

Lesson: Compare and order rational and negative rational numbers/Add, Subtract, Multiply and Divide Decimals

Sixth Grade Objective:

- 1.01 Develop number sense for negative rational numbers b) compare and order
- 1.03 Compare and order rational numbers
- 1.04 Develop fluency in addition, subtraction, multiplication and division of nonnegative rational numbers.

Lesson:

We are going to arrange rational numbers (numbers that are not a whole) and negative rational numbers (numbers below zero that are not a whole) in increasing or decreasing order.

For example:

Examine the list of numbers. Order them in increasing order (least to greatest).

0.023 0.5 .0004 .32 0.2224

Step 1: Make sure they are the same. We know they are all decimals.

Step 2: Write the decimals so that they are lined up. You may need to add zeros to plug in the empty place values.

For example:

0.0230
0.5000
0.0004
0.3200
0.2224

The numbers highlighted in green are the added zeros.

Step 3: Now compare the ones place. All zeros. Go to the tenths place. You see a 0, 5, 0, 3 and 2. Which is smallest? Yes, the two zeros. You can't tell which is smaller just by looking at the tenths place so we now look at the hundredths place of 0.023 and 0.0004. You will see a 2 and 0. Which is smaller? That is correct the 0, so you know that 0.0004 is smaller than 0.023. We are now finished with those two numbers. Go back to the tenths place and ask yourself which is smaller 5, 3 or the 2? Yes, the two so you know that the next number is 0.224. Ask you self again which is smaller 5 or 3, and yes the three is smaller so the next number is 0.32 and the last number is 0.5.

Step 4: Write the numbers from least to greatest as they appeared in the problem (without the added zeros).

.00004
0.023
0.2224
.32

0.5

You can even write the answer with the decimals lined up to make sure they are in increasing order!

Lesson:

Examine the next list of numbers. Arrange them in decreasing order.

0.25 $\frac{2}{5}$ -0.23 35% 56

What is different between the first list and this one? That is correct! They are not the same. You see a decimal, fraction, negative rational number, percent and even a whole number.

The directions are even different – This time we must put them in decreasing order (greatest to least).

Step1: Since the numbers are all different, we must first decide what to convert them to so we can compare them easily. We already learned how to compare decimals so that is what we are going to do. Please take the time to do this step to ensure that your answer is correct.

Before we convert anything let's think logically. Examine the list of numbers and ask yourself, what do you know about negative rational numbers versus positive rational numbers? That is correct, they are always smaller. So we know that the smallest number is -0.23 and will be last in our list.

The other numbers we will need to convert to decimals.

0.25 $\frac{2}{5} = 0.40$ -0.23 35% = 0.35 56 = 56.00

Step 3: Line up the decimals to determine the largest to the smallest.

0.25 Compare the decimals and you will see that 56 is the largest then
0.40, 0.35 and 0.25.

0.40
0.35
56.00

Step 4: Write the numbers in decreasing order but you must use the original problem!
Do not forget the -0.23 .

Answer: $-0.23, 56, \frac{2}{5}, 35\%, 0.25$

Try these on your own!

Which is smaller?

1. 0.7 or $\frac{3}{5}$ 2. -0.002 or 0.002 3. 45% or $\frac{4}{5}$

Arrange in increasing order.

4. 67% $\frac{1}{2}$ 0.86 $-\frac{1}{3}$

5. -100% 0.00087 $\frac{6}{7}$

Check your answers

1. $\frac{3}{5}$ is smaller because it is equivalent to $.30$ 2. -0.002 is smaller because
negative is always smaller than positive

3. 45% because $\frac{4}{5}$ is equivalent to 80%

4. $-\frac{1}{3}, \frac{1}{2}, 67\%, 0.86$ Think logically! Negative is smallest, $\frac{1}{2}$ of a dollar is 50 cents,
 67% is equal to 0.67 and last is 0.86 .

5. $-100\%, 0.00087, \frac{6}{7} = 0.86$ (rounded to the nearest hundredths place)

Quiz Yourself

A. What is the difference between increasing and decreasing?

B. Arrange in increasing order.

$$\frac{3}{4}, -.4678, -\frac{2}{7}, 7.345$$

C. Arrange in decreasing order.

$$-.34, -.25, -4.5, -\frac{2}{3}$$

Extra Practice!

http://www.internet4classrooms.com/skills_5th_original.htm

Click on any of the math skills that you need to practice!

Check Your Answers

A. The difference is that increasing is going up and decreasing is going down.

B. $-\frac{2}{7}, -.4678, \frac{3}{4}, 7.345$

To determine the correct answer convert $-\frac{2}{7}$ to a decimal. (0.29 – rounded to the nearest hundredths). If you still have difficulty converting fractions to decimals use a calculator. Type 2 divided by 7 in the calculator and it will give you the decimal.

You should already know $\frac{3}{4}$ because it is 0.75 or three quarters out of four!

C. In this problem you will notice they are all negative. Remember the closer to the zero the larger the number.

$$-.25, -.34, -\frac{2}{3}, -4.5$$