum of a number and its inverse is zero.

(-4) + 4 = 0

5. The sum of any number and zero is the same number.

(-7) + 0 = -7

Rules for Subtraction:

1. If a smaller positive is subtracted from a larger positive, the result is positive.

9 – 8 = 1

2. If a larger positive is subtracted from a smaller positive, the result is negative.

7 – 8 = -1

3. Subtracting a negative number is the same as adding the corresponding positive number.

3 – (-5) = 3 + 5 = 8

4. Subtracting a number from itself gives zero.

9 – 9 = 0

5. Subtracting zero from a number gives the same number.

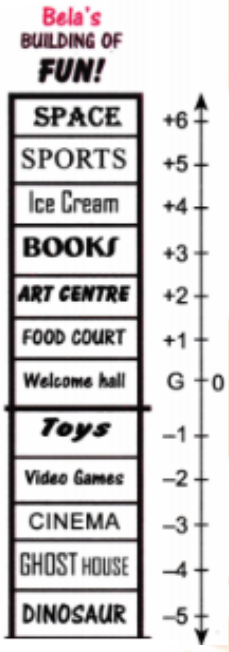
8 – 0 = 8

143. Comparing Numbers using Floors

Who is on the lowest floor?

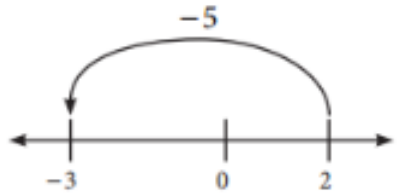
1. Jay is in the Art Centre. So, he is on Floor +2.
2. Asin is in the Sports Centre. So, she is on Floor _____.
3. Binnu is in the Cinema Centre. So, she is on Floor _____.
4. Aman is in the toy shop. So, he is on _____.

Ans. :



1. Jay is in the Art Centre. So, he is on Floor+2.
2. Asin is in the Sports Centre. So, she is on Floor +5.
3. Binnu is in the Cinema Centre. So, she is on Floor -3.
4. Aman is in the toy shop. So, he is on Floor -1.

144. Use unmarked number lines to evaluate these expressions:



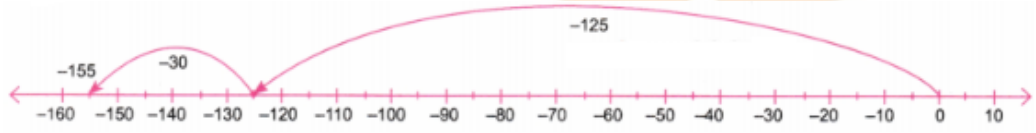
(a) -125 + (-30) = _____

(b) +105 – (-55) = _____

(c) +80 – (-150) = _____

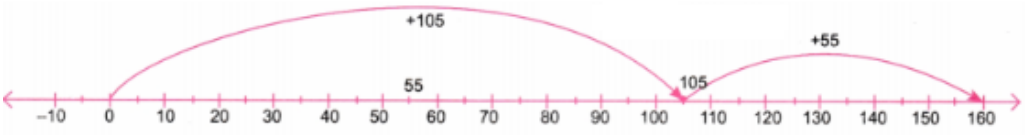
(d) -99 – (-200) = _____

Ans. : (a) Adding two negative numbers on the number line



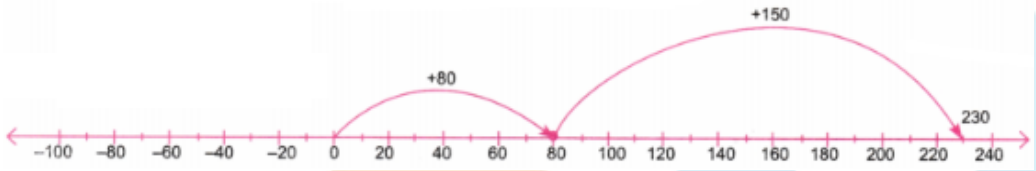
∴ -125 + (-30) = – 125 – 30 = -155

(b) Subtracting a negative number is the same as adding the positive counterpart.



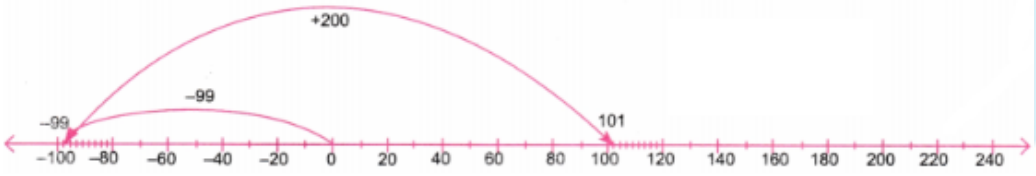
∴ +105 – (-55) = 105 + 55 = 160

(c) Subtracting a negative number is the same as adding the positive counterpart.



∴ +80 – (-150) = 80 + 150 = 230

(d) Subtracting a negative number is the same as adding the positive counterpart.



∴ -99 – (-200) = -99 + 200 = 101

*** Match the following.** **[4]**

145.

Column A	Column B
(a) The integer, which is neither positive nor negative	(i) 1
(b) The greatest negative integer	(ii) -2
(c) The smallest positive integer	(iii) 0
(d) The predecessor of the greatest negative integer	(iv) -1

Ans. :

Column A	Column B
(a) The integer, which is neither positive nor negative	(iii) 0
(b) The greatest negative integer	(iv) -1
(c) The smallest positive integer	(i) 1
(d) The predecessor of the greatest negative integer	(ii) -2

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