Lesson 8: Ordering Integers and Other Rational Numbers

Classwork

Example 1: Ordering Rational Numbers from Least to Greatest

Sam has $10 in the bank. He owes his friend Hank $2.25. He owes his sister $1.75. Consider the three rational numbers related to this story of Sam's money. Write and order them from least to greatest.

Exercises 2–4

For each problem, list the rational numbers that relate to each situation. Then, order them from least to greatest, and explain how you made your determination.

2. During their most recent visit to the optometrist (eye doctor), Kadijsha and her sister, Beth, had their vision tested. Kadijsha's vision in her left eye was -1.50, and her vision in her right eye was the opposite number. Beth's vision was -1.00 in her left eye and $+0.25$ in her right eye.

3. There are three pieces of mail in Ms. Thomas's mailbox: a bill from the phone company for $38.12, a bill from the electric company for $67.55, and a tax refund check for $25.89. (A bill is money that you owe, and a tax refund check is money that you receive.)

4. Monica, Jack, and Destiny measured their arm lengths for an experiment in science class. They compared their arm lengths to a standard length of 22 inches. The listing below shows, in inches, how each student's arm length compares to 22 inches.

Monica: $-\dfrac{1}{8}$

Jack: $1\dfrac{3}{4}$

Destiny: $-\dfrac{1}{2}$

Example 2: Ordering Rational Numbers from Greatest to Least

Jason is entering college and has opened a checking account, which he will use for college expenses. His parents gave him $200 to deposit into the account. Jason wrote a check for $85.00 to pay for his calculus book and a check for $25.34 to pay for miscellaneous school supplies. Write the three rational numbers related to the balance in Jason's checking account in order from greatest to least.

Exercises

For each problem, list the rational numbers that relate to each situation in order from greatest to least. Explain how you arrived at the order.

5. The following are the current monthly bills that Mr. McGraw must pay:

$122.00 Cable and Internet

$73.45 Gas and Electric

$45.00 Cell Phone

6. $-\dfrac{1}{3},\ 0,\ -\dfrac{1}{5},\ \dfrac{1}{8}.$

> **Lesson Summary**
>
> When we order rational numbers, their opposites will be in the opposite order. For example, if 7 is greater than 5, -7 is less than -5.

Problem Set

1.
   a. In the table below, list each set of rational numbers from greatest to least. Then, in the appropriate column, state which number was farthest right and which number was farthest left on the number line.

Column 1	Column 2	Column 3	Column 4
Rational Numbers	**Ordered from Greatest to Least**	**Farthest Right on the Number Line**	**Farthest Left on the Number Line**
$-1.75,\ -3.25$			
$-9.7,\ -9$			
$\frac{4}{5},\ 0$			
$-70,\ -70\frac{4}{5}$			
$-15,\ -5$			
$\frac{1}{2},\ -2$			
$-99,\ -100,\ -99.3$			
$0.05,\ 0.5$			
$0,\ -\frac{3}{4},\ -\frac{1}{4}$			
$-0.02,\ -0.04$			

   b. For each row, describe the relationship between the number in Column 3 and its order in Column 2. Why is this?
   c. For each row, describe the relationship between the number in Column 4 and its order in Column 2. Why is this?

2. If two rational numbers, a and b, are ordered such that a is less than b, then what must be true about the order for their opposites: $-a$ and $-b$?

3. Read each statement, and then write a statement relating the *opposites* of each of the given numbers:

   a. 7 is greater than 6.

   b. 39.2 is greater than 30.

   c. $-\dfrac{1}{5}$ is less than $\dfrac{1}{3}$.

4. Order the following from least to greatest: $-8,\ -19,\ 0,\ \dfrac{1}{2},\ \dfrac{1}{4}$.

5. Order the following from greatest to least: $-12,\ 12,\ -19,\ 1\dfrac{1}{2},\ 5$.