CHAPTER 2 INTEGERS

Section 2.1

TERMINOLOGY 2.1

For each of the following terms, provide 1) a definition in your own words, 2) the formal definition (as provided by your text or instructor), and 3) an example of the term using a drawing or problem. A sample filled-out form is available in the Introduction.

Whole Number

Your definition	
Formal definition	
Example	

Integer

Your definition	
Formal definition	
Example	

Number Line

Your definition	
Formal definition	
Example	

Opposites

Your definition	
Formal definition	
Example	

Absolute Value

Your definition	
Formal definition	
Example	

Inequality

Your definition	
Formal definition	
Example	

READING AND SELF-DISCOVERY QUESTIONS 2.1

1. How do you know if a given number is positive or negative?

   A negative number is preceded by a negative (–) sign. Otherwise, the number is a positive number.

2. What is a number line? How would you illustrate a number line for someone?

A number line represents the real numbers from minus infinity to positive infinity. Often, only a portion of the line is used.

3. How do you define the term *integer*? Describe some numbers that are **not** integers.

Integers are the set of numbers that include whole numbers, the negation of the whole numbers, and zero, but not numbers like .5, 1/3, π or $\sqrt{2}$.

4. List the symbols your textbook uses to compare any two integers.

>, <, or =

5. How do you represent an absolute value? When should you use this concept?

| a | Use absolute values for the positive value of any number such as distance.

CRITICAL THINKING QUESTIONS 2.1

1. How do signed numbers differ from integers?

Signed numbers are a subset of real numbers of which integers are also a subset. Some signed numbers are integers like –3, but there are also signed numbers that are not integers like –1.2.

2. How are integers related to decimals and fractions?

Integers are a subset of decimals and fractions. Fractions use integers for the numerators and denominators, as long as the denominator is not zero.

3. Why don't we use the word *opposite* in the definition of absolute value? Give an example.

The absolute value of 9 is equal to 9, which has nothing to do with opposites. The distance a point is from zero on the number line can be in either direction from zero. The absolute value of a number is the distance from zero, while the negative of the number is a number on the number line that is the same distance from zero, but on the other side of zero.

4. Does the commutative property apply to division? Why or why not? Give examples.

The commutative property does not apply to division. Example: 1 divided by 2 is ½ while 2 divided by 1 is 2.

DEMONSTRATE YOUR UNDERSTANDING 2.1

1. Answer the following questions. Show your work.

Problem	Work
Is $\|7 - 9\|$ equal to $\|7\| - \|9\|$?	$\|7 - 9\| = \|-2\| = \mathbf{2}$ $\|7\| - \|9\| = 7 - 9 = \mathbf{-2}$ **No, they are not equal.**
Is $\|9 - 7\|$ equal to $\|9\| - \|7\|$?	$\|9 - 7\| = \|2\| = \mathbf{2}$ $\|9\| - \|7\| = 9 - 7 = \mathbf{2}$ **Yes, they are equal.**

IDENTIFY AND CORRECT THE ERROR 2.1

In the second column, identify the error(s) you find in the following worked solution and describe the error made. Solve the problem correctly in the third column.

Problem	Describe Error	Correct Process
Calculate: $-(-4) + \|-7\|$ **Worked Solution** *(What is wrong here?)* $-(-4) + \|-7\|$ $4 + -7$ $\mathbf{-3}$	**The student has added –7, not the absolute value of –7, which is 7.** $\|-7\| \neq -7$ $4 + -7$ **is not correct notation**	$-(-4) + \|-7\|$ $= 4 + (7)$ $= 4 + 7$ 11