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**

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

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

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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
```

9.

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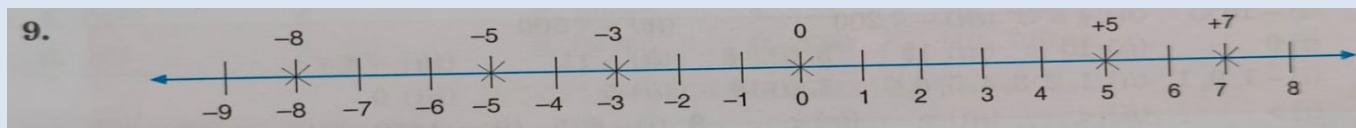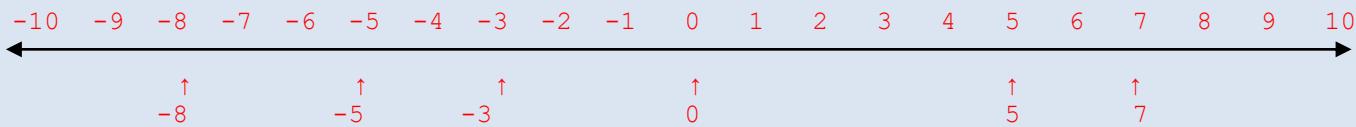
Exercise 3.2

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**

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2. Find the sum of:
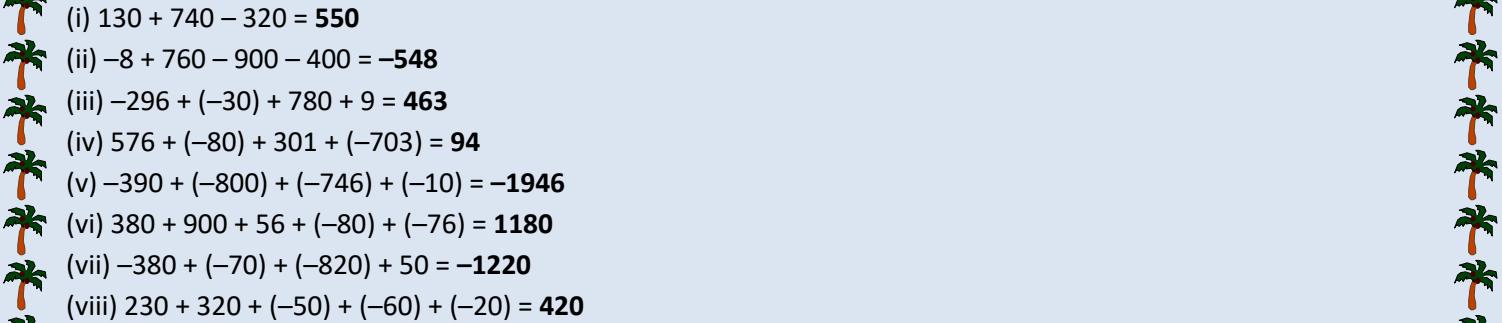
(i) 130 + 740 − 320 = **550**

(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**

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3. Subtract:

Note: "**A from B**" means **B − A**
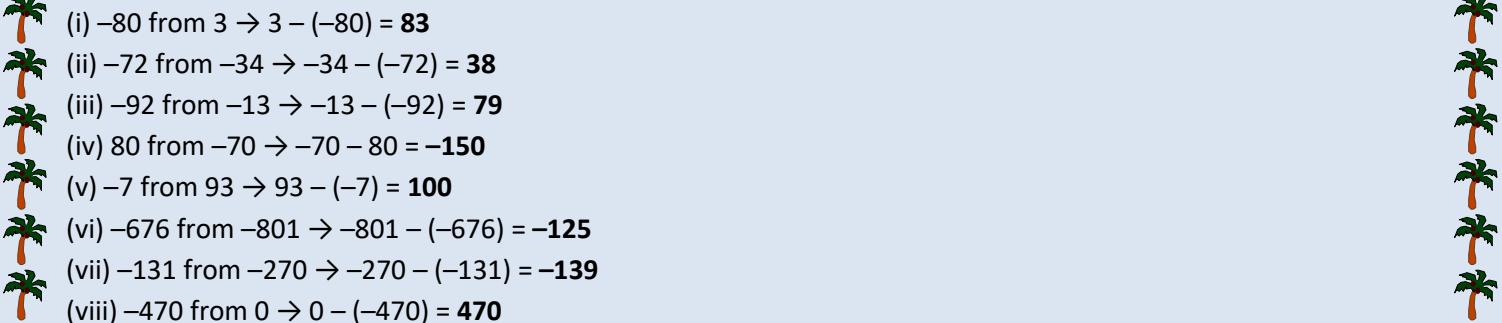
(i) −80 from 3 → 3 − (−80) = **83**

(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**

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4. Simplify:
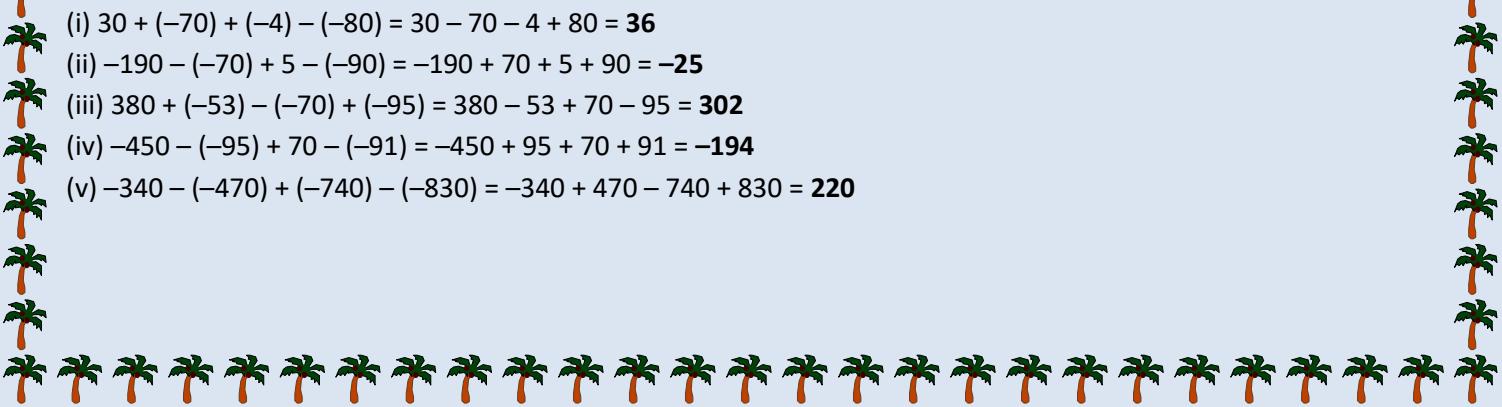
(i) 30 + (−70) + (−4) − (−80) = 30 − 70 − 4 + 80 = **36**

(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

Addition — Second number

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

First number

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

Subtract — Second number

−	-3	-2	-1	0	1	2	3
-3	0	-1	-2	-3	-4	-5	-6
-2	1	0	-1	-2	-3	-4	-5
-1	2	1	0	-1	-2	-3	-4
0	3	2	1	0	-1	-2	-3
1	4	3	2	1	0	-1	-2
2	5	4	3	2	1	0	-1
3	6	5	4	3	2	1	0

First number

7. True or False Statements:

Statement	Result	True/False
(i) -8 - (7) = -15	-15	True
(ii) 0 - (-6) = 6	6	True

Subtract — Second number

	-7	-3	-4	-6
-8	-15	-5	-12	-2

Statement	Result	True/False
(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

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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

Given Number	Additive Inverse
(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

Prompt	Answer
(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**

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

(i) -7, 0 → **0**

(ii) 8, 10 → **10**

(iii) -7, 12 → **12**

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5. Which number is smaller?

(i) 7, -8 → **-8**

(ii) 0, -11 → **-11**

(iii) -4 and 4 → **-4**

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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 → **<**
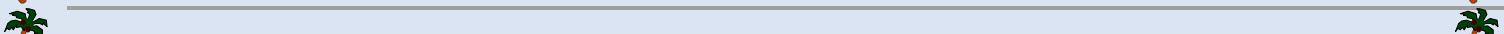
9. Add:

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

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

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

(iv) -725 + (-80) = **-805**
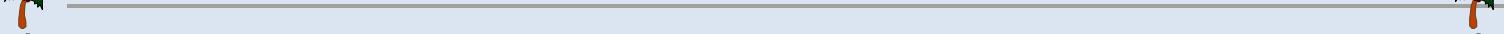
10. Find the sum:

(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**

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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**

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

→ **998810**

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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*)

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4. Indicate the following by using integers:
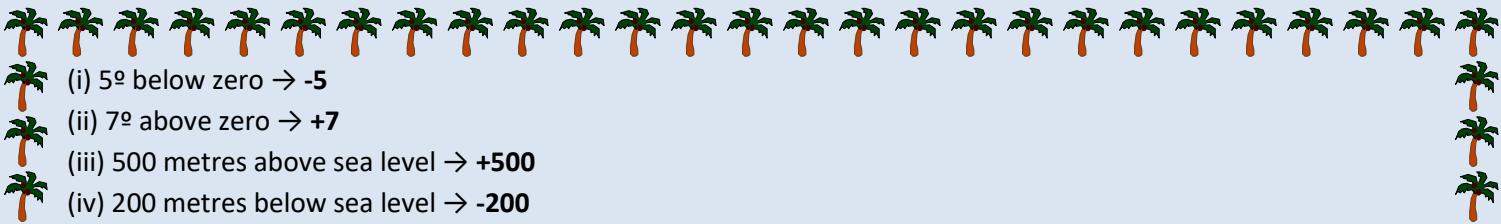
(i) 5º below zero → **-5**
(ii) 7º above zero → **+7**
(iii) 500 metres above sea level → **+500**
(iv) 200 metres below sea level → **-200**

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**

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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**

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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**