

Unit 2: Working With Rational Numbers**2.1 Comparing & Ordering Rationals**

Recall...

Rational: A number that can be expressed as $\frac{a}{b}$ where a and b are integers and $b \neq 0$ ie. can be written as a fraction

ex. -4 , 3.5 , $-\frac{1}{2}$, $1\frac{3}{4}$, $5.\overline{7}$

❖ How to write a negative rational

$$\boxed{-\frac{3}{4} = \frac{-3}{4}} = \frac{3}{-4} \neq \frac{-3}{-4} = \frac{3}{4}$$

preferred forms

❖ Opposite numbers

Ex. State the opposite of each value:

 -5 5 1 -1 $\frac{3}{4}$ $-\frac{3}{4}$

❖ Fraction to decimal form – divide

Ex. Write each rational in decimal form:

$$\frac{3}{4} = 0.75$$

$$\frac{-2}{3} = -0.\overline{6}$$

$$\frac{5}{16} = 0.3125$$

❖ Decimal (terminating) to fraction – place digits of the number (without a decimal point) over the the power of 10 corresponding to the position of the last digit

Ex. Write each decimal in fraction form:

 -0.4

$$-\frac{4}{10} = \boxed{-\frac{2}{5}}$$

 3.05

$$\frac{305}{100} = 3\frac{5}{100}$$

$$\boxed{\frac{61}{20} = 3\frac{1}{20}}$$

 -0.002

$$= -\frac{2}{1000}$$

$$= \boxed{-\frac{1}{500}}$$

Ex. Order the following numbers:

$$-1.2, \frac{4}{5}, \frac{7}{8}, -0.\bar{5}, -\frac{7}{8}, \frac{-11}{20}$$

Use decimals
Ascending Order:
Small $\rightarrow$ large

$$\cancel{-1.2}, 0.8, 0.875, \cancel{-0.\bar{5}}, \cancel{-0.875}, -0.55$$

Descending Order:
Large $\rightarrow$ Small

$$-1.2, -\frac{7}{8}, -0.\bar{5}, -\frac{11}{20}, \frac{4}{5}, \frac{7}{8}$$

$$\frac{7}{8}, \frac{4}{5}, \frac{-11}{20}, -0.\bar{5}, -\frac{7}{8}, -1.2$$



Ex. Which is greater? $-\frac{3}{4}$ or $-\frac{2}{3}$

Method 1 – Common denominators

$$\begin{array}{r} -\frac{3}{4} \\ -\frac{9}{12} \end{array} \quad \boxed{\begin{array}{r} -\frac{2}{3} \\ -\frac{8}{12} \end{array}}$$

Method 2 – Decimal comparison

$$\begin{array}{r} -\frac{3}{4} \\ -0.75 \end{array} \quad \begin{array}{r} -\frac{2}{3} \\ -0.\bar{6} \end{array}$$

$\therefore -\frac{2}{3} \text{ is greater}$

Ex. Identify a fraction between -0.6 and -0.7

Method 1 – choose a decimal and convert

$$\begin{array}{r} -\frac{65}{100} \\ -\frac{13}{20} \end{array}$$

Method 2 – convert bounds and choose a fraction

$$\begin{array}{r} -\frac{7}{10} \\ -\frac{14}{20} \end{array} \quad \boxed{\begin{array}{r} -\frac{13}{20} \end{array}} \quad \begin{array}{r} -\frac{6}{10} \\ -\frac{12}{20} \end{array}$$