

# Ordering Numbers

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**Reporting Category** Number and Number Sense

**Topic** Comparing and ordering numbers

**Primary SOL** 8.1b The student will compare and order decimals, fractions, percents, and numbers written in scientific notation.

## Materials

- Ordering Numbers Cards (attached)
- Student whiteboards and markers
- Sticky notes

## Vocabulary

*least, greatest, less than, greater than, convert, fraction, decimal, percent, scientific notation*  
(earlier grades)

## Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Distribute whiteboards and markers. Have five students come to the front, and give each of them one of the Ordering Numbers Cards. Have them write their numbers on their whiteboards and convert the numbers to decimal form, if they are not already in that form. Then, direct the five students to line up in the order of their numbers from smallest to largest, displaying their numbers.
2. Hold a discussion about how to order numbers and the need to convert numbers to the same form before ordering them. Emphasize that when ordering, numbers should be compared in pairs to decide which number is larger and which is smaller.
3. Repeat this process with different groups of five students and different sets of numbers so that all students have a chance to participate in the ordering process.
4. Next, give each student five sticky notes, and instruct them to fold each note in half horizontally. Display a list of five numbers not in decimal form, and have students copy them on the top halves of their sticky notes, one number per note. Direct students to convert the numbers to decimal form, write the converted numbers on the bottom halves of their notes, and order the converted numbers from smallest to largest. Then, have students unfold the notes so they can see the original forms of the numbers now placed in order. Review the conversion and ordering of the five numbers with the class, discussing to which form—decimal, fraction, percent, or scientific notation—it is easiest to convert a number, and checking the ordering of the numbers.
5. To close, give each student an Ordering Numbers Card, and have the entire class order the numbers from smallest to largest. Check students' results by checking all conversions and the ordering of the converted numbers. Have students make corrections, as needed.

### Assessment

- **Questions**

- How would you order the following numbers from smallest to largest?

$$0.25 \quad \frac{2}{5} \quad 2.5 \times 10^{-3} \quad 2.5\%$$

- Which of the following is larger:  $4.5 \times 10^1$  or 45%? How do you know?

- **Journal/Writing Prompts**

- Explain how you would go about ordering five different numbers from largest to smallest.
- Describe the steps you would use to order the following numbers from smallest to

$$\text{largest: } \frac{1}{3} \quad 1.3\% \quad 3 \times 10^0 \quad 0.13.$$

### Extensions and Connections (for all students)

- Display on a number line the numbers the class ordered, and refer back to the different types of numbers when discussing the real number system.
- As students make conversions, relate the decimal form of numbers to amounts of money to help them understand how smaller and larger numbers are similar to lesser and greater quantities.

### Strategies for Differentiation

- Have students complete a preparatory activity on scientific notation and all conversions so students are ready to compare and order numbers.
- Provide students with a number line so they can write numbers on it or attach sticky notes to it to assist them with ordering.
- Have students arrange decimal numbers vertically in order to line up and compare their various place values.

## Ordering Numbers Cards

Copy cards on cardstock, and cut out.

$6 \times 10^{-3}$	$\frac{1}{4}$	1.34	20%
$4.2 \times 10^1$	$\frac{5}{3}$	2.5	2%
$3.3 \times 10^0$	$\frac{3}{10}$	0.33	0.5%
$1.2 \times 10^3$	$\frac{2}{3}$	0.45	1.1%
$6 \times 10^{-4}$	$\frac{6}{7}$	0.923	3.5%