

Name _____

Date _____

Ordering Integers and Other Rational Numbers

In math class, Christina and Brett are debating the relationship between two rational numbers. Read their claims below, and then write an explanation of who is correct. Use a number line model to support your answer.

Christina's Claim: "I know that 3 is greater than $2\frac{1}{2}$. So, -3 must be greater than $-2\frac{1}{2}$."

Brett's Claim: "Yes, 3 is greater than $2\frac{1}{2}$, but when you look at their opposites, their order will be opposite. So that means $-2\frac{1}{2}$ is greater than -3 ."

1. In the table below, list each set of rational numbers in order from least to greatest. Then list their opposites. Then list the opposites in order from least to greatest. The first example has been completed for you.

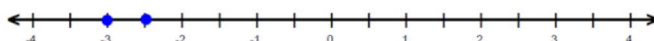
| Rational Numbers | Ordered from Least to Greatest | Opposites | Opposites Ordered from Least to Greatest |
|-----------------------------|--------------------------------|-----------|--|
| -7.1, -7.25 | -7.25, -7.1 | 7.25, 7.1 | 7.1, 7.25 |
| $\frac{1}{4}, -\frac{1}{2}$ | | | |
| 2, -10 | | | |
| 0, $3\frac{1}{2}$ | | | |
| -5, -5.6 | | | |
| $24\frac{1}{2}, 24$ | | | |
| -99.9, -100 | | | |
| -0.05, -0.5 | | | |
| -0.7, 0 | | | |
| 100.02, 100.04 | | | |

2. For each row, what pattern do you notice between the numbers in the second and fourth columns? Why is this so?

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Christina's Claim: "I know that 3 is greater than $2\frac{1}{2}$. So, -3 must be greater than $-2\frac{1}{2}$."

Brett's Claim: "Yes, 3 is greater than $2\frac{1}{2}$, but when you look at their opposites, their order will be opposite. So that means $-2\frac{1}{2}$ is greater than -3 ."



Brett is correct. I graphed the numbers on the number line, and -3 is to the left of $-2\frac{1}{2}$. The numbers increase as you move to the right, so $-2\frac{1}{2}$ is greater than -3 .

1. In the table below, list each set of rational numbers in order from least to greatest. Then list their opposites. Then list the opposites in order from least to greatest. The first example has been completed for you.

| Rational Numbers | Ordered from Least to Greatest | Opposites | Opposites Ordered from Least to Greatest |
|-----------------------------|--------------------------------|-----------------------------|--|
| $-7.1, -7.25$ | $-7.25, -7.1$ | $7.25, 7.1$ | $7.1, 7.25$ |
| $\frac{1}{4}, -\frac{1}{2}$ | $-\frac{1}{2}, \frac{1}{4}$ | $\frac{1}{2}, -\frac{1}{4}$ | $-\frac{1}{4}, \frac{1}{2}$ |
| $2, -10$ | $-10, 2$ | $10, -2$ | $-2, 10$ |
| $0, 3\frac{1}{2}$ | $0, 3\frac{1}{2}$ | $0, -3\frac{1}{2}$ | $-3\frac{1}{2}, 0$ |
| $-5, -5.6$ | $-5.6, -5$ | $5.6, 5$ | $5, 5.6$ |
| $24\frac{1}{2}, 24$ | $24, 24\frac{1}{2}$ | $-24, -24\frac{1}{2}$ | $-24\frac{1}{2}, -24$ |
| $-99.9, -100$ | $-100, -99.9$ | $100, 99.9$ | $99.9, 100$ |
| $-0.05, -0.5$ | $-0.5, -0.05$ | $0.5, 0.05$ | $0.05, 0.5$ |
| $-0.7, 0$ | $-0.7, 0$ | $0.7, 0$ | $0, 0.7$ |
| $100.02, 100.04$ | $100.02, 100.04$ | $-100.02, -100.04$ | $-100.04, -100.02$ |

2. For each row, what pattern do you notice between the numbers in the second and fourth columns? Why is this so?

For each row, the numbers in the second and fourth columns are opposites, and their order is opposite. This is because on the number line, as you move to the right, numbers increase. But as you move to the left, the numbers decrease. So, when comparing 5 and 10, 10 is to the right of 5; therefore, 10 is greater than 5. However, -10 is to the left of -5 ; therefore, -10 is less than -5 .