

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 $b \neq 0$ i.e. 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

$$\boxed{-\frac{3}{4} = \frac{-3}{4}} = \frac{3}{-4} \quad \text{preferred form}$$
~~$$-\frac{3}{-4} = \frac{3}{4}$$~~

❖ 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:

$\frac{3}{4}$

$= 0.75$

$\frac{-2}{3}$

$= -0.\overline{6}$

$\frac{5}{16}$

$= 0.3125$

$5 \div 16$

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

Ex. Write each decimal in fraction form:

-0.4

$-\frac{4}{10}$

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

* check with calc

3.05

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

$\boxed{\frac{61}{20} \text{ or } 3\frac{1}{20}}$

-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

$$\underline{-1.2}, 0.8, 0.875, \underline{-0.5}, \underline{-0.875}, \underline{-0.55}$$

Ascending Order:

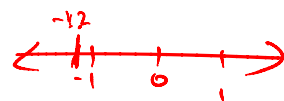
small $\rightarrow$ large

$$-1.2, -\frac{7}{8}, -0.5, -\frac{11}{20}, \frac{4}{5}, \frac{7}{8}$$

Descending Order:

large $\rightarrow$ small

$$\frac{7}{8}, \frac{4}{5}, -\frac{11}{20}, -0.5, -\frac{7}{8}, -1.2$$



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

Method 1 – Common denominators

$$-\frac{3}{4} \quad -\frac{2}{3}$$

$$-\frac{9}{12} \quad \boxed{-\frac{8}{12}}$$

Method 2 – Decimal comparison

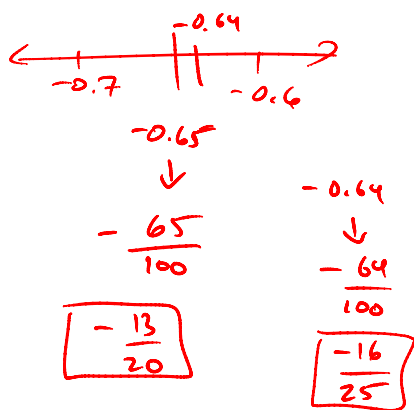
$$-\frac{3}{4} \quad -\frac{2}{3}$$

$$-0.75 \quad \boxed{-0.\bar{6}}$$

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

Ex. Identify a fraction between -0.6 and -0.7

Method 1 – choose a decimal and convert



Method 2 – convert bounds and choose a fraction

