**Mathematics class 6**

**Chapter -3 (Integers)**

**Exercise 3.1**

**1. Arrange the following integers in increasing order:**  
Given numbers: **-7, 0, -5, 15, 13, -8, -10, 12, 20**  
Arranged in increasing order: **-10, -8, -7, -5, 0, 12, 13, 15, 20**

**2. Arrange the following integers in decreasing order:**  
Given numbers: **-12, 0, 5, -5, 10, -10, 7, -18, -20**  
Arranged in decreasing order: **10, 7, 5, 0, -5, -10, -12, -18, -20**

**3. Which is greater?**

(i) **20** > -20 (ii) **17** > -8 (iii) **0** > -20 (iv) **-10** > -15 (v) **20** > 18  
(vi) **-12** > -20

**4. Which is smaller?**

(i) **0** < 30 (ii) **-50** < -30 (iii) **-8** < 0 (iv) **-17** < 17 (v) **-20** < 0  
(vi) **-30** < -3

**5. Write all the integers between:**

(i) Between **-5 and 7**: **-4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6**  
(ii) Between **-3 and 3**: **-2, -1, 0, 1, 2**  
(iii) Between **-7 and 0**: **-6, -5, -4, -3, -2, -1**

**6. Fill in the blanks using either > or <:**

(i) **-8 < 5** (ii) **-7 < 0** (iii) **15 > -17** (iv) **0 > -19**

**7. Fill in the blanks:**

(i) Zero is smaller than **all positive** integers.  
(ii) Zero is greater than **all negative** integers.  
(iii) Positive integers are **greater than zero**. 1,2,3,4,………………  
(iv) Negative integers are **less than zero**. ………………….-3, -2, -1,   
(v) The opposite of **-10** is **10**.  
(vi) The opposite of **0** is **0**.

**8. Write the opposite of each of the following statements:**

(i) **Gain of ₹100** → **Loss of ₹100**  
(ii) **Loss of ₹30** → **Gain of ₹30**  
(iii) **70 m above sea level** → **70 m below sea level**  
(iv) **20 m to the left** → **20 m to the right**  
(v) **5°C below 0°C** → **5°C above 0°C**  
(vi) **Losing a weight of 5 kg** → **Gaining a weight of 5 kg**  
(vii) **Withdrawing ₹500 from the bank** → **Depositing ₹500 into the bank**  
(viii) **-50** → +**50**  
(ix) **30** → **-30**  
(x) **-10** → +**10**

**9. Mark on the number line:**

To mark these numbers on a number line:

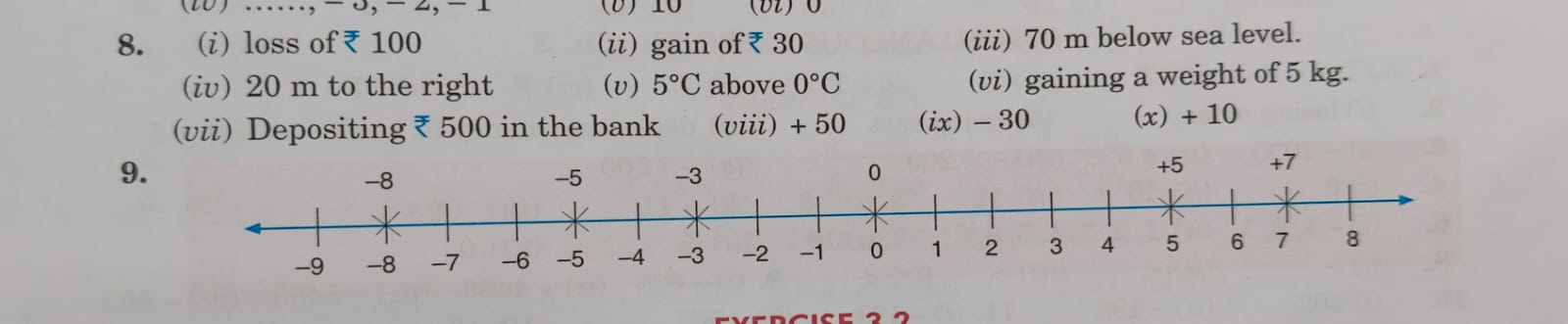
* Place **0** at the center.
* Positive numbers (**+7, +5**) go to the **right** of 0.
* Negative numbers (**-8, -5, -3**) go to the **left** of 0.

**Number Line Representation:**

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

↑ ↑ ↑ ↑ ↑ ↑

-8 -5 -3 0 5 7

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**Exercise 3.2**

### ****1. Add:****

(i) 5 + 7 = **12**  
(ii) –8 + (–9) = **–17**  
(iii) –12 + 7 = **–5**  
(iv) 13 + (–15) = **–2**  
(v) –7 + (–20) = **–27**  
(vi) 124 + (–756) = **–632**  
(vii) -134 + 573 = **439**  
(viii) 13 + (–13) = **0**  
(ix) 117 + (–50) = **67**

### ****2. Find the sum of:****

(i) 130 + 740 – 320 = **550**  
(ii) –8 + 760 – 900 – 400 = **–548**  
(iii) –296 + (–30) + 780 + 9 = **463**  
(iv) 576 + (–80) + 301 + (–703) = **94**  
(v) –390 + (–800) + (–746) + (–10) = **–1946**  
(vi) 380 + 900 + 56 + (–80) + (–76) = **1180**  
(vii) –380 + (–70) + (–820) + 50 = **–1220**  
(viii) 230 + 320 + (–50) + (–60) + (–20) = **420**

### ****3. Subtract:****

Note: “**A from B**” means **B – A**

(i) –80 from 3 → 3 – (–80) = **83**  
(ii) –72 from –34 → –34 – (–72) = **38**  
(iii) –92 from –13 → –13 – (–92) = **79**  
(iv) 80 from –70 → –70 – 80 = **–150**  
(v) –7 from 93 → 93 – (–7) = **100**  
(vi) –676 from –801 → –801 – (–676) = **–125**  
(vii) –131 from –270 → –270 – (–131) = **–139**  
(viii) –470 from 0 → 0 – (–470) = **470**

### ****4. Simplify:****

(i) 30 + (–70) + (–4) – (–80) = 30 – 70 – 4 + 80 = **36**  
(ii) –190 – (–70) + 5 – (–90) = –190 + 70 + 5 + 90 = **–25**  
(iii) 380 + (–53) – (–70) + (–95) = 380 – 53 + 70 – 95 = **302**  
(iv) –450 – (–95) + 70 – (–91) = –450 + 95 + 70 + 91 = **–194**  
(v) –340 – (–470) + (–740) – (–830) = –340 + 470 – 740 + 830 = **220**

### ****5. Complete the table and answer the following (Addition):****

| **First Number** | **Second Number** | **Operation** | **Result** |
| --- | --- | --- | --- |
| -2 | -2 | -2 + (-2) | -4 |
| -1 | 0 | -1 + 0 | -1 |
| 1 | 2 | 1 + 2 | 3 |
| 0 | -2 | 0 + (-2) | -2 |
| 2 | -2 | 2 + (-2) | 0 |

### ****6. Complete the table and answer the following (Subtraction):****

| **First Number** | **Second Number** | **Operation** | **Result** |
| --- | --- | --- | --- |
| -3 | -3 | -3 - (-3) | 0 |
| 2 | -2 | 2 - (-2) | 4 |
| 0 | -1 | 0 - (-1) | 1 |
| 3 | 3 | 3 - 3 | 0 |
| 0 | 0 | 0 - 0 | 0 |
| -1 | -3 | -1 - (-3) | 2 |
| -2 | 0 | -2 - 0 | -2 |

### ****7. True or False Statements:****

| **Statement** | **Result** | **True/False** |
| --- | --- | --- |
| (i) -8 - (7) = -15 | -15 | **True** |
| (ii) 0 - (-6) = 6 | 6 | **True** |
| (iii) 5 - (-3) > 0 | 8 > 0 | **True** |
| (iv) 5 - (-6) = 11 | 11 | **True** |
| (v) -3 - (-6) = 3 | 3 | **True** |
| (vi) 5 + 4 - 6 = 3 | 3 | **True** |
| (vii) -8 + 4 > 0 | -4 > 0 | **False** |

### ****8. Temperature Problem (Delhi):****

**Initial Temperature** = 25°C  
**Fall in Temp** = 5°C  
**Final Temperature** = 25°C - 5°C = **20°C**

### ****9. Temperature Problem (Hill Station):****

**Initial Temperature** = 4°C  
**Fall in Temp** = 5°C  
**Final Temperature** = 4°C - 5°C = **-1°C**

### ****10. Temperature Changes Table (Final Temperature at 12 Noon):****

| **Time Slot** | **6 A.M.** | **8 A.M.** | **10 A.M.** | **12 Noon (Final Temp)** |
| --- | --- | --- | --- | --- |
| (i) | 10°C | +3°C → 13°C | +1°C → 14°C | -2°C → **12°C** |
| (ii) | 8°C | +5°C → 13°C | -3°C → 10°C | -1°C → **9°C** |
| (iii) | 6°C | -1°C → 5°C | -3°C → 2°C | +4°C → **6°C** |
| (iv) | 5°C | -3°C → 2°C | +2°C → 4°C | -3°C → **1°C** |

### ****11. Temperature Change from 10 A.M. to 2 P.M.:****

| **Temp at 10 A.M.** | **Change in Temp.** | **Temp at 2 P.M.** |
| --- | --- | --- |
| (i) 8°C | -2°C | **6°C** |
| (ii) 3°C | +7°C | **10°C** |
| (iii) -1°C | +11°C | **10°C** |

Let me know if you'd like this in PDF/Word format or with visuals for a student-friendly worksheet!

**12. Deposit and Withdrawal Table:**

| **Number** | **Starting Balance** | **Deposit** | **Withdrawn** | **Final Balance** |
| --- | --- | --- | --- | --- |
| (i) | ₹5,000 | ₹750 | ₹3,000 | ₹2,750 |
| (ii) | ₹4,000 | ₹1,000 | ₹500 | ₹4,500 |
| (iii) | ₹9,800 | ₹500 | ₹4,700 | ₹5,600 |
| (iv) | ₹6,700 | ₹8,000 | ₹0 | ₹14,700 |
| (v) | ₹10,000 | ₹5,000 | ₹1,000 | ₹14,000 |

**13.**

**Sum = 12**  
**One number = -20**  
**Other number = 12 - (-20) = 12 + 20 = 32**  
**Answer: 32**

**14.**

**Sum = -22**  
**One number = 20**  
**Other number = -22 - 20 = -42**  
**Answer: -42**

**15.**

**To get -500 from -247, add:**  
**-500 - (-247) = -500 + 247 = -253**  
**Answer: -253**

**16.**

**What must be subtracted from -12 to get -27?**  
Let x be the number to subtract:  
**-12 - x = -27 ⇒ x = -12 + 27 = 15**  
**Answer: 15**

**17.**

**What must be added to -18 to get 0?**  
**x + (-18) = 0 ⇒ x = 18**  
**Answer: 18**

**18. Vertical Distance between P and Q:**

* **P = 4051 metres above sea level**
* **Q = 503 metres below sea level**

**Total vertical distance = 4051 + 503 = 4554 metres**  
**Answer: 4554 metres**

**Exercise 3.3**

### ****1. Write the additive inverse (opposite) of:****

| **Given Number** | **Additive Inverse** |
| --- | --- |
| (i) -9 | 9 |
| (ii) 0 | 0 |
| (iii) 8 | -8 |
| (iv) -236 | 236 |
| (v) 349 | -349 |

### ****2. Write the additive inverse and find the sum with its inverse:****

| **Number** | **Additive Inverse** | **Sum** |
| --- | --- | --- |
| (i) 7 | -7 | 0 |
| (ii) -215 | 215 | 0 |
| (iii) 0 | 0 | 0 |
| (iv) -409 | 409 | 0 |
| (v) 11 | -11 | 0 |

### ****3. Fill in the blanks:****

(i) 7 + **(-7)** = 0  
(ii) -8 + **8** = 0  
(iii) 8 + 0 = **8**  
(iv) -9 + 0 = **-9**  
(v) (3 + 7) + (-5) = 3 + [7 + **(-5)**]  
(vi) (23 + (-5) + (-7)) = 23 + **(-5) + (-7)**  
(vii) [18 + (-21)] + 14 = **18 + [(-21) + 14]**

### ****4. Successor and Predecessor:****

| **Prompt** | **Answer** |
| --- | --- |
| (i) Successor of -20 | -19 |
| (ii) Predecessor of -200 | -201 |
| (iii) Predecessor of 43 | 42 |
| (iv) Successor of 0 | 1 |
| (v) Successor of -100 | -99 |

**Miscellaneous Exercise**

**1. State True or False:**

(i) Every positive integer is greater than zero.  
→ **True**

(ii) Every negative integer is less than every positive integer.  
→ **True**

(iii) The greater the number, the greater is its opposite.  
→ **False**  
(Because the opposite becomes more negative, e.g., opposite of 10 is -10)

(iv) The sum of an integer and its opposite is zero.  
→ **True**

(v) The sum of two negative integers is a positive integer.  
→ **False**  
(It is more negative, e.g., -2 + (-3) = -5)

(vi) The sum of a positive integer and negative integer is always positive.  
→ **False**  
(Depends on which has a greater absolute value)

(vii) The sum of 3 different integers can never be zero.  
→ **False**  
(e.g., -3, 1, 2 → sum = 0)

**2. Give the opposite of:**

(i) Earning money → **Losing money**

(ii) Going West → **Going East**

(iii) Withdrawing money from bank → **Depositing money**

(iv) -5 → **+5**

### ****CONCEPTUAL LEARNING****

**3. Express the following by using integers:**

(i) 10°C below 0°C → **-10**

(ii) 5°C above 0°C → **+5**

(iii) A withdrawal of ₹200 from bank → **-200**

(iv) Loss of ₹500 → **-500**

**4. Which number is to the right on the number line?**

(i) -7, 0 → **0**

(ii) 8, 10 → **10**

(iii) -7, 12 → **12**

**5. Which number is smaller?**

(i) 7, -8 → **-8**

(ii) 0, -11 → **-11**

(iii) -4 and 4 → **-4**

**6. Write all integers between:**

(i) -2 and 2 → **-1, 0, 1**

(ii) 0 and 8 → **1, 2, 3, 4, 5, 6, 7**

### ****KNOWLEDGE APPLICATION****

**7. Write the absolute value of:**

(i) -19 → **19**

(ii) 5 → **5**

(iii) 0 → **0**

**8. Put > or < so that the statement becomes true:**

(i) 0 \_\_ 5 → **<**

(ii) 5 \_\_ 8 → **<**

(iii) 7 \_\_ -9 → **>**

(iv) -9 \_\_ 0 → **<**

**9. Add:**

(i) -420 + (-205) = **-625**

(ii) 5305 + (-845) = **4460**

(iii) 547 + (-6000) = **-5453**

(iv) -725 + (-80) = **-805**

**10. Find the sum:**

(i) 403 + (-301) - (-300) = 403 - 301 + 300 = **402**

(ii) -308 - (-302) - 84 + (-108) = -308 + 302 - 84 - 108 = **-198**

**11. Subtract:**

(i) -301 from -500  
→ -500 - (-301) = -500 + 301 = **-199**

(ii) 607 from 40  
→ 40 - 607 = **-567**

**12. Put > or < to make the statement true:**

(i) [(-6) + (-9)] \_\_ [-6 - (-9)]  
→ -15 \_\_ 3 → **<**

(ii) [(-20) - (+20)] \_\_ |20 - (+65)|  
→ -40 \_\_ | -45 | → -40 \_\_ 45 → **<**

**Chapter test 3**

### ****1. Write the number-name in Hindu-Arabic system of numeration:****

(i) **40517235** → **Four crore five lakh seventeen thousand two hundred thirty-five**  
(ii) **500006334** → **Fifty crore six thousand three hundred thirty-four**

### ****2. Write the greatest 6-digit number using only 0, 1, 8 and 9 digits.****

→ **998810**

### ****3. Write the greatest 7-digit number having 4 different digits.****

→ **9999887**  
(Uses 9, 8, 7 in decreasing order to make it largest with only 4 different digits)

### ****4. Indicate the following by using integers:****

(i) 5º below zero → **-5**  
(ii) 7º above zero → **+7**  
(iii) 500 metres above sea level → **+500**  
(iv) 200 metres below sea level → **-200**

### ****5. Which is smaller?****

(i) 5, -7 → **-7**  
(ii) -8, 10 → **-8**  
(iii) 0, 12 → **0**  
(iv) -9, -111 → **-111**  
(v) 3, 412 → **3**

### ****6. Put < or > to make the statement true:****

(i) 0 \_\_ 8 → **<**  
(ii) [-(-9)] \_\_ [+(+9)] → 9 \_\_ 9 → **=**  
(iii) [- (7)] \_\_ [+(-7)] → -7 \_\_ -7 → **=**  
(iv) [-13] \_\_ [13] → -13 \_\_ 13 → **<**  
(v) [-531] \_\_ [-324] → -531 \_\_ -324 → **<**

### ****7. Which of the following statements are true?****

(i) The opposite of zero is zero. → **True**  
(ii) The smallest integer is zero. → **False** (No smallest integer; integers go to negative infinity)  
(iii) Every positive integer is greater than its opposite. → **True**  
(iv) Zero is not an integer because it is neither positive nor negative. → **False** (Zero **is** an integer)  
(v) The absolute value of an integer is always equal to the integer itself. → **False** (Only true for non-negative integers)

### ****8. Which of the following statements are true?****

(i) The sum of an integer and its opposite is zero. → **True**  
(ii) The sum of two negative integers is a positive integer. → **False**  
(iii) The sum of a negative integer and a positive integer is always a negative integer. → **False** (Depends on their values)  
(iv) The successor of -299 is -300. → **False** (It is **-298**)

### ****9. Find the value of:****

(i) (-17) - (-14) + (-30)  
→ -17 + 14 - 30 = **-33**

(ii) -75 - (-40) + (-30) + 40  
→ -75 + 40 - 30 + 40 = **-25**

(iii) 18 - [-13 + (-40) + 70]  
→ 18 - [ -13 - 40 + 70 ] = 18 - (17) = **1**

### ****10. The sum of two integers is -452. If one of them is 46, find the other integer.****

→ Let the other be **x**  
→ 46 + x = -452  
→ x = -452 - 46 = **-498**

### ****11. Which of the following statements are true?****

(i) -15 > [-8 - (-5)]  
→ -15 > [-8 + 5] → -15 > -3 → **False**

(ii) (-7) - (-8) < (-5 + 3)  
→ -7 + 8 < -2 → 1 < -2 → **False**

(iii) Negative of a negative integer is a positive integer.  
→ **True**