# Ordering Integers and Other Rational Numbers

Order the following set of rational numbers from least to greatest, and explain how you determined the order.

$$-3,\ 0,\ -\frac{1}{2},\ 1,\ -3\frac{1}{3},\ 6,\ 5,\ -1,\ \frac{21}{5},\ 4$$

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** |
| $-1.75,\ -3.25$ | | | |
| $-9.7,\ -9$ | | | |
| $\dfrac{4}{5},\ 0$ | | | |
| $-70,\ -70\dfrac{4}{5}$ | | | |
| $-15,\ -5$ | | | |
| $\dfrac{1}{2},\ -2$ | | | |
| $-99,\ -100,\ -99.3$ | | | |
| $0.05,\ 0.5$ | | | |
| $0,\ -\dfrac{3}{4},\ -\dfrac{1}{4}$ | | | |
| $-0.02,\ -0.04$ | | | |

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

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

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

Order the following set of rational numbers from least to greatest, and explain how you determined their order.

$$-3, 0, -\frac{1}{2}, 1, -3\frac{1}{3}, 6, 5, -1, \frac{21}{5}, 4$$
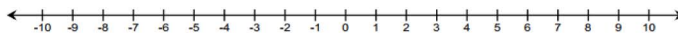


$$-3\frac{1}{3}, -3, -1, -\frac{1}{2}, 0, 1, 4, \frac{21}{5}, 5, 6$$

*I drew a number line and started at zero.  I located the positive numbers to the right and their opposites (the negative numbers) to the left of zero.  The positive integers listed in order from left to right are $1, 4, 5, 6$.  And since $\frac{21}{5}$ is equal to $4\frac{1}{5}$, I know that it is $\frac{1}{5}$ more than 4 but less than 5.  Therefore, I arrived at $0, 1, 4, \frac{21}{5}, 5, 6$.  Next, I ordered the negative numbers.  Since $-1$ and $-3$ are the opposites of 1 and 3, they are 1 unit and 3 units from zero but to the left of zero.  And $-3\frac{1}{3}$ is even farther left, since it is $3\frac{1}{3}$ units to the left of zero.  The smallest number is farthest to the left, so I arrived at the following order:  $-3\frac{1}{3}, -3, -1, -\frac{1}{2}, 0, 1, 4, \frac{21}{5}, 5, 6$.*

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

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

    *The number in Column 3 is the first number listed in Column 2. Since it is farthest right on the number line, it will be the greatest; therefore, it comes first when ordering the numbers from greatest to least.*

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

    *The number in Column 4 is the last number listed in Column 2. Since it is farthest left on the number line, it will be the smallest; therefore, so it comes last when ordering the numbers from greatest to least.*

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 $-b$?**

 *The order will be reversed for the opposites which means $-a$ is greater than $-b$.*

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

 a. **7 is greater than 6.**

  *$-7$ is less than $-6$.*

 b. **$39.2$ is greater than 30.**

  *$-39.2$ is less than $-30$.*

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

  *$\dfrac{1}{5}$ is greater than $-\dfrac{1}{3}$.*

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

 *$-19,\ -8,\ 0, \dfrac{1}{4}, \dfrac{1}{2}$*

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

 *$12,\ 5,\ 1\dfrac{1}{2},\ -12,\ -19$*