Compare and Order Rational Numbers
Vocabulary:

- **Rational Number**: a number that can be expressed as a ratio of two integers written as a fraction in which the denominator is not zero

- **Common Denominator**: a common multiple of the denominators of two or more fractions

- **Least Common Denominator (LCD)**: the least common multiple (LCM) of the denominators
COMPARING RATIONAL NUMBERS:

- **Method #1:** Use a number line.

**Example:**

a. Use the number line to compare $-5\frac{5}{9}$ and $-5\frac{1}{9}$.

Since $-5\frac{1}{9}$ is further right on the number line, then $-5\frac{5}{9} < -5\frac{1}{9}$.
**Method #2:** Compare the numerators if you have common denominators.

**Examples:** Fill in the circle with <, >, or = to make the statement true.

a) \(-3 \frac{3}{8}\) [>] \(-3 \frac{7}{8}\)  Since they both have the same whole number and denominator, compare the numerators (-3 and -7).

b) \(1 \frac{1}{6}\) [<] \(1 \frac{5}{6}\)  Since they both have the same whole number and denominator, compare the numerators (1 and 5).
**Method #3:** Find a common denominator and then compare the numerators.

**Example:** Fill in the ○ with <, >, or = to make the statement true.

\[
\begin{align*}
\frac{7}{12} & \quad \bigcirc \quad \frac{5}{9} \\
\frac{7}{12} \times 3 & = \frac{21}{36} \\
\frac{5}{9} \times 4 & = \frac{20}{36}
\end{align*}
\]

a) Find the LCD.

b) Compare the numerators.

Since \[\frac{21}{36} > \frac{20}{36}\], \[\frac{7}{12} > \frac{5}{9}\]
Compare using $<, >,$ or $=$

a) \( \frac{5}{6} \) and \( \frac{7}{9} \)

b) \( \frac{1}{5} \) and \( \frac{7}{50} \)

c) \( -\frac{9}{16} \) and \( -\frac{7}{10} \)

\[
\begin{align*}
\text{a) } & \quad > \\
\text{b) } & \quad > \\
\text{c) } & \quad >
\end{align*}
\]
Order the set from least to greatest.

\{23\%, 0.21, \frac{1}{4}, \frac{1}{5}\}

a) Change each rational number to decimal form:

\[
23\% = 0.23 \\
\frac{1}{4} = 1 \div 4 = 0.25 \\
\frac{1}{5} = 1 \div 5 = 0.2
\]

b) Line up the decimal points of each number. Use place value to compare and order the decimals:

0.23
0.21
0.25
0.20

\rightarrow

0.2, 0.21, 0.23, 0.25

c) Write the answer using the original form:

\frac{1}{5}, 0.21, 23\%, \frac{1}{4}
Example

Nolan is the quarterback on the football team. He completed 67% of his passes in the first game. He completed 0.64, \(\frac{3}{5}\), and 69% of his passes in the next three games. List Nolan’s completed passing numbers from least to greatest.

Express each number as a decimal and then compare.

67% = 0.67 \hspace{1cm} 0.64 = 64\% \hspace{1cm} \frac{3}{5} = 0.6 \hspace{1cm} 69\% = 0.69

Nolan’s completed passing numbers from least to greatest are \(\frac{3}{5}\), 0.64, 67%, and 69%.
Homework:

Pg. 275-276 #1-14 (all)
Pg. 278 #24-32 (evens)