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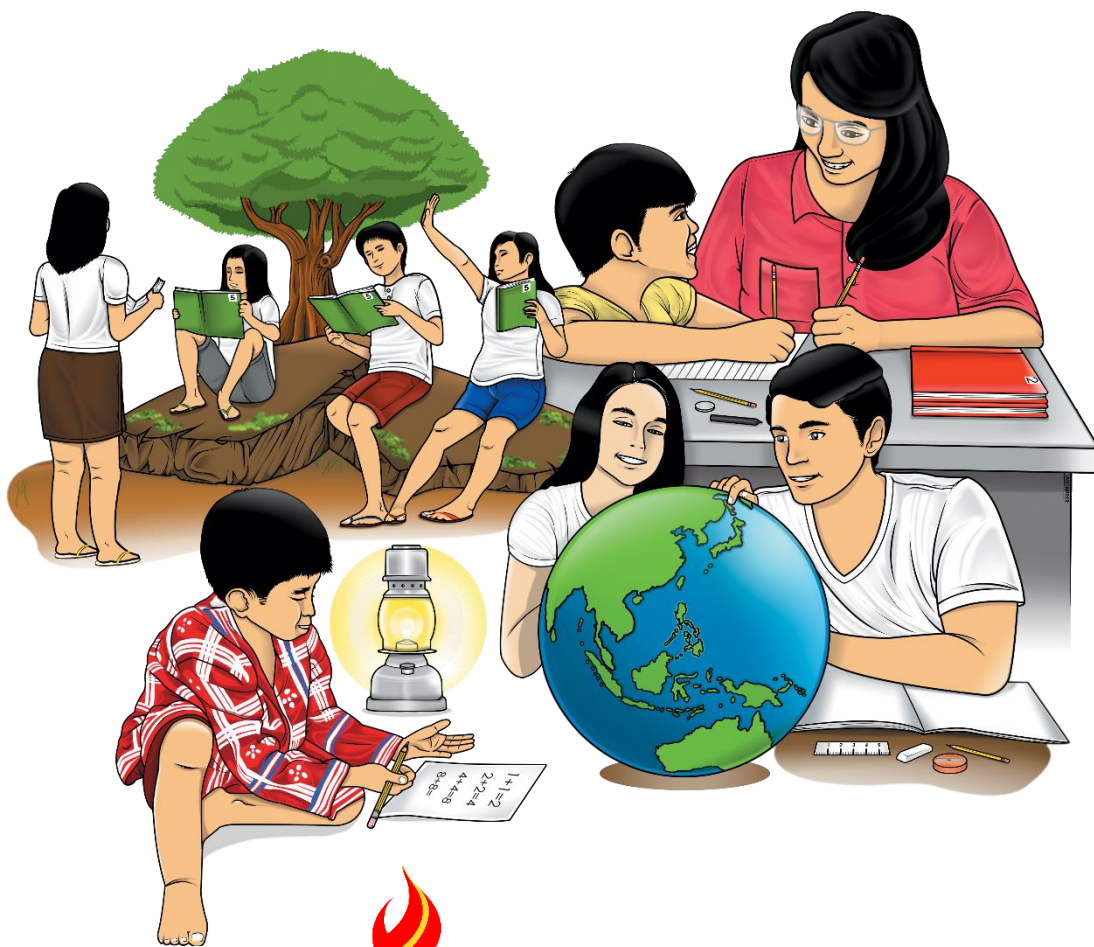
Mathematics
Quarter 2 – Module 11:
Adding Integers

ALTERNATIVE DELIVERY MODE

ADM

Mathematics – Grade 6
Alternative Delivery Mode
Quarter 2 – Module 11: Adding Integers
First Edition, 2020

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Mathematics
Quarter 2 – Module 11:
Adding Integers

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 adding 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 three lessons, namely:

- Lesson 1 – Adding Integers with Like Signs
- Lesson 2 – Adding Integers with Unlike Signs
- Lesson 3 – Solving Routine and Non-Routine Problems Involving Addition of Integers Using Appropriate Strategies and Tools

After going through this module, you are expected to:

1. describe and interpret addition of integers using materials such as algebra tiles, counters, chips, and cards **(M6NS-IIh-155)**;
2. perform addition of integers **(M6NS-IIi-156);** and,
3. solve routine and non-routine problems involving addition of integers using appropriate strategies and tools **(M6NS-IIj-157)**.

What I Know

A. Choose the letters of the correct answers and write them on your answer sheet. (For item 1, refer to Illustration I.)

Illustration I

1) What is the appropriate number sentence for the Illustration I above?
   A. $^+3 \times ^-5 = 15$ B. $^+3 \div ^-5 = ^-2$ C. $^+3 + ^+5 = ^+8$ D. $^+3 - ^-5 = ^+7$

2) On the table, you placed 6 negative counters and 3 negative counters. What is the value of the counters on the table?
   A. $^-9$ B. $^-3$ C. $^-1$ D. 0

3) Which of the following statement is true?
   A. The sum of two negative integers is a positive integer.
   B. The sum of positive integer and negative integer is zero.
   C. The sum of two different integers can never be a negative integer.
   D. The sum of a negative integer and a positive integer is always a positive integer.

(For items 4 and 5 refer to illustration II.)
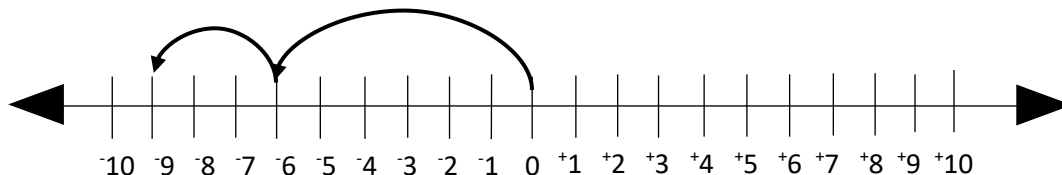
4) Using the illustration above, what addition sentence can you make?
   A. $^-6 + ^-9 = N$ B. $^+6 + ^+9 = N$ C. $^-6 + ^-3 = N$ D. $^-6 + ^+3 = N$

5) What is the sum for the addition sentence in illustration II?
   A. $^-15$ B. $^-9$ C. $^-3$ D. $^+3$

B. Below are expressions involving integers. Find the sum of each item by drawing your positive and negative counters or number lines in your notebook. Then, write your answers on your answer sheet.

6) $^+14 + ^+12 =$

7) $^-33 + ^-15 =$

8) $^+24 + ^+11 =$

9) $^-13 + ^-12 =$

10) $^+21 + ^+11 =$

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This module will help you realize how operations on integers work. It aims to build basic concepts on how to add integers using positive and negative counters and number lines. Learning about these concepts are equally exciting and challenging, right? So, ready your working space and counters to make this lesson more meaningful.

What's In

Write the addition sentence for each model. Then find the sum. Write your answers on your answer sheet.

1)

| 26 | 54 | 37 |

2)

3)

| 65 | 72 |

4)

5)
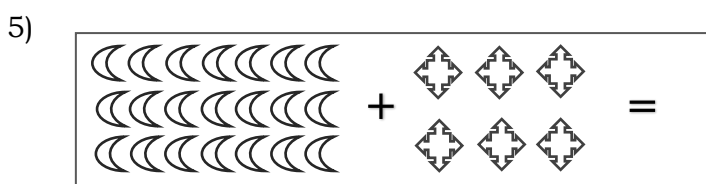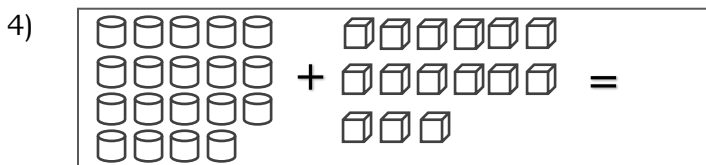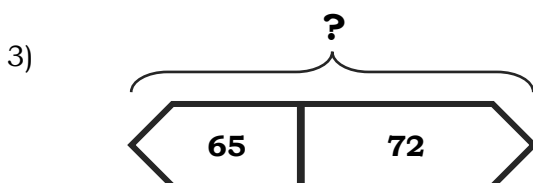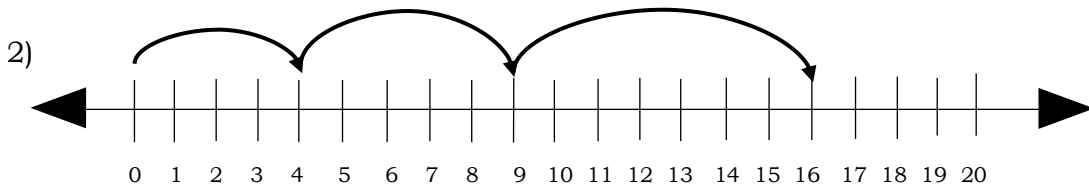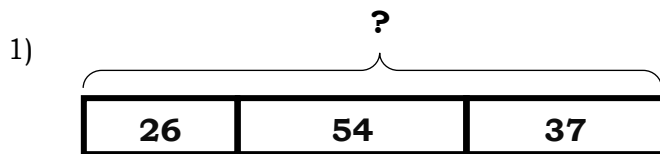
What's New

Read and analyze the problem.

The temperature on top of a mountain is 5°C at 10 p.m. During the next hours, the temperature fell further by 4°C. What is the temperature at 2 a.m.?

What is It

Before working on the given problem above, let us explore how to add integers with the same sign.

Is the sum of two positive integers *positive* or *negative*?

How about the sum of two negative integers? What do you think?

Adding Positive Integers

> **Example 1:** $^+5 + {}^+4 = $ _____
> * **Using counters**
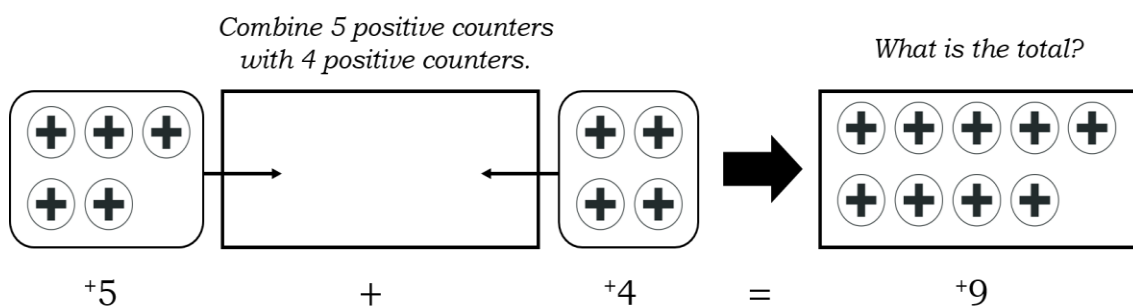
How many counters are there in all? (9)

Do they have the same sign? (Yes)

What is the sign of the counters? (positive)

5

- **Using a number line**

Start at 0. Move 5 units to the right.

Then move 4 units to the right.

⁺5   ⁺4

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

$$^+5 + {}^+4 = {}^+9$$

Example 2: ⁺**3** + ⁺**7** = _____
- **Using counters**

Add 7 positive counters to 3 positive counters.

What is the total?

⁺3   +   ⁺7   =   ⁺10

- **Using a number line**

Start at 0. Move 3 units to the right.

Then move 7 units to the right.

⁺3   ⁺7

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

$$^+3 + {}^+7 = {}^+10$$
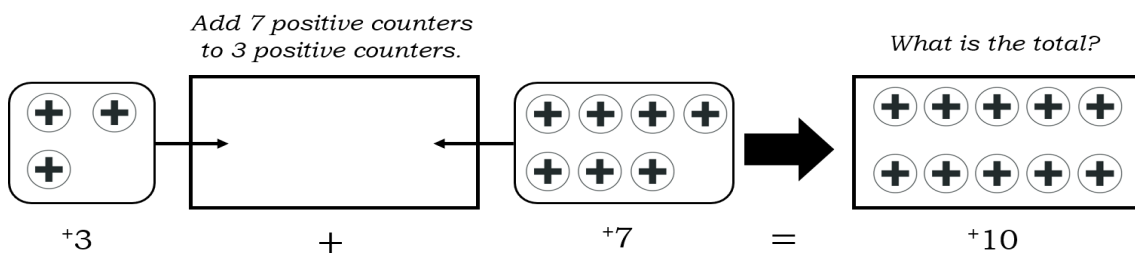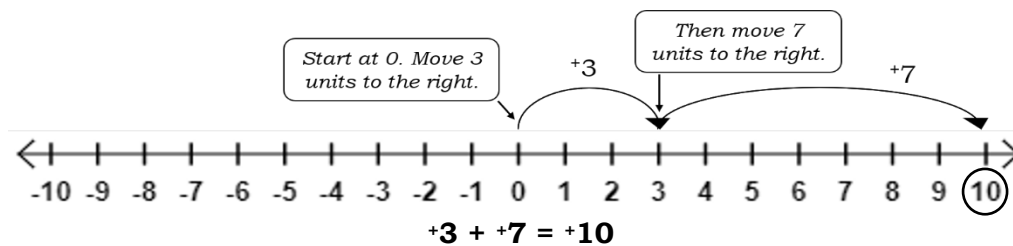
How about if you have to combine negative integers? What is their sum?

Adding Negative Integers

Example 3: ⁻**5** + ⁻**4** = _____
- **Using counters**
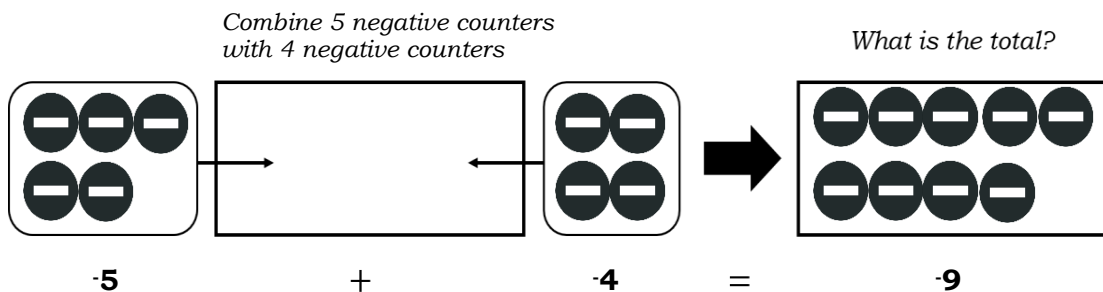
Combine 5 negative counters with 4 negative counters

What is the total?

⁻**5**   +   ⁻**4**   =   ⁻**9**

How many counters are there in all? (9)

Do they have the same sign? (Yes)

What is the sign of the counters? (negative)
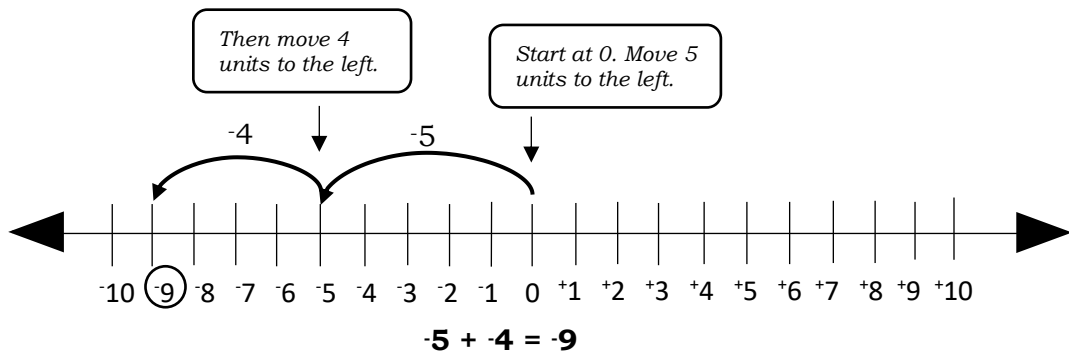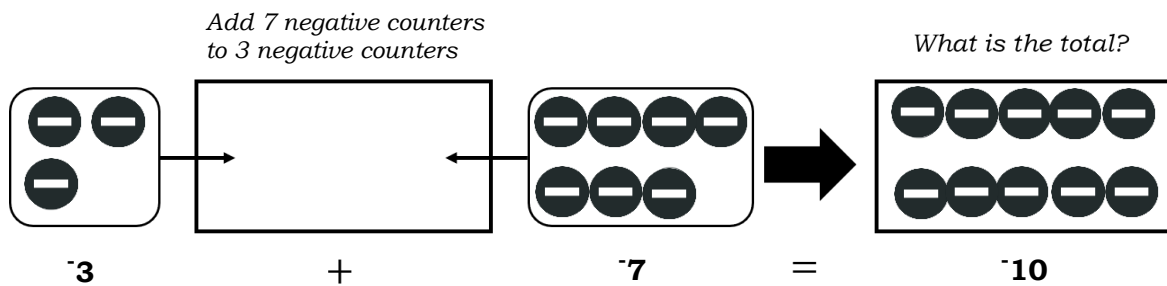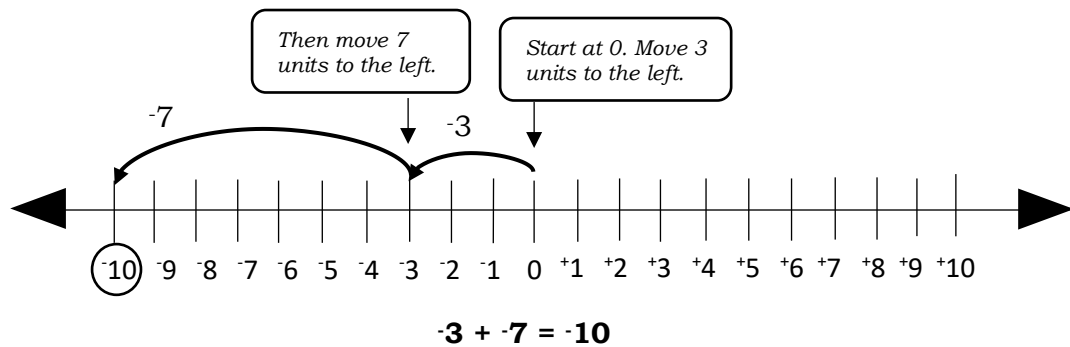
6

- **Using a number line**

Then move 4 units to the left.

Start at 0. Move 5 units to the left.

$$^-5 + {}^-4 = {}^-9$$

Example 4: $^-3 + {}^-7 =$ _____
- **Using counters**

Add 7 negative counters to 3 negative counters

What is the total?

$$^-3 \qquad + \qquad {}^-7 \qquad = \qquad {}^-10$$

- **Using a number line**

Then move 7 units to the left.

Start at 0. Move 3 units to the left.

$$^-3 + {}^-7 = {}^-10$$

Now, let us use the previous examples to complete the following table.

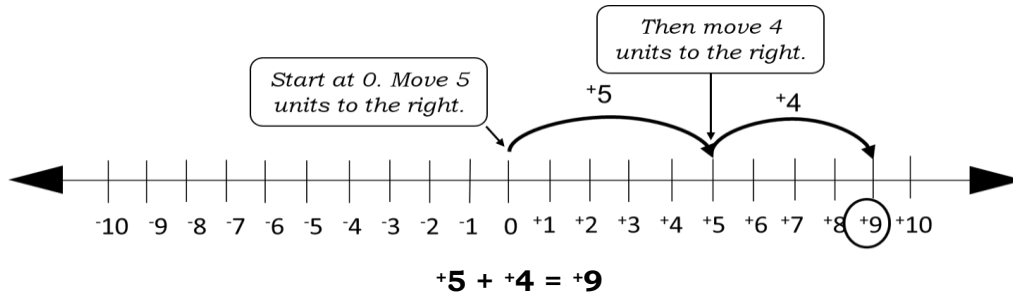|	Example	Same Sign? (Yes/No)	Sum	Sign (+/-)
1	$^+5 + {}^+4$	Yes	$^+9$	Positive (+)
2	$^+3 + {}^+7$	Yes	$^+10$	Positive (+)
3	$^-5 + {}^-4$	Yes	$^-9$	Negative (-)
4	$^-3 + {}^-7$	Yes	$^-10$	Negative (-)

What do you notice?

When two positive integers are added together, the result is a positive sum. When two negative integers are combined, the result is a negative sum.

7
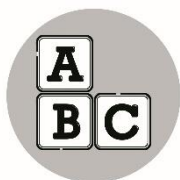
What's More

Here are some items for you to practice on. Draw a number line in your notebook and find each sum. Write your answers with correct sign on your answer sheet.

Example: $^+35 + ^+25 =$
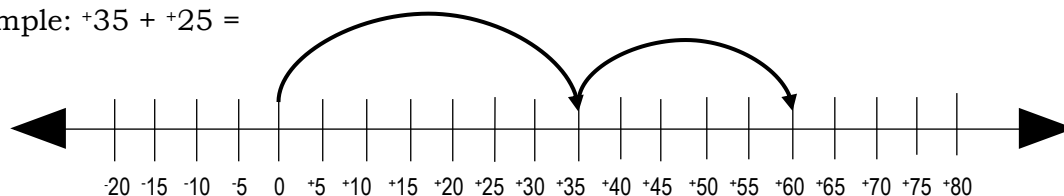
```
       -20 -15 -10 -5  0  +5 +10 +15 +20 +25 +30 +35 +40 +45 +50 +55 +60 +65 +70 +75 +80
```

$$^+35 + ^+25 = ^+60$$

1) $^-8 + ^-7 =$

2) $^+12 + ^+9 =$

3) $^-2 + ^-6 =$

4) $^+24 + ^+16 =$

5) $^+65 + ^+10 =$

What I Have Learned

Addition means to put together or to combine two or more quantities.

- The sum of two positive integers is always positive.
- The sum of two negative integers is always negative.

When adding two integers with the same sign, add like whole numbers and the sum follows the sign of both addends.

What I Can Do

Find each sum. Write your answers on your answer sheet.

1) $^-21 + ^-5 =$

2) $^+47 + ^+15 =$

3) $^-31 + ^-16 =$

4) $^-12 + ^-85 =$

5) $^+15 + ^+48 =$

6) $^+27 + ^+42 =$

7) $^-15 + ^-32 =$

8) $^+56 + ^+29 =$

9) $^-97 + ^-28 =$

10) $^+46 + ^+72 =$

Assessment

A. Choose the letter of the correct answer. Write the answers on your answer sheet.

1) What is the value of the counters in the diagram below?

    A. 0   B. $^{+}$5   C. $^{+}$17   D. $^{+}$20

2) Which of the following addition sentences will give you a positive sum?

    A. $^{-}$7 + $^{-}$8 = N   C. $^{+}$7 + $^{-}$8 = N
    B. $^{-}$7 + $^{+}$8 = N   D. $^{+}$7 + $^{+}$8 = N

3) What is the value of $^{-}$6 + $^{-}$5?

    A. $^{-}$11   B. $^{-}$1   C. 0   D. $^{+}$11

4) Using your number line, what is the value of N in $^{+}$20 + $^{+}$5 = N?

    A.   0   B. $^{-}$5   C. $^{+}$5   D. $^{+}$25

5) Which of the following statements is FALSE?
    A.   Adding two negative integers together sometimes gives a positive sum.
    B.   Two positive integers added together always results in a positive sum.
    C.   Two negative integers combined is equal to a negative sum.
    D.   The sum of two integers with like signs follows the same sign as the addends.

B. Add the following integers. Write your answers on your answer sheet.

6) $^{+}$6 + $^{+}$9 =

7) $^{-}$19 + $^{-}$16 =

8) $^{+}$13 + $^{+}$11 =

9) $^{-}$38 + $^{-}$14 =

10) $^{+}$16 + $^{+}$23 =

9

![gears icon] ***Additional Activities***

A. Make your own addition sentence with the following information, then find the sum. Write your answers on your answer sheet.

1) ⊕⊕⊕⊕⊕⊕⊕⊕⊕⊕⊕ ⊕⊕⊕⊕⊕⊕⊕⊕⊕⊕⊕

2)

⁻48 ⁻44 ⁻40 ⁻36 ⁻32 ⁻28 ⁻24 ⁻20 ⁻16 ⁻12 ⁻8 ⁻4 0 ⁺4 ⁺8 ⁺12 ⁺16 ⁺20 ⁺24 ⁺28 ⁺32

3)
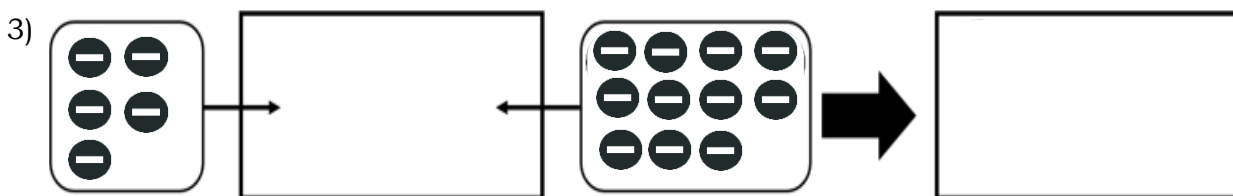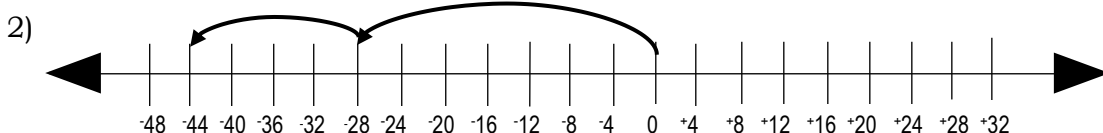
B. Find each sum.

4) ⁺12 + ⁺5 =

5) ⁻64 + ⁻11 =

6) ⁺5 + ⁺14 =

7) ⁻16 + ⁻11 =

8) ⁻16 + ⁻2 =

C. Read and solve. Write your solutions on your answer sheet and label the final answers.

9) Find three consecutive positive integers whose sum is 147.

10) A submarine submerged 563 feet below sea level. If it submerged another 65 feet, what was the depth of the submarine now?

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Answer Key

What I Know

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

B.
6) +26
7) -48
8) +35
9) -25
10) +32

What's In

1) $26 + 54 + 37 = 117$
2) $4 + 5 + 7 = 16$
3) $65 + 72 = 137$
4) $19 + 15 = 34$
5) $21 + 6 = 27$

What's More

1) -15
2) +21
3) - 8
4) +40
5) +75

What I Can Do

A.
1) -26
2) +62
3) -47
4) -97
5) +63
6) +69
7) -47
8) +85
9) -125
10) +118

Assessment

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

B.
6) +15
7) -35
8) +24
9) -52
10) +39

Additional Activities

A.
1) $+11 + +10 = +21$
2) $-28 + -16 = -44$
3) $-5 + -11 = +16$

B.
4) +17
5) -75
6) +19
7) -27
8) -18
9) +48, +49, +50
10) 628 feet – depth of the submarine

What I Know

A. The following multiple-choice items are for you to answer. Some items use illustration for your reference. Choose the letters of the correct answers and write them on your answer sheet.

++ + ⊖⊖⊖⊖⊖	+++++ + ⊖⊖⊖⊖⊖⊖
Illustration I	Illustration II

1) In Illustration I, positive counters are combined with negative counters. What is the appropriate number sentence for this?

   A. ⁺3 x ⁻5 = 15   B. ⁺3 + ⁻5 = ⁻2   C. ⁺3 ÷ ⁻5 = ⁻2   D. ⁺3 – ⁻5 = ⁺7

2) What is the answer to the illustration II shown above?
   A. ⁻2   B. 0   C. ⁺2   D. ⁻14

3) Which of the following statement is FALSE?

   A. If one positive counter is paired with one negative counter, the result is zero.
   B. In each set of counters, if there are more positive counters, the answer is positive.
   C. In adding integers with unlike sign, the sum is always negative.
   D. If the number of positive and negative counter is equal, then the set is zero.

4) In which set of counters will give you a negative sum?

   A.   C.

   B.   D.
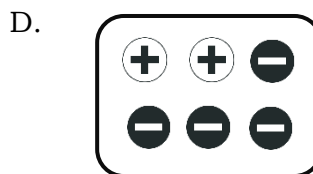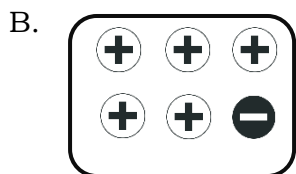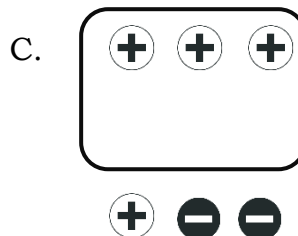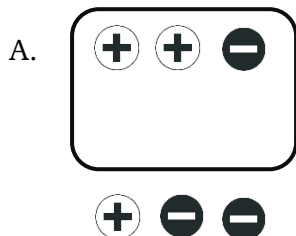
5) What is the sum if ⁻31 added to ⁺53?
   A.⁻22   B. 0   C. ⁺22   D. ⁺84

B. Below are expressions involving integers. Find the sum of each item by using your positive and negative counters or number lines in your notebook. Then, write your answers on your answer sheet.

   6) $^+16 + {}^-18 =$

   7) $^-17 + {}^+9 =$

   8) $^+19 + {}^-10 =$

   9) $^-82 + {}^+45 =$

   10) $^+34 + {}^-11 =$

Lesson 2 — Adding Integers with Unlike Signs

You have done a good job in developing your skills in adding integers with like signs. This time, you will move forward to adding integers with unlike signs.

What's In

Find each sum. Write your answers on your answer sheet.

   1) $^+26 + {}^+15$

   2) $^-38 + {}^-7$

   3) $^+19 + {}^+13$

   4) $^-42 + {}^-25$

   5) $^+84 + {}^+21$

What's New

Read and analyze the story problem below.

> From their house, Joyce went to visit her friend in Barangay Cansilayan. She rode a motorcycle 6 kilometers north. Then she rode a tricycle 3 kilometers going back south to her Tita's place to get her book. How far is Joyce now from their house?

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What is It

Furthermore, what will happen if you combine a positive integer and a negative integer?

What do you think will happen to their sum? Will it be a positive or negative integer?

Let's try to study the following situation.

Example 1: $^+6 + {}^-3 = $ _____

- **Using counters**

In the illustration below, there are positive and negative counters in the set. Take note that we cannot simply combine them together for not all of them have the same signs. You have to pair first a positive and a negative counter for their value is zero and they will not be counted anymore. Then, add the remaining counters with no pair of opposite sign to get the sum of the combined counters.
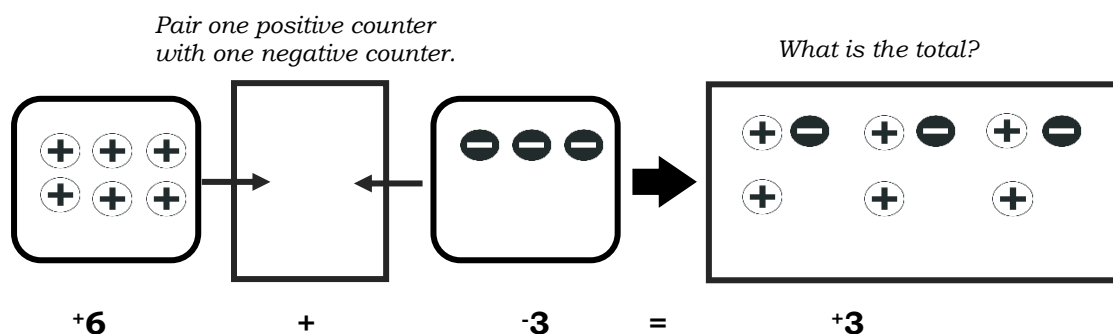
Pair one positive counter with one negative counter.

What is the total?

$^+6$ + $^-3$ = $^+3$

How many pairs of positive and negative counters are there? (3pairs)
How many counters do not have pairs of opposite sign? (3)

What is the sign of the counters with no pair of opposite sign? (positive)

We can also illustrate the given problem by using a **number line**.

Start at 0. Move 6 units to the right.

$^+6$

$^-3$

Then move 3 units to the left.

$^+6 + {}^-3 = {}^+3$

14

Example 2: $^+5 + {}^-7 =$ _____

- **Using counters**

Pair one positive counter with one negative counter.

What is the total?

| $^+5$ | $+$ | $^-7$ | $=$ | $^-2$ |

How many pairs of positive and negative counters are there? (5 pairs)

How many counters do not have pairs of opposite sign? (2)

What is the sign of the counters without pair of its opposite sign? (negative)

- **Using a number line**
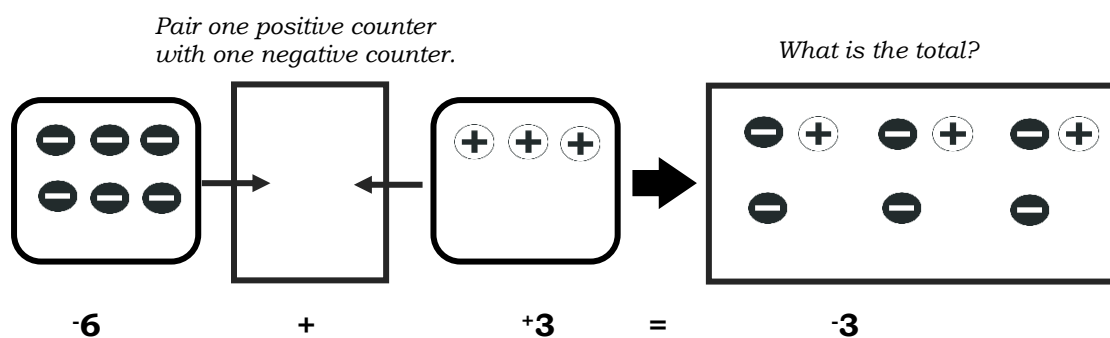
Start at 0. Move 5 units to the right.

$^+5$

Then move 7 units to the left.

$^-7$

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

$^+5 + {}^-7 = {}^-2$

Example 3: $^-6 + {}^+3 =$ _____

- **Using counters**

Pair one positive counter with one negative counter.

What is the total?

| $^-6$ | $+$ | $^+3$ | $=$ | $^-3$ |

How many pairs of positive and negative counters are there? (3 pairs)

How many counters do not have pairs of opposite sign? (3)

What is the sign of the counters with no pair of opposite sign? (negative)

15

- **Using number line.**

Then move 3 units to the right.

$^-6$

Start at 0. Move 6 units to the left.

$^+3$

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

$$^-6 + {}^+3 = {}^-3$$

Example 4: $^-5 + {}^+7 =$ _____

- **Using counters**

Pair one positive counter with one negative counter.

What is the total?

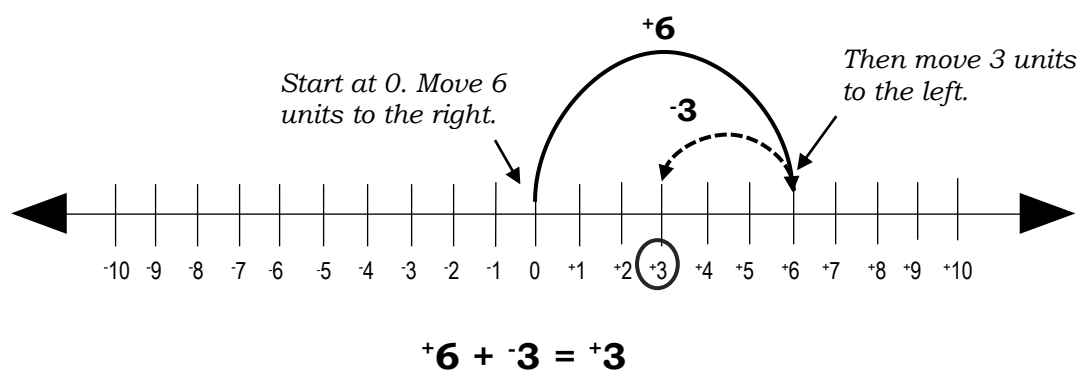**$^-5$**   **+**   **$^+7$**   **=**   **$^+2$**
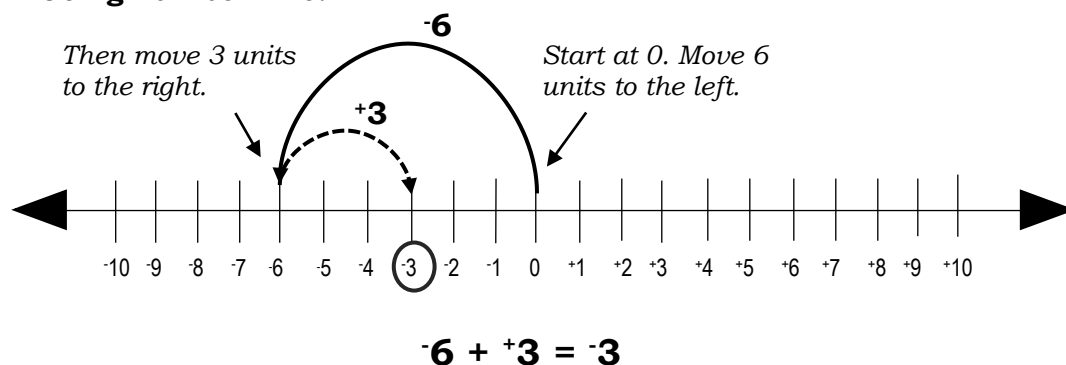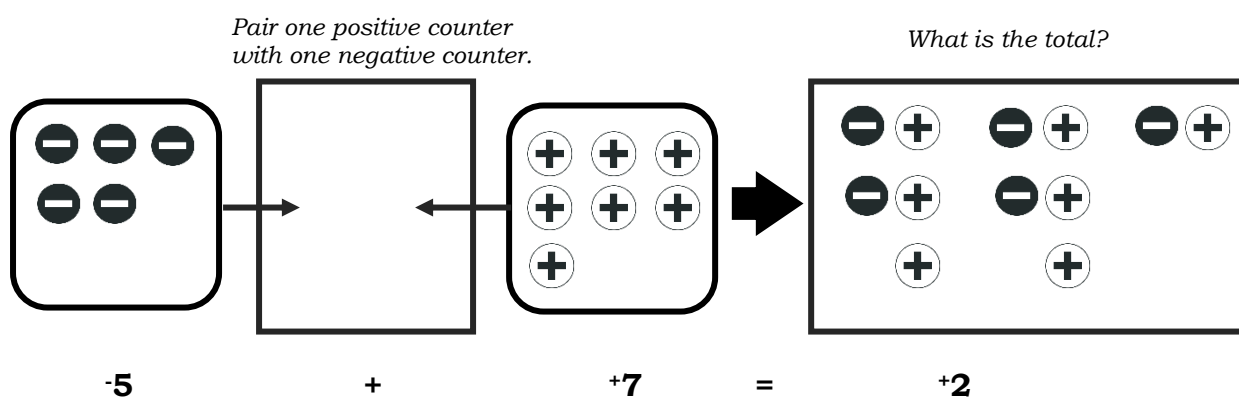
How many pairs of positive and negative counters are there? (5 pairs)

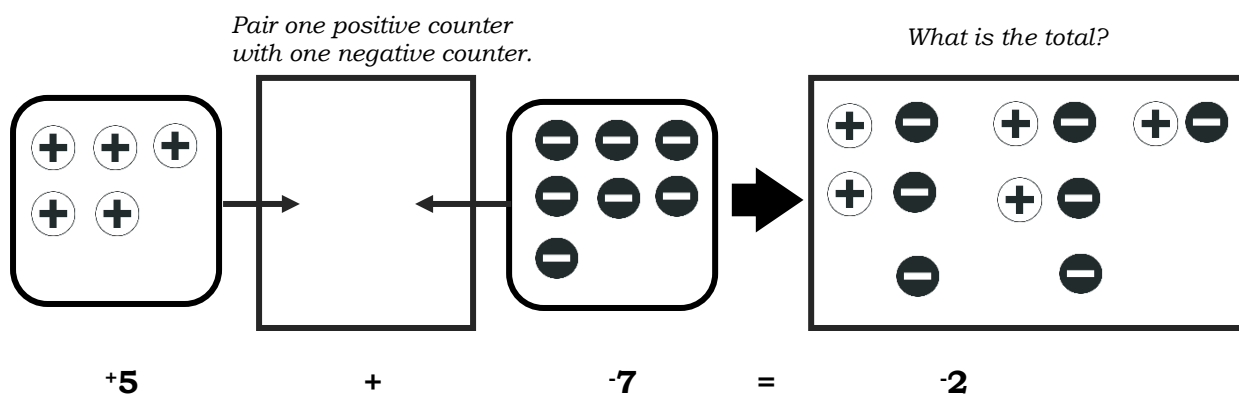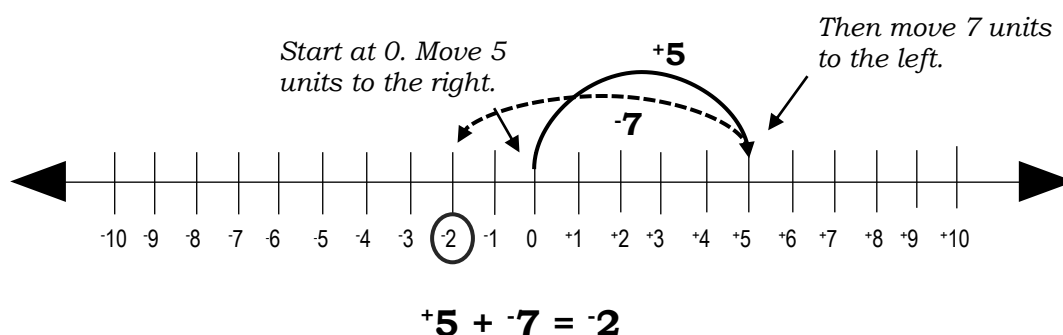How many counters do not have pairs of opposite sign? (2)

What is the sign of the counters with no pair of opposite sign? (positive)

- **Using a number line**
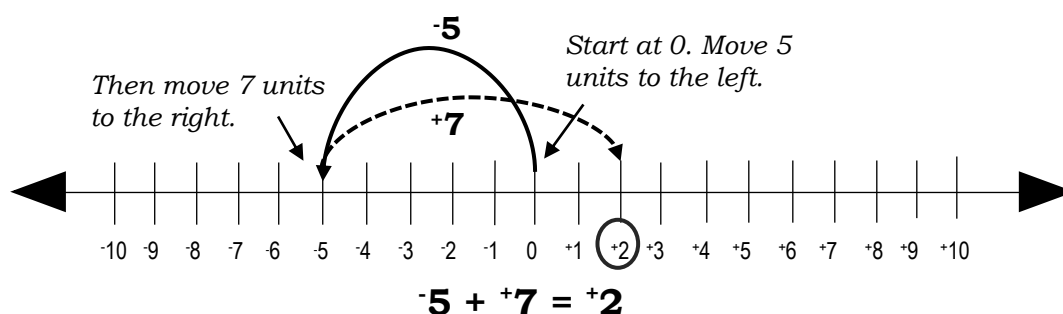
$^-5$

Start at 0. Move 5 units to the left.

Then move 7 units to the right.

$^+7$

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

$$^-5 + {}^+7 = {}^+2$$

Now, let us use the previous examples to complete the following table.

	Example	Same Sign? (Yes/No)	Sum	Sign (+/-)
1	$^+6 + {}^-3$	No	$^+3$	Positive (+)
2	$^+5 + {}^-7$	No	$^-2$	Negative (-)
3	$^-6 + {}^+3$	No	$^-3$	Negative (-)
4	$^-5 + {}^+7$	No	$^+2$	Positive (+)

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What do you notice?

In adding integers with unlike sign, the signs are first disregarded and the difference between the numbers is obtained. Then, the sign of the greater number is affixed to the answer.
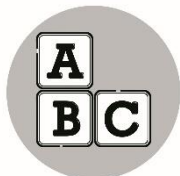
What's More

In your notebook, use a number line or positive/negative counters to find the sum of each given item. Write your answers with correct sign on your answer sheet.

Example: $^+44 + {}^-28 = {}^+16$

-32 -28 -24 -20 -16 -12 -8 -4 0 $^+4$ $^+8$ $^+12$ $^+16$ $^+20$ $^+24$ $^+28$ $^+32$ $^+36$ $^+40$ $^+44$ $^+48$
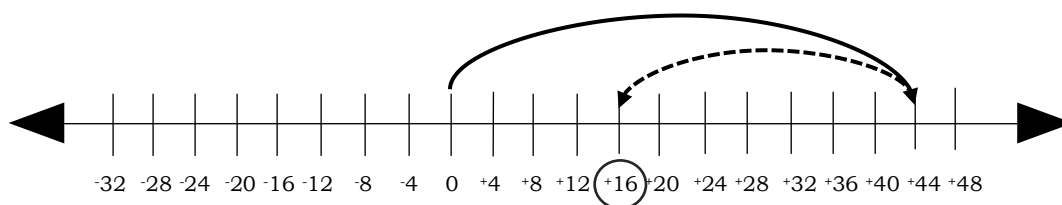
1) $^-25 + {}^+20 =$
2) $^+12 + {}^-6 =$
3) $^-36 + {}^+12 =$
4) $^-15 + {}^+7 =$
5) $^+28 + {}^-4 =$

What I Have Learned

Addition means to put together or to combine two or more quantities.

To add integers having unlike signs:

- disregard the signs of the two addends;
- obtain the difference; and,
- affix the sign of the bigger number to the sum.

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What I Can Do

A. Find each sum. Write your answers on your answer sheet.

1) ⁺15 + ⁻5 =
2) ⁻18 + ⁺3 =
3) ⁻21 + ⁺13 =
4) ⁺12 + ⁻5 =
5) ⁺8 + ⁻2 =
6) ⁺26 + ⁻18 =
7) ⁺52 + ⁻17 =
8) ⁻91 + ⁺24 =
9) ⁺9 + ⁻45 =
10) ⁺14 + ⁻27 =

Assessment

A. The following multiple-choice items are for you to answer. Some items use illustration for your reference. Choose the letters of the correct answers and write them on your answer sheet.

1) Which of the following addition sentences is TRUE?
   A. ⁻8 + ⁻4 = ⁺16   C. ⁻9 + ⁺3 = ⁻6
   B. ⁺7 + ⁻9 = +2   D. ⁺8 + ⁺9 = ⁺1

2) Using your counters, what is the value of N in ⁻8 + ⁺3 = N?
   A. ⁻11   B. ⁻5   C. ⁺5   D. ⁺11

3) What is the value of ⁻3 + ⁺3?
   A. ⁻6   B. ⁻3   C. 0   D. ⁺6

4) What is the value of the counters in the rectangle below?

   A. ⁻1   B. ⁻5   C. ⁺5   D. ⁺11

5) Using the number line below, what is the sum if positive 5 is added to negative 3?
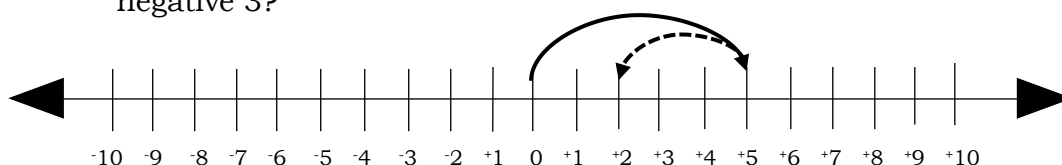
   A.⁻8   B. ⁻2   C. ⁺2   D. ⁺8

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B. Find each sum. Write your answers on your answer sheet.

6) $^+26 + {}^-5 =$

7) $^+56 + {}^-18 =$

8) $^-33 + {}^+15 =$

9) $^-67 + {}^+19 =$

10) $^-7 + {}^+29 \;=$

Additional Activities

A. Copy and complete the table on your answer sheet. Give the answer of the empty cells below by finding the sum of the number in the first row and the number in the first column.

+	$^-9$	$^-6$	$^-3$	0	$^+3$	$^+6$	$^+9$
$^+9$	0	$^+3$		■	■	$^+15$	
$^+6$	■	■	$^+3$	■	■		■
$^+3$	■	■		$^+3$		■	■
0	$^-9$	■		■	$^+3$	■	$^+9$
$^-3$		$^-9$	■	■	■		$^+6$
$^-6$	■	$^-12$	■		■	0	■
$^-9$	■		■	■	■	$^-3$	0

B. Read, analyze, and solve. Write the solutions on your answer sheet and label your final answers.

1) A bird flew 100 meters above the ground and then went 79 meters down. How far from the ground is the bird now?

2) Mirasol had ₱800.00. She spent ₱455.00 for her groceries. How much money does she have now?

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Answer Key

What I Know

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

B.
6) -2
7) -8
8) +6
9) -37
10) +23

What's In

1) +41
2) -45
3) +32
4) -67
5) +105

What's More

1) -5
2) +6
3) -24
4) -8
5) +24

What I Can Do

A.
1) +10
2) -15
3) -8
4) +7
5) +6
6) +8
7) +35
8) -67
9) -36
10) -13

Assessment

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

B.
1) +21
2) +38
3) -18
4) -48
5) +22

Additional Activities

A.

+	-6	-6	-3	0	+3	+6	+6
+9	0	+3	+6	■	■	+15	+18
+6	■	■	+3	■	■	+12	■
+3	■	■	0	+3	+6	■	■
0	-9	■	-3	0	+3	■	+9
-3	-12	-9	■	■	■	+3	+6
-6	■	-12	■	-6	■	0	■
-9	■	-15	■	■	■	-3	0

B.
1) +21 meters – bird's distance from the ground
2) +₱345.00 – Grace's amount of money left

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CO_Q2_Mathematics6_Module11

What I Know

A. Choose the letter of the correct answer. Write your answers on your answer sheet.

(Study the given facts below for items 1 to 3.)

> The temperature in Canada was $^+5°C$ in the morning. The temperature in the afternoon dropped to $^-8°C$. What was the temperature reading in the afternoon?

1) What is asked in the given problem above?
   A. The temperature reading in the afternoon.
   B. The temperature reading in the morning.
   C. The total temperature reading in Canada.
   D. The temperature reading.

2) What operation is needed to solve the problem?
   A. Multiplication   C. Addition and Division
   B. Addition   D. Subtraction and Multiplication

3) What will be the temperature reading in the afternoon?
   A. $^-13°C$ B. $^-3°C$ C. $^+3°C$ D. $^+13°C$

(For items 4 to 6.) Use number line to illustrate the given problem.

> On her dance rehearsal, Sivera moves 2 steps forward, 5 steps backward, 3 steps forward and another 4 steps forward. Find the total steps that Sivera moves from her original place?

4) What is asked in the given problem above?
   A. The total steps that Sivera moves from her original place.
   B. The total steps that she moves forward.
   C. The total steps that she moves backward.
   D. The steps that she moves altogether.

5) What operation is needed to solve the problem?
   A. Addition   C. Subtraction
   B. Division   D. Multiplication

6) What is the answer to the problem?
   A. $^+5$ B. $^+4$ C. $^+3$ D. 0

B. For items 7 to 10, read, analyze and solve the given problem below. Write your answers on your answer sheet.

> The cat sits on the branch of the tree which is 9 feet above the ground and then jumps 4 feet down. How far from the ground is the cat now?

Understand
7) What is asked in the problem?

    _____

8) What is/are the given facts?

    _____

Plan
9) What operation will be used?

    _____

Solve
10) Solution

    _____
    _____
    _____

Lesson 3 — Solving Routine and Non-Routine Problems Involving Addition of Integers

You already have the concept of integers in the previous lessons. The skills you have learned in adding integers will become more useful if you can apply these in solving word problems.

What's In

Find the sum of the integers below. Use any of the strategies you have learned from the previous lesson. Write your answers on your answer sheet.

1) $^+84 + {}^+21 =$

2) $^+52 + {}^+13 =$

3) $^-40 + {}^-23 =$

4) $^+36 + {}^-18 =$

5) $^-18 + {}^+9 =$

What's New

Read and analyze the problems below.

Problem No. 1

  Edna gets in the elevator on the ninth floor. The elevator goes down two floors and stops. It then continues to go down three more floors where Edna gets off. In what floor did she get off the elevator?

Problem No. 2

  Fourteen consecutive positive integers are given. The sum of the first seven positive integers is 161. What is the sum of the last seven positive integers?

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 What is It

What will you do to solve these problems? The following steps will surely help you. Let's try this one!

Problem No. 1

Edna gets in the elevator on the ninth floor. The elevator goes down two floors and stops. It then continues to go down three more floors where Edna gets off. In what floor did she get off the elevator?

Understand:

    1. What is asked?

        The floor number that Edna got off the elevator.

    2. What facts are given?

- ninth floor from the ground $^+9$ ← the floor that she gets in first
- two floors down which can be presented as $^-2$
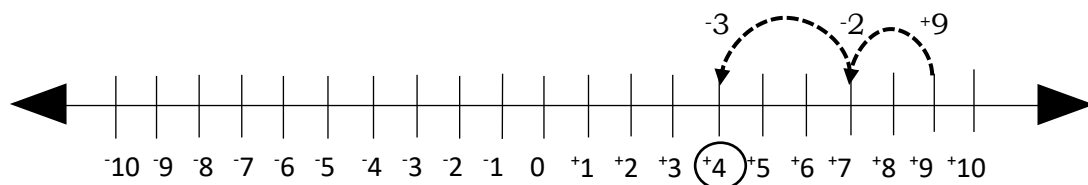- three more floors where she gets off means $^-3$

Plan: What operation will be used to solve the problem? Decide for a strategy.

Strategy: The problem can be solved using counters and a number line.
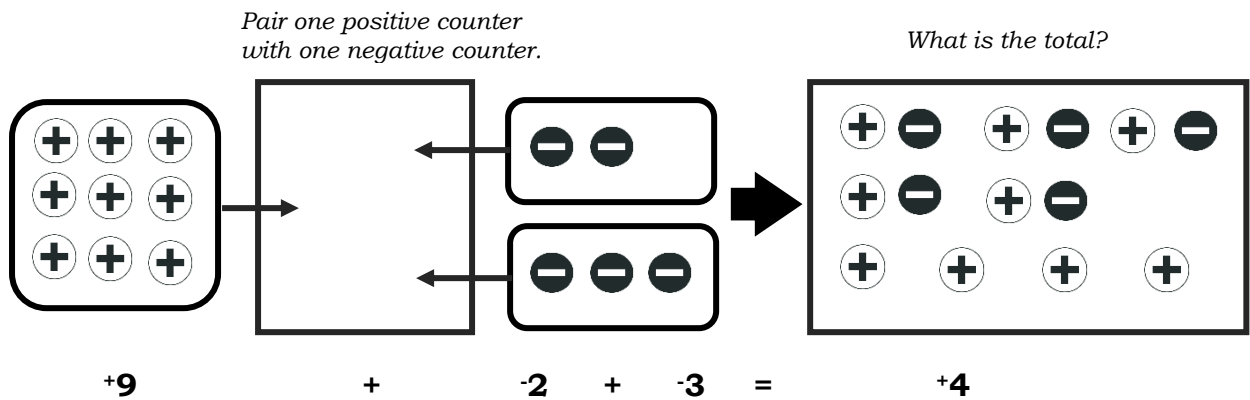
Solve: Show your solution.

Applying the strategy:

To solve for the floor that Edna gets off, refer to the number line below.

    Therefore, Edna is in the 4th floor now.

Another way to solve the problem is by using our counters.

Pair one positive counter with one negative counter.

What is the total?

$$^+9 \quad + \quad ^-2 \quad + \quad ^-3 \quad = \quad ^+4$$

Check: To check your answer, verify if the sum of the given integers is correct by doing this.

First $^+9 + ^-2 = ^+7.$ Then, $^+7 + ^-3 = ^+4.$

Thus, our answer is correct.

Problem No. 2

Fourteen consecutive positive integers are given. The sum of the first seven positive integers is 161. What is the sum of the last seven positive integers?

Understand:

1. What is asked?

The sum of the last seven positive integers.

2. What facts are given?

14 consecutive positive integers

161 – sum of the first seven positive integers

Plan: What operations will be used to solve the problem? Decide for a strategy.

*Strategy:* The problem can be solved using the Block Model Strategy.

Solve: Show your solution.

Applying the strategy:

Step 1: *Draw blocks to represent the first seven positive integers whose sum is 161. Observe the block models below representing the first seven consecutive positive integers. Knowing that the given positive integers are consecutive, it is understood that the second integer is 1 greater than the first integer. The third integer is 1 greater than the second integer. The fourth integer is also 1 greater than the third integer, so on and so forth until you reach the seventh integer.*
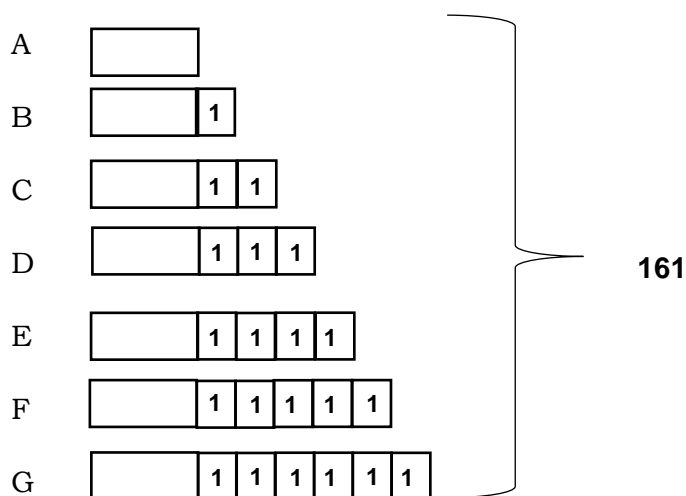
Step 2: *Notice that we have seven equal unknown units without value. The rest have values of 1. To get the value of each unknown unit, we have to take away all the 1's and subtract it from 161 which is the sum of the first seven integers.*

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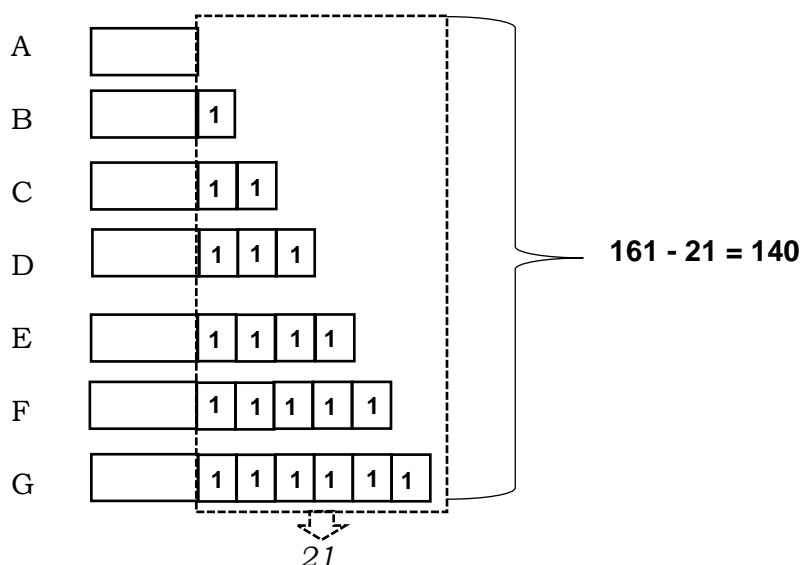
Step 3: *Based on the illustration, there are twenty-one 1's. So, if you subtract 21 from 161, the result is 140. Then, divide 140 by 7 equal unknown units. Therefore, each unknown unit is equal to 20.*
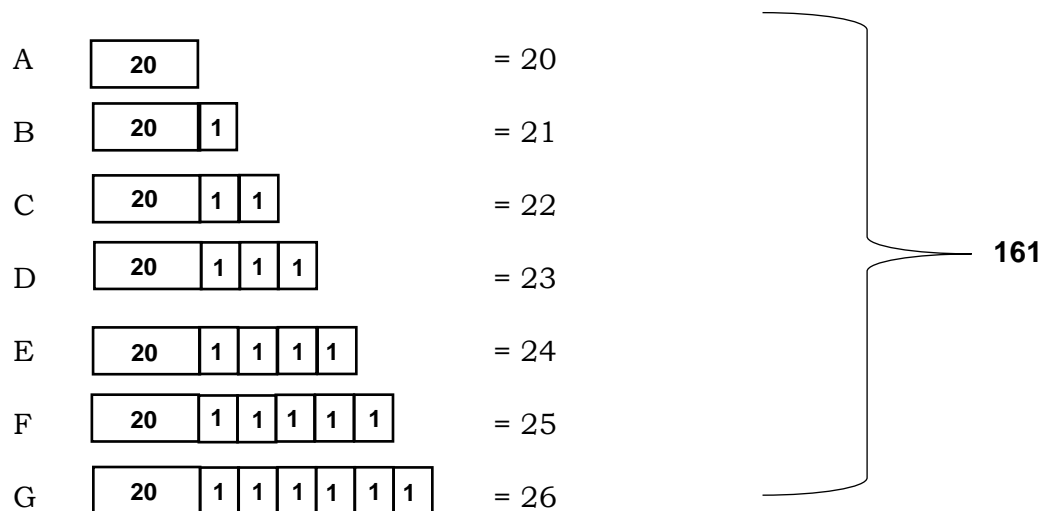
A

B   1

C   1   1

D   1   1   1   **161 − 21 = 140**

E   1   1   1   1   **140 ÷ 7 = 20**

F   1   1   1   1   1

G   1   1   1   1   1   1

7 unknown units
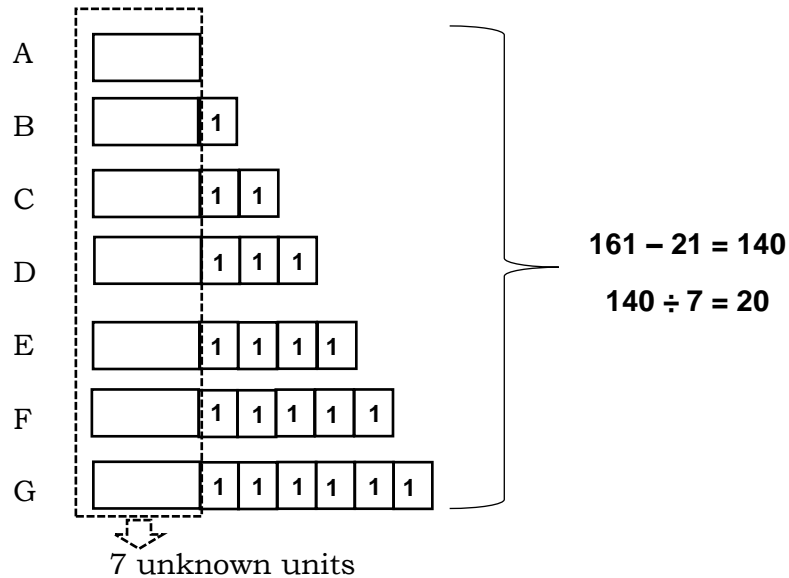
Step 4: *To get the value of every integer, it shows that the first integer is equal to 20. The second integer is 20 plus 1. The third integer is 20 plus 1, plus 1. The fourth integer is 20 plus 1, plus 1, plus 1, and, so on and so forth until the seventh integer.*

A   **20**   = 20

B   **20**   1   = 21

C   **20**   1   1   = 22

D   **20**   1   1   1   = 23   **161**

E   **20**   1   1   1   1   = 24

F   **20**   1   1   1   1   1 = 25

G   **20**   1   1   1   1   1   1 = 26

Now, you have the first seven integers which are 20, 21, 22, 23, 24, 25, and 26. You already have the first seven integers. However, you are looking for the sum of the last seven integers. Knowing that they are consecutive integers, so you could say that the next seven integers are 27, 28, 29, 30, 31, 32, and 33.

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Step 5: *To get the sum of the last seven integers, add 27, 28, 29, 30, 31, 32, and 33.*

27 + 28 + 29 + 30 + 31 + 32 + 33 = 210

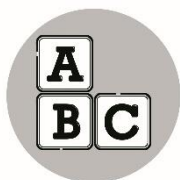*Therefore, the sum of the last seven integers is **210***

Check: To check your answer, verify if the sum of the first seven positive integers is equal to 161.

20 + 21 + 22 + 23 + 24 + 25 + 26 = 161

Then, what are the succeeding seven positive integers from the set of integers above?

27, 28, 29, 30, 31, 32, 33

Therefore, we are looking for the sum of the 27, 28, 29, 30, 31, 32, 33 which is 210.

What's More

Read, analyze and solve the problem. Write your solutions on your answer sheet and label the final answers.

> Dinah has an initial deposit of ₱2 535.00 in her bank account. In April, she deposited ₱5 639.00 and withdrawn ₱7 585.00 in May. Then in June, she deposited again ₱1 590.00. Is the initial deposit bigger that her ending balance? By how much? Express the difference as integer.

Understand
What is asked in the problem?

The difference of the initial deposit and her ending balance.
What facts are given?

₱2 535.00 – initial deposit   ₱5 639.00 deposited in April
₱7 585.00 – withdrawn in May   ₱1 590.00 deposited in June

Plan:
1) What operations will be used?

_____

2) What is the number sentence?

_____

Solve:
3)   Solution:

_____

Check:
4) _____

What I Have Learned

In solving routine problems involving addition of integers using appropriate strategies and tools we have the following steps:
  - ➢ Understand
  - ➢ Plan
  - ➢ Solve
  - ➢ Check

In solving non-routine problems, we apply different strategies:
  - ➢ Draw a diagram, Picture or Model
  - ➢ Find a Pattern
  - ➢ Make a Table or an Organized List
  - ➢ Work Backward
  - ➢ Simplify the Problem

What I Can Do

Read, analyze and solve. Write the solutions on your answer sheet and label your final answers.

1) Noel lost 2 kilograms when he was admitted in the hospital. After three months of recovery, he gained 6 kilograms. He enrolled to a fitness program and lost 3 kilograms. Did he finally loss or gain weight? By how much?

2) Last Monday, Nenebeth went to the department store to buy her laptop. She was on the eight floor when she decided to go to the tenth floor to pay her bills in the customer service center. She then went down eight floors, and went up three more floors. Where is she now?

3) At 8 a.m., the temperature in Baguio City was 12˚C. By 3 p.m., it had risen by 4˚C. What was the new temperature reading in Baguio City?

4) I owed ₱5 000.00 in my credit card. I paid ₱4 500.00 for my balance and then spent ₱3 250.00. How much is my standing balance?

5) Mrs. Lorena bought apples which cost ₱560.00 from a wholesaler and sold them in her fruit stand. On the first day, her sales was ₱420.00; and on the second day, ₱450.00. But on the third day, she lost ₱150.00 because some of the apples were already rotten. Considering the sales for three days, did Mrs. Lorena gain or loss? By how much?

Assessment

A. Choose the letter of the correct answer. Write your answers on your answer sheet.

(Study the given facts for items 1 to 3.)

> A frog fell in a 2-meter pit. Every day it struggles to climb 50 centimeters in the morning but it slides down by 20 centimeters at night. After how many days will the frog get out of the pit?

1) What is asked in the problem?
   A. How many days can the frog get out of the pit?
   B. What is the total distance that the frog climb in the morning?
   C. What is the total distance that the frog slides down at night?
   D. How many meter is the pit?

2) What operations will be used to solve the problem?
   A. Addition and Multiplication   C. Addition and Division
   B. Addition and Subtraction   D. Subtraction and Multiplication

3) After how many days will the frog get out of the pit?
   A. 6 days   B. 5 days   C. 4 days   D. 3 days

(For items 4 and 5.)

> The sum of three negative integers is -132. The largest negative is three times than the smallest negative integer. One of the integers is -36. Find the value of the largest negative integer.

4) What is asked in the given problem above?
   A. The sum of three negative integers.
   B. The value of the smallest negative integer.
   C. The value of the largest negative integer.
   D. The value of the second integer.

5) What is the value of the largest negative integer?
   A. -36   B. -44   C. -72   D. -132

B. For items 6 to 10, read, analyze and solve the given problem below. Write your answers on your answer sheet.

> A motorcycle is located 20 kilometers north of San Miguel. If it travelled 15 kilometers north then 25 kilometers south, how far from San Miguel was the motorcycle at the end of its travel.

Understand
    6) What is asked in the problem?

    _____

    7) What is/are the given facts?

    _____

Plan
    8) What operation to be used?

    _____

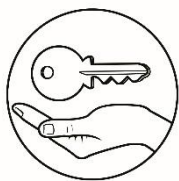   9) What is the number sentence?

    _____

Solve
    10) Solution

    _____

Additional Activities

Read, analyze, and solve. Write the solutions on your answer sheet and label your final answers.

1) A, B, and C are three positive integers. B and C is equal to 47. The difference of A and B is 4 where B is greater than A. The difference of B and C is 3 where C is greater than B. What is the sum of A and B?

2) A monkey sits on the twig of the tree that is 10 feet above the ground. He swings up 3 feet then jumps down 5 feet. How far off the ground is the monkey now?

3) Jeffrey drew 17 negative counters in a piece of paper. LJ drew more counters and they both noticed that the value of their drawing becomes zero. What counters did LJ draw?

4) Vanissa engaged in an online business to help support her family. On the first month, she gains ₱15 560.00, and ₱13 720.00 for the second month. But on the third and fourth month she losses ₱8 720.00 and ₱7 360.00 respectively. Did she gain or loss in her business? By how much?

5) Jose saved ₱3 665.00 from his daily allowance. He spent ₱ 230.00 to buy a pair of shorts and ₱250.00 to buy a shirt. How much of his money was left?

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Answer Key

What I Know	What's More	Assessment
What I Know	**What's More**	**Assessment**
A.	1) addition and subtraction	A.
1) A	2) N=[(P2 535.00 + P5 639.00) - P7 585.00] + P1 590.00	1) A
2) B	3) N=[(P2 535.00 + P5 639.00) - P7 585.00] + P1 590.00	2) B
3) B	Ending balance = Initial deposit – N	3) A
4) A	N=[(P8 174.00) - P7 585.00] + P1 590.00	4) C
5) A	N=[P585.00 + P1 590.00]	5) C
6) B	N=[(P589.00)] + P1 590.00	B.
B.	N=P2 179.00	6) The distance travelled by the motorcycle from San Miguel to the end of its travel.
7) The distance of the cat from the ground.	N=P2 179.00	7) 20 kilometers north of San Miguel, 15 kilometers, 25 kilometers
8) 9 feet above the ground and 4 feet down	N=P2 535.00 - P2 179.00	8) Addition
9) Addition	**N=P356.00**	9) N = -25 + +20 + +15 - -25
10) +6 + -4 = +5 feet from the ground	4) N=P356.00 + P2 179.00	10) N = -25 + +15 + +20 + +35 - -25
	N=P2 535.00	N = +10
What's In	**What I Can Do**	**Additional Activities**
1) +105	1) Noel losses 1 kilogram.	1) +40
2) +65	2) fifth floor	2) 8 feet above the ground
3) -63	3) +16°C	3) +17
4) +18	4) -P3 750.00	4) She gains P13 200.00
5) -6	5) Gains, P160.00	5) P3 185.00-money left

References

- DepEd Most Essential Learning Competencies (MELCs) in Mathematics for Grade 6
- Perez, M., Placer, D, Burgos, J., 2016, 21st Century Mathletes 6, Book Media Press, Inc., 152-157.