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Mathematics
Quarter 2 – Module 10:
Comparing and Arranging
Integers on the Number Line

ALTERNATIVE DELIVERY MODE
ADM

Mathematics– Grade 6
Alternative Delivery Mode
Quarter 2 – Module 10: Comparing and Arranging Integers on the Number Line
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Mathematics
Quarter 2 – Module 10: Comparing and Arranging Integers on the Number Line

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What I Need to Know

This module was designed and written with you in mind. It is here to help you master the skills in arranging and comparing integers. The scope of this module permits it to be used in many different learning situations. The language used recognizes your diverse vocabulary level. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using.

The module is divided into two lessons, namely:

- Lesson 1 – Comparing Integers on the Number Line
- Lesson 2 – Arranging Integers on the Number Line
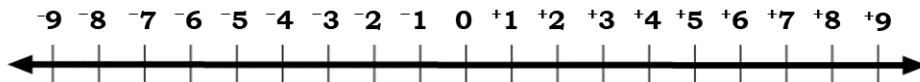
After going through this module, you are expected to:

1. describe integers on the number line; and,
2. compare and arrange integers on the number line.

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What I Know

A. Read and answer the questions below. Write the letter of the correct answer on your answer sheet.

1) Study the number line. Which integer has the least value?

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

A. +9   B. -9   C. 0   D. +1

2) Which integer below has the greatest value?
   A. +25   B. -76   C. +42   D. -1

3) Which of the following is true?
   A. +25 < +12   B. -76 > +32
   C. -42 = +42   D. +1 > 0
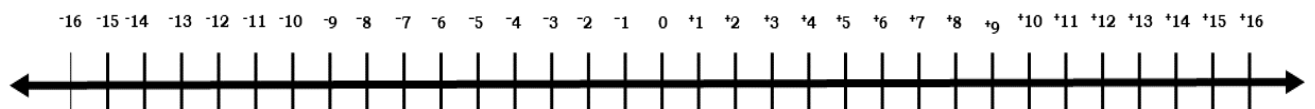
4) Which is greater than -15?
   A. +12   B. -32   C. -16   D. -20

5) Which symbol will make the statement correct?   **+23 _____ -45**
   A. <   B. >   C. =   D. None of these

B. Study the number line below. Answer the questions about integers. Write the answer on your answer sheet.

-16 -15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10 +11 +12 +13 +14 +15 +16

1) Write 5 integers that are greater than -3.

2) Zero is greater than -1 because _____.

3) Create 3 number comparisons based on the number line.

   a.   _____ < _____

   b.   _____ > _____

   c.   _____ = _____

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Did you find comparing integers with other numbers an exciting experience? This time, you will move further and improve your skill in comparing integers on the number line. I hope you will enjoy your journey.

What's In

Compare the following numbers using the relational symbols **<, >, =** . Write your answers on your answer sheet.

1) 105 ____ 150
2) 96   ____ 69
3) 206 ____ 206
4) 716 ____ 671
5) 111 ____ 1111

What's New

Study the following situation.

The Grade 6 learners were asked by their Science teacher to research on the temperature of the different places in the world at a certain time of the year. They found out that at a particular time of the year, New York, USA recorded a temperature of ⁻3°C while Baguio, Philippines recorded a temperature of ⁺9°C.
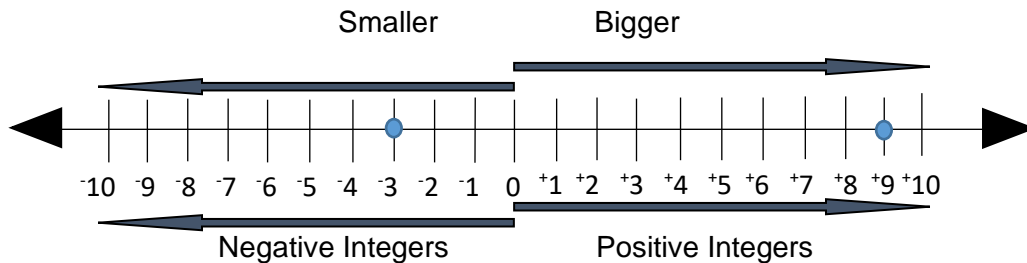
Here's the illustration of the thermometer reading.

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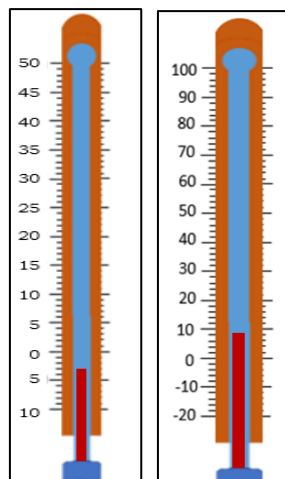
The thermometer readings can be presented through a number line.

On a number line, zero (0) separates the positive and negative integers. Positive integers are to the right of zero, while negative integers are to the left of zero. The value of an integer increases as we move to the right and decreases as we move to the left.

Based on the number line, $^+9$ is on the right of $^-3$. So, $^+9 > ^-3$.
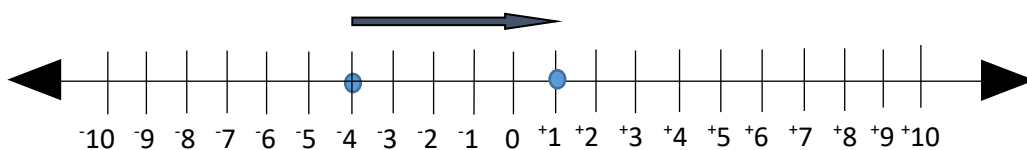
Let's consider other examples:

Example 1

Which is lesser, $^-5$ or $^-2$?
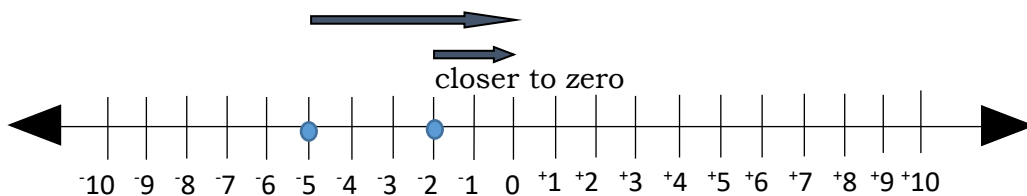
$^-5$ and $^-2$ are both on the left of zero. At first, you might think that $^-2$ is less than $^-5$ because 2 is less than 5. But this is not the case. $^-5$ is on the left of $^-2$, and it is farther from zero. So, $^-5 < ^-2$.
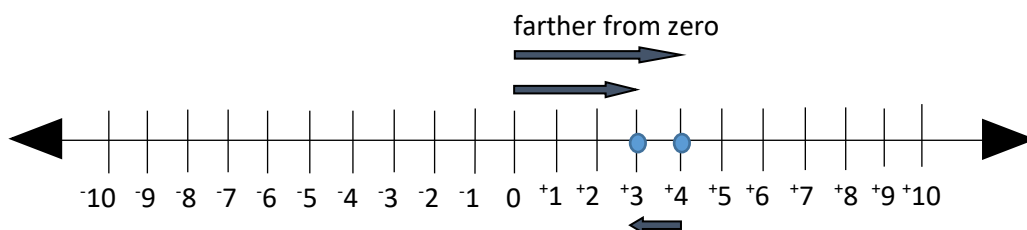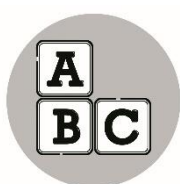
Example 2

Which is greater, $^-4$ or $^+1$

On the number line, $^+1$ is on the right of $^-4$. So, $^+1 > ^-4$.

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Example 3

Which is lesser, ⁺4 or ⁺3?

farther from zero

On the number line, ⁺4 and ⁺3 are both on the right of zero, ⁺3 is on the left of ⁺4, and it is nearer to zero. So, ⁺3 < ⁺4.

What's More

A. Compare the following integers using the relational symbols **<**, **>**, **=.** Write your answers on your answer sheet.

   1)   ⁺5 ___ 0
   2)   ⁻16 ___ ⁺4
   3)   ⁺24 ___ ⁺16
   4)   ⁻7 ___ ⁺1
   5)   ⁻8 ___ ⁻15

What I Have Learned

In comparing integers using the number line, consider the following concepts:

➢ Zero is always greater than all negative integers but smaller than all positive integers.
➢ All positive integers are always greater than all negative integers.
➢ All negative integers are always less than all positive integers.
➢ When comparing two integers with like signs, the one that is to the right on the number line has greater value.

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What I Can Do

Study the number line and answer the questions that follow. Write the letter of the correct answer on your answer sheet.
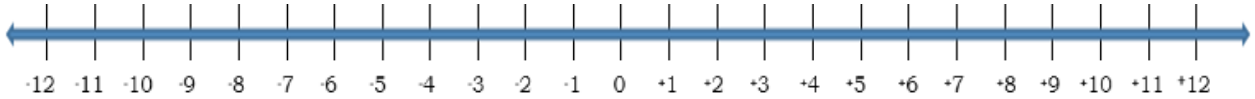
1) Which integer is greater than ⁻4?
   A. ⁻9   B. ⁻12   C. ⁺3   D. ⁻5
2) Which integers are less than ⁻3?
   A. 0 and ⁻5   B. ⁻7 and ⁺2   C. ⁻12 and ⁻6   D. ⁻2 and 0
3) Which integers are greater than 0?
   A. ⁻6 and ⁺4   B. ⁺9 and ⁻7   C. ⁻12 and ⁻3   D. ⁺1 and ⁺4
4) Which number line has the set of integers greater than negative integers?

   A.

   B.

   C.

   D.
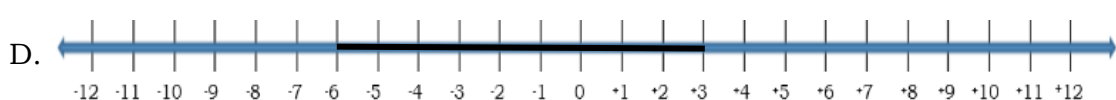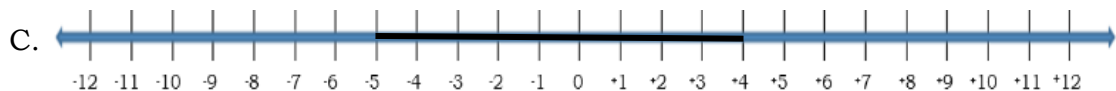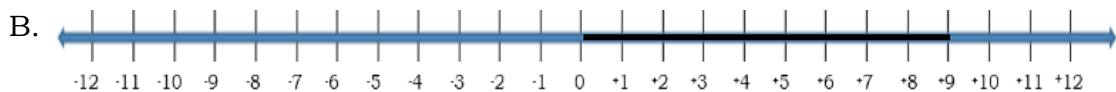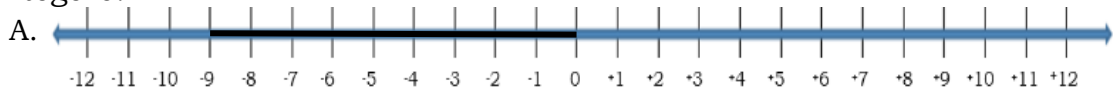
5) Which integers are greater than ⁻1?
   A. 0 and ⁺4   B. ⁻2 and ⁺1   C. ⁻12 and ⁻3   D. ⁻4 and ⁺4

B. Answer the problem involving integers. Write your answer on your answer sheet.
   1) Mariz and Joan entered a department store together. Their temperatures were taken and recorded by the security guard. Mariz had a temperature of 36°C while Joan's was 35.8°C. Whose temperature was higher?
   2) Felizardo walked 12 steps forward and walked 3 steps backward. Write the integers correctly on the box and compare them using the symbols <, > or =.

   ☐ _____ ☐

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Assessment

A. Read and answer the questions below. Write the letter of the correct answer on your answer sheet.

  1) Which statement is correct?

   A. ⁻15 > ⁺15   B. ⁺26 < ⁺14   C. ⁻12 > ⁻15   D. ⁻45 > ⁺35

  2) The integers ⁺38 and ⁺45 are greater than _____. Which will make the sentence correct?

   A. ⁺73 and ⁻20   B. ⁻26 and ⁺84
   C. ⁺12 and ⁻35   D. ⁺45 and ⁺18

  3) Which statement is false?

   A. ⁻72 = ⁺72   B. ⁻26 < ⁻18   C. ⁻12 > ⁻60   D. ⁻34 < ⁺26

  4) Which set of integers is less than ⁺75 but greater than ⁻20?

   A. ⁻19, ⁺80, ⁻1   B. ⁺64, ⁻14, 0   C. ⁻26, ⁻80, ⁺48   D. ⁺89, ⁺35, +43

  5) Which is true?
   A. All odd integers are less than 0.
   B. All negative integers are greater than 0.
   C. All even integers are greater than 0.
   D. All positive integers are greater than 0.

B. Compare the following integers using the relational symbols **<**, **>** or =. Write your answers on your answer sheet.

  1) ⁺8 ___ ⁺5

  2) ⁻30 ___ ⁻22

  3) ⁻29 ___ ⁺13

  4) ⁺38 ___ ⁺15

  5) ⁻24 ___ ⁻24

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Additional Activities

A. Write TRUE if the statement is correct. If it is FALSE, modify the statement to make it correct.

1) Integers at the left of zero have greater value than zero.

2) Positive 1 is greater than negative100.

3) Positive 20 is equal to negative 20.

4) Negative 10 is greater than negative 15.

5) Positive 5 is less than positive 3.

B. Draw a number line and plot the following integers. Then, compare them using **<, >** or =.

1) $^+11$ and $^-11$

2) $^-10$ and $^-10$

3) $^-12$ and $^-9$

4) $^+9$ and $^-9$

5) $^+12$ and $^+12$

Answer Key

What I Know

A.
1. B
2. C
3. D
4. A
5. B

B.
1. -2, -1, 0, +1, ...+16
2. Zero is always greater than negative numbers. (possible answer)
3.
a. -5 < +5
   -7<0
   (possible answers)
b. +4>-3
   -2>-11

What I Can Do

A.
1. C
2. C
3. D
4. B
5. A

B.
1. Mariz
2. +12 > -3

Assessment
(possible answers)
1. C
2. C
3. A
4. B
5. D

c. -3=-3
+6=+6
(possible answers)
1. >
2. <
3. <
4. >
5. =

What's In
1. <
2. >
3. =
4. >
5. =

What's More

A.
1. >
2. <
3. >
4. <
5. =
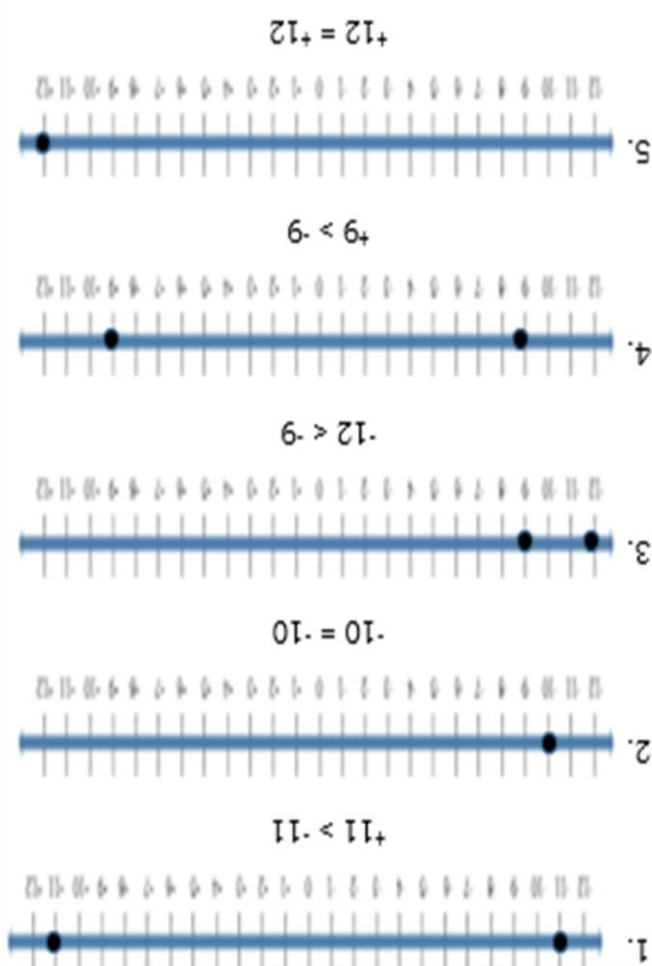
Additional Activities

A.
1. False
- Integers at the left of zero have *lesser* value than zero.
- Integers at the *right* of zero have greater value than zero.
2. True
3. False
- Positive 20 is equal to negative 20.
- Positive 20 is equal to negative 20.
4. True
5. False
- Positive 5 is *greater* than positive 3.
- *Negative* 5 is less than positive 3.

B.

1. +11 > -11

2. -10 = -10

3. -12 < -9

4. +9 > -9

5. +12 = +12

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What I Know

A. Arrange the following integers from least to greatest. Write your answers on your answer sheet.

1) Which are arranged in ascending order?
   A. ⁺25, ⁺12, 0, ⁻7, ⁻24
   B. ⁻23, ⁻12, ⁺2, ⁺15, 0
   C. ⁻45, ⁻20, 0, ⁺18, ⁺33
   D. 0, ⁺42, ⁺45, ⁻47, ⁻55

2) Which will complete the set of the integers arranged in descending order?
   ⁺54, ⁺29, ⁺11, ___, ⁻8, ⁻15
   A. ⁺25
   B. ⁻23
   C. ⁻2
   D. ⁺15

3) Which are arranged in descending order?
   A. ⁺35, ⁺10, 0, ⁻5, ⁻14
   B. ⁻20, ⁻13, ⁺4, ⁺19, 0
   C. ⁻48, ⁻27, 0, ⁺26, ⁺39
   D. 0, ⁺34, ⁺56, ⁻43, ⁻58

4) Arrange ⁻76, ⁺45, ⁻15, ⁺14, 0 in ascending order.
   A. 0, ⁺14, ⁻15, ⁺45, ⁻76
   B. ⁻76, ⁻15, 0, ⁺14, ⁺45
   C. ⁻76, ⁺45, ⁻15, ⁺14, 0
   D. ⁺45, ⁺14, 0, ⁻15, ⁻76

5) Which is ordered correctly?
   A. ⁺48, ⁺32, ⁻1, ⁻43, ⁻13
   B. ⁻1, ⁻13, ⁺32, ⁻43, ⁺48
   C. ⁻43, ⁻13, ⁻1, ⁺32, ⁺48
   D. ⁻13, ⁻1, ⁺48, ⁻43, ⁺32

B. Read the situation below. Answer the activities in each item as instructed. Write your answer on your answer sheet.

1) Write 5 possible integers that will complete the following set of numbers in ascending order.
   ⁻12, _____, _____, _____, _____, _____, ⁺10

2) Select 5 integers between ⁺20 and ⁻20.
   a. Arrange them in ascending order.
   b. Arrange them in descending order.

3) Draw a number line and plot the integers ⁺12, ⁻10, ⁻13, ⁺6, ⁻1. Draw an arrow to show descending order.

4) Juliana likes to ride the elevators. One day, she accompanied her mother to see a **balikbayan** friend on a high-rise building. They first went up the 20-step stairs and rode the elevator to the 10ᵗʰ floor only to find out that her friend was in the restaurant, 6 floors below. Then, they went up to the observation area on the 14ᵗʰ floor to enjoy their reunion. After catching up on each other's life, they went down to the dining area on the 3ʳᵈ floor. They really enjoyed their visit. Identify the integers in the situation and write them in ascending order.

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Lesson 2 Arranging Integers in Ascending or Descending Order and Vice Versa

Do you like things to be in proper order? As a learner, you should develop the skill in ordering numbers. In this lesson, we will learn on how to arrange integers in ascending or descending order and vice versa.

What's In

A. Arrange the numbers in ascending order. Write your answers on your answer sheet.

1) 26, 62, 19, 32, 36

2) 105, 150, 252, 225, 522

3) 99, 66, 69, 96

B. Arrange the numbers in descending order. Write your answers on your answer sheet.

1) 47, 93, 58, 39, 85

2) 62, 89, 26, 43, 17

What's New

Study the situation which we are going to discuss later.

Rheno is fond of adventurous activities. One day, he joined his friends on a camping trip. He swam the 10-meter distance between the banks of a river, walked for 3 kilometers, dived and touched the bottom of a 4-meter deep lake, climbed the 12-meter cliff and went down the same way.
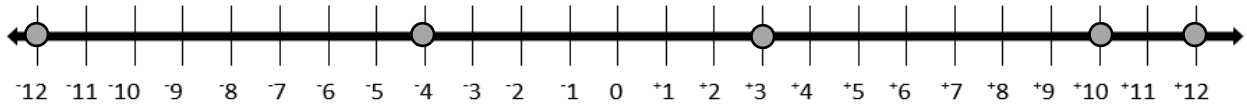
Activities	Value in Integer
Swam 10-meter distance	+10
Walk 3 kilometers	+3
Dived 4-meter deep lake	⁻4
Climbed 12-meter cliff	+12
Went down the cliff	⁻12

Arrange the values of integers of all his activities in ascending order.

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What is It

Based on the situation, let us plot each integer +10, +3, ⁻4,+12, ⁻12 on the number line below.

-12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10 +11 +12

To arrange these integers from least to greatest, look at the number line from left to right. So, ⁻12, ⁻4, ⁺3, ⁺10, and ⁺12 are arranged in **ascending order**.

To arrange the integers from greatest to least, look at the number line from right to left. So, ⁺12, ⁺10, ⁺3, ⁻4 and ⁻12 are arranged in **descending order**.

> Spectators are observing the antics of dolphins in a certain marine park. One dolphin jumps 8 feet out of the water and dives 3 feet before jumping again for 2 feet. Another dolphin seen 10 feet below swims upward and jumps out of the water 6 feet high and dives again 6 feet under water to the delight of the audience.
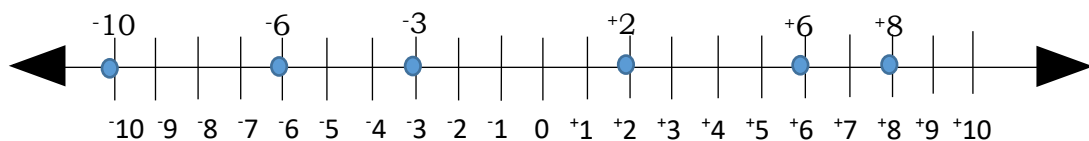>
> Arrange the numbers in ascending order.

Example 1:

The height of the dolphins' jumps is represented as positive integers: ⁺8, ⁺2, +6.

The depth of the dolphins' dive is represented as negative integers: ⁻3, ⁻10, ⁻6.

Arrange the numbers in ascending order by following the steps:

Step 1: Plot the given integers on the number line.

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

Step 2: Arrange the integers in ascending order by writing the numbers following the direction of the arrow from left to right.

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10
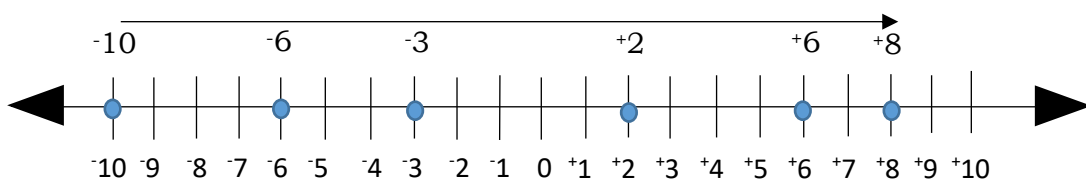
Therefore, the answer is ⁻10, ⁻6, ⁻3, ⁺2, ⁺6, ⁺8.

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Example 2:

During a school encampment, the scouts were grouped into three patrols. Each patrol was asked to put up a marker placed on a bamboo stick at the front of their camp. Eagle Patrol placed their marker by pushing the stick 3 inches to the ground with the marker sticking out 6 inches above the ground. Goat Patrol stuck their bamboo stick 6 inches below the ground and the marker 10 inches high above the ground. Cow Patrol's marker is 8 inches above the ground with its stick pushed down 4 inches to the ground.

What are the integers used in the situation?

Arrange the numbers in descending order.

The depth in which the bamboo sticks were pushed underground represents the negative integers: ⁻3, ⁻6, ⁻4.

The height of the marker above the ground represents the positive integers: ⁺6, ⁺10, ⁺8.

To arrange integers in descending order, follow the steps below:

Step 1: Plot the given integers on the number line.

Step 2: Arrange the integers in descending order by writing the numbers following the direction of the arrow from right to left.
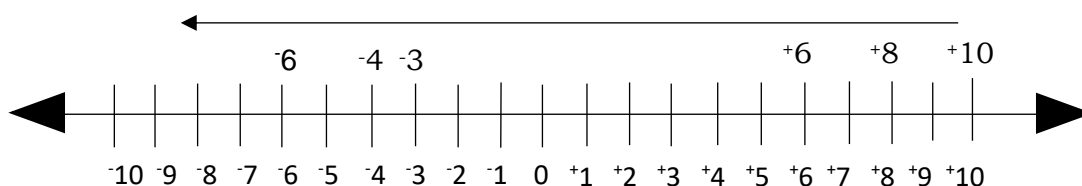
Therefore, the answer is ⁺10, ⁺8, ⁺6, ⁻3, ⁻4, ⁻6.

Take note that arranging the integers from least to greatest is the same as arranging them in **increasing** or **ascending** order.

On the other hand, arranging the integers from greatest to least is also the same as arranging them in **decreasing** or **descending** order.

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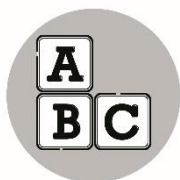
What's More

A. Arrange the following in ascending order. Write your answers on your answer sheet.
   Example: ⁻2, ⁺3 , ⁺8 , ⁺10 , ⁻5
   Answer: ⁻5, ⁻2 , ⁺3 , ⁺8 , ⁺10

   1) ⁻5, ⁺10 , ⁻12 , ⁺7 , ⁺15
   2) 0, ⁻9 , ⁻15 , ⁺12 , ⁻4
   3) ⁻9, ⁺6 , ⁻25 , ⁺14 , ⁺8

B. Study the situation and answer the questions below. Write your answer on your answer sheet.

   An adventurous diver goes to a cliff overlooking the sea where the water is deep. He dives from the cliffs with different heights. He climbs the first cliff 5 meters high and dives to the sea 2 meters deep. Then he climbs to the second cliff which is 7 meters high and dives 3 meters into the water. He excitedly climbs the 10-meter cliff and dives to a depth of 5 meters before coming out to the surface.

   1) What are the integers used in the situation?

   2) Arrange the integers in descending order.

What I Have Learned

➤ To arrange integers in **ascending order**, look at the number line from left to right.
➤ Arranging the integers from least to greatest is the same as arranging them in **increasing** or **ascending** order.
➤ To arrange integers in **descending order**, look at the number line from right to left.
➤ Arranging the integers from greatest to least is also the same as arranging them in **decreasing** or **descending** order.

What I Can Do

A. Arrange the following integers in ascending order. Write your answers on your answer sheet.
1) ⁻3, ⁻8, 0, ⁻5, ⁺9, ⁺6
2) ⁻2, ⁺5, ⁺7, ⁻8, ⁻1, ⁻5
3) ⁻3, ⁺6, ⁺8, ⁻7, ⁻9, ⁻2

B. Arrange the following integers in descending order. Write your answers on your answer sheet.
4) ⁺7, ⁻7, ⁺14, ⁻14, 0, ⁻2
5) ⁺30, ⁻20, ⁻50, ⁺10, ⁻60

C. Study the table below about the atmospheric temperatures in different places.

1) Arrange the places according to their atmospheric temperatures in ascending order using a number line. Do this on your answer sheet.

Philippine Provinces	Atmospheric Temperature
Cagayan De Oro	⁺30˚C
Baguio	⁺21˚C
Iloilo	⁺29˚C
Davao	⁺33˚C

2) Arrange the places according to their atmospheric temperatures in descending order using a number line. Do this on your answer sheet.

Cities Around the World	Atmospheric Temperature
New York, USA	⁻2˚C
Manila, Philippines	⁺29˚C
Toronto, Canada	⁻7˚C
Beijing, China	⁻9˚C
Auckland, New Zealand	⁺15˚C

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Assessment

A. Arrange the integers in ascending order below. Write the letter of the correct answer on your answer sheet.

1) ⁻7, ⁺8, ⁻8, ⁺5, ⁺9
   A. ⁻8, ⁻7, ⁺5, ⁺8, ⁺9   C. ⁺5, ⁻7, ⁻8, ⁺8, ⁺9
   B. ⁻7, ⁻8, ⁺5, ⁺8, ⁺9   D. ⁺9, ⁺8, ⁺5, ⁻7, ⁻8

2) ⁺15, ⁻11, ⁻16, ⁺4, 0
   A. ⁺15, ⁺4, 0, ⁻11, ⁻16   C. 0, ⁻11, ⁻16, ⁺4, ⁺15
   B. 0, ⁺4, ⁻11, ⁺15, ⁻16   D. ⁻16, ⁻11, 0, ⁺4, ⁺15

3) ⁺7, ⁻16, ⁻5, ⁺11, ⁺9
   A. ⁺11, ⁺9, ⁺7, ⁻5, ⁻16   C. ⁻5, ⁻16, ⁺7, ⁺ 9, ⁺11
   B. ⁻16, ⁻5, ⁺7, ⁺9, ⁺11   D. ⁻5, ⁺7, ⁺9, ⁻16, ⁺11

4) ⁺17, ⁻17, ⁺1, ⁻5, ⁻1
   A. ⁺17, ⁺1, ⁻1, ⁻5, ⁻17   C. ⁻17, ⁻5, ⁻1, ⁺ 1, ⁺17
   B. ⁻1, ⁺1, ⁻5, ⁻17, ⁺17   D. ⁺1, ⁻1, ⁻5, ⁺17, ⁻17

5) ⁺13, ⁺3, ⁻18, ⁻15, ⁺4
   A. ⁺3, ⁺4, ⁺13, ⁻15, ⁻18   C. ⁺13, ⁺4, ⁺3, ⁻15, ⁻18
   B. ⁻15, ⁻18, ⁺3, ⁺4, ⁺13   D. ⁻18, ⁻15, ⁺3, ⁺4, ⁺13

B. Arrange the following integers in descending order by plotting them on the number line. Do this on your answer sheet.

1) ⁻4, ⁻5, ⁺8, ⁺11, ⁺14
2) ⁺13, ⁻12, ⁻7, ⁺5, ⁺1
3) ⁻15, ⁺15, ⁻9, ⁺11, ⁻7
4) ⁺14, ⁻10, 0, ⁻13, ⁺6
5) ⁻11, ⁺3, ⁻14, ⁺9, ⁺8

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Additional Activities

A. Write the integer for each situation and arrange them in ascending order. Do this on your answer sheet.

Situation	Integers
1) The plane is now 200 m off the ground.	
2) The baby's height increased by 20 mm in one year.	
3) Mother paid for the fish that costs ₱180.	
4) The ants built their colony 48 cm below the ground.	
5) The boy climbs the *palosebo* pole which is 10 m high.	

B. Write the integer for each situation and arrange them in descending order. Do this on your answer sheet.

Situation	Integers
1) Charlene lost 5 kilograms after months of doing her weekly dance routine.	
2) The patient's temperature increased by 2°C.	
3) The man went sky diving from an altitude of 10 000 feet.	
4) Chris has 3 incorrect answers in the test.	
5) The store owner gained ₱1 200 in a month.	

Answer Key

What I Know

A.
1) C
2) C
3) A
4) B
5) C

B.
1) -11, -10, -9, -8, -7,...,+9
2) Possible answers:
   a. -19, -17, 0, +3, +5
   a. +18, +15, +1, -1, -3
3)
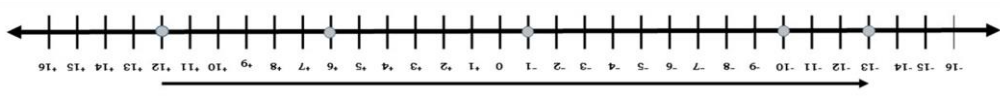
4) -6, -3, +10, +14, +20

What's In

1) 19, 26, 32, 36, 62
2) 105, 150, 225, 252, 522
3) 66, 69, 96, 99

B
1) 93, 85, 58, 47, 39
2) 89, 62, 43, 26, 17

What's More

A
1) -12, -5, -7, +10, +15
2) -15, -9, -4, 0, +12
3) -25, -9, +6, +8, +14

B
1) +5, -2, +7, -3, +10, -5
2) +10, +7, +5, -5, -3, -2

What I Can Do

A.
1) -8, -5, -3, 0, +6, +9
2) -8, -5, -2, -1, +5, +7
3) -9, -7, -3, -2, +6, +8

B.
1) +14, +7, 0, -2, -7, -14
2) +30, +10, -20, -50, -60

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