

Concept: Subtracting Integers

Name: _____

COMPUTER COMPONENT

Instructions:

In follow the **Content Menu** path:

Whole Numbers and Integers > Subtracting Integers



Work through all Sub Lessons of the following Lessons **in order**:

- *In This Topic*
- *Markers ...An Introduction to subtraction*
- *Elevators ...An Introduction to subtraction*
- *Summary ... Add the Opposite*
- *Example Questions*
- *Going for a Walk*
- *Word Problems*



As you work through the computer exercises, you will be prompted to make notes in your notebook/math journal.

SUMMARY

Note: ● = (+1) ○ = (-1)

1. Complete the chart below as you work through the computer portion of this section.

Example	Number Sentence	Marker Representation	Answer
1	$(+5) - (+3) =$	●●●●● - ●● =	+2
2	$(+6) - (+2) =$	●●●●●● - ●● =	+4
3	$(-4) - (-3) =$	○ ○ ○ ○ - ○ ○ ○ =	-1
4	$(-5) - (-2) =$	○ ○ ○ ○ ○ - ○ ○ =	-3
5	$(-5) - (+2) =$	○ ○ ○ ○ ○ - ● ● =	-7
6	$(-4) - (+2) =$	○ ○ ○ ○ - ● ● =	-6

7	$(+5) - (-1)$	●●●●● - ○ =	+ 6
8	$(+2) - (-3)$	●● - ○○○ =	+ 5

The Pattern:

When we are subtracting integers, we are simply adding the opposite of the original integer presented.

$$(+2) - (-5) \text{ becomes } (+2) + (+5) = +7$$

OFF COMPUTER EXERCISES

1. Fill in the blanks.


(a) When you add red and blue markers in order to get an answer of zero, you are using **zero** property.

(b) When subtracting integers, add the **opposite**.

2. Demonstrate your knowledge of subtracting integers by completing the chart below.

Note: ● = (+1) ○ = (-1)

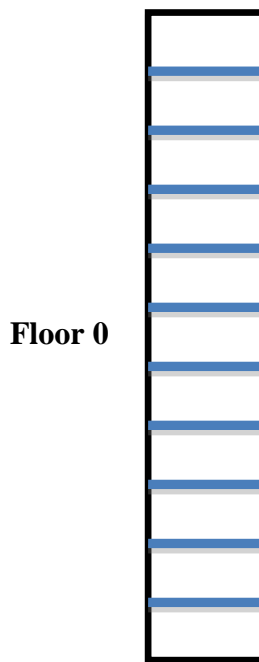
	Number Sentence	Marker Representation	Result
(a)	$(+2) - (-1) =$	●● - ○ =	+3
(b)	$(+5) - (-1) =$	●●●●● - ○ =	+6
(c)	$(+4) - (2) =$	●●●● - ○○ =	+6
(d)	$(-6) - (+2) =$	○○○○○○ - ●● =	-8
(e)	$(-2) - (-3) =$	○○ - ○○○ =	+1

(f)	$(-4) - (+5)$		-9
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3. Demonstrate your knowledge of subtracting integers by completing the ‘Elevator Travel’ table below. *The first one is done for you.*

Elevator Starts At:	Elevator Ends At:	Final – Initial Position:	Change In Height:
1	3	$(+3) - (+1) =$	+2
4	1	$(+1) - (+4) =$	-3
2	P1	$(-1) - (+2) =$	-3
P2	3	$(+3) - (-2) =$	+5
Ground Level	2	$(+2) - (0) =$	+2

Use this ‘Elevator’ Integer line to help you.



4. When we subtract integers, we **add** the opposite.

For the following:

- Fill in the missing integers.
- Finish answering the question.

$$\begin{aligned}
 \text{(a) } +6 - 9 + 2 &= (+6) - (+9) + (+2) \\
 &= (+6) + (-9) + (+2) \\
 &= -1
 \end{aligned}$$

$$\begin{aligned}
 \text{(b) } -8 - 3 + 2 &= (-8) - (+3) + (+2) \\
 &= (-8) + (-3) + (+2) \\
 &= -9
 \end{aligned}$$

5. Find the answer to these subtraction questions. You may use a number line to help you.

$$\begin{aligned}
 \text{(a) } (-3) - (-1) &= \mathbf{(-3) + (+1)} \\
 &= \mathbf{-2}
 \end{aligned}$$

$$\begin{aligned}
 \text{(b) } (-4) - (+1) &= \mathbf{(-4) + (-1)} \\
 &= \mathbf{-5}
 \end{aligned}$$

$$\begin{aligned}
 \text{(c) } (-4) - (+3) &= \mathbf{(-4) + (-3)} \\
 &= \mathbf{-7}
 \end{aligned}$$

$$\begin{aligned}
 \text{(d) } (-2) - (+4) &= \mathbf{(-2) + (-4)} \\
 &= \mathbf{-6}
 \end{aligned}$$

$$\begin{aligned}
 \text{(e) } (-1) - (+1) &= \mathbf{(-1) + (-1)} \\
 &= \mathbf{-2}
 \end{aligned}$$

$$\begin{aligned}
 \text{(f) } (+5) - (-2) &= \mathbf{(+5) + (+2)} \\
 &= \mathbf{7}
 \end{aligned}$$

$$\begin{aligned}
 \text{(g) } (+3) - (-1) &= \mathbf{(+3) + (+1)} \\
 &= \mathbf{4}
 \end{aligned}$$

$$\begin{aligned}
 \text{(h) } (-3) - (-2) &= \mathbf{(-3) + (+2)} \\
 &= \mathbf{-1}
 \end{aligned}$$

6. During a severe thunderstorm, the tree in your front yard lost the top 2m of its trunk. If the tree trunk was originally 15m tall, how tall is the trunk now? *Use integers to answer this question.*

$$\begin{aligned}
 (+15) - (+2) &= (+15) + (-2) \\
 &= \mathbf{13 \text{ m}} \quad \text{The trunk is 13m now.}
 \end{aligned}$$

7. Find the answer for each question. Remember to **add** the opposite.

$$\begin{aligned}
 \text{(a) } (-1) - (+7) &= \mathbf{(-1) + (-7)} \\
 &= \mathbf{-8}
 \end{aligned}$$

$$\begin{aligned}
 \text{(b) } 0 - (-10) &= \mathbf{0 + (+10)} \\
 &= \mathbf{+10}
 \end{aligned}$$

$$\begin{aligned}
 \text{(c) } (+3) - (-2) &= \mathbf{(+3) + (+2)} \\
 &= \mathbf{5}
 \end{aligned}$$

$$\begin{aligned}
 \text{(d) } (+5) - (+3) &= \mathbf{(+5) + (-3)} \\
 &= \mathbf{+2}
 \end{aligned}$$

$$\begin{aligned} \text{(e)} \quad (+2) - (-9) - (+18) &= (+2) + (+9) + (-18) \\ &= -7 \end{aligned}$$

$$\begin{aligned} \text{(f)} \quad (+5) - (+6) - (+3) &= (+5) + (-6) + (-3) \\ &= -4 \end{aligned}$$

$$\begin{aligned} \text{(g)} \quad (-7) - (-7) - (-3) &= (-7) + (+7) + (+3) \\ &= +3 \end{aligned}$$

$$\begin{aligned} \text{(h)} \quad (+8) - (-9) - (+4) &= (+8) + (+9) + (-4) \\ &= +13 \end{aligned}$$

$$\begin{aligned} \text{(i)} \quad (-5) - (-3) - (+2) - (+10) &= (-5) + (+3) + (-2) + (-10) \\ &= -14 \end{aligned}$$

$$\begin{aligned} \text{(j)} \quad (-6) - (-2) - (-8) - (+2) &= (-6) + (+2) + (+8) + (-2) \\ &= +2 \end{aligned}$$

8. Sometimes expressions are written without brackets. For these types of expressions, we can do the following:

$$\begin{aligned} 4 - 8 + 5 &= (+4) - (+8) + (+5) \\ &= (+4) + (-8) + (+5) \\ &= +1 \quad \rightarrow \text{ which can also be written as } 1 \end{aligned}$$

You try.

$$\begin{aligned} \text{(a)} \quad 5 - 9 + 4 &= (+5) - (+9) + (+4) & \text{(b)} \quad -1 + 3 - 5 + 7 &= (-1) + (+3) - (+5) + (+7) \\ &= (+5) + (-9) + (+4) & &= (-1) + (+3) + (-5) + (+7) \\ &= 0 & &= +4 \end{aligned}$$

$$\begin{aligned} \text{(c)} \quad -5 + 10 - 8 + 15 - 4 &= (-5) + (+10) - (+8) + (+15) - (+4) \\ &= (-5) + (+10) + (-8) + (+15) + (-4) \\ &= +8 \end{aligned}$$

$$\begin{aligned} \text{(d)} \quad 14 - 6 + 2 - 1 + 6 - 10 &= (+14) - (+6) + (+2) - (+1) + (+6) - (+10) \\ &= (+14) + (-6) + (+2) + (-1) + (+6) + (-10) \\ &= +5 \end{aligned}$$