Lesson 6: Order of Operations

Goals:

- Use BEDMAS to perform operations involving fractions.
- Simplify answers.
- Identify errors in a math problem involving fractions.

The order of operations with fractions (rational numbers) is the same as that for integers (signed numbers):

- Do operations in brackets first.
- Do any work with exponents.
- Multiply and divide, in order, from left to right.
- Add and subtract, in order, from left to right.

We will evaluate expressions involving fractions and the order of operations.

Example 1

$$\frac{1}{3}+\left[\left(-\frac{2}{3}\right)\times\frac{1}{2}\right]$$

$\frac{1}{3}+\left[\frac{-2}{6}\right] = \frac{1}{3}+\left(-\frac{1}{3}\right) = \boxed{0}$

Example 2

$$\frac{5}{3}\times\left(-\frac{4}{5}+\frac{2}{5}\right)-\frac{1}{3}$$

$= \left[\frac{5}{3}\times\left(\frac{-2}{5}\right)\right]-\frac{1}{3}$

$\left(\frac{-10}{15}\right)-\frac{1}{3} \Rightarrow \frac{-10}{15}-\frac{1\times5}{3\times5} = \frac{-10}{15}-\frac{5}{15} = \frac{-15}{15} = \boxed{-1}$

Example 3

$$\left(-\frac{2}{3}\right)\div\left[\frac{1}{3}+\left(-\frac{3}{12}\right)\right]$$

$\left(-\frac{2}{3}\right)\div\left[\frac{1\times4}{3\times4}+\frac{-3}{12}\right] \Rightarrow \left(-\frac{2}{3}\right)\div\left[\frac{4}{12}-\frac{3}{12}\right]$

$= \left(-\frac{2}{3}\right)\div\left(\frac{1}{12}\right)$

$\left(-\frac{2}{3}\right)\times\left(\frac{12}{1}\right) = \frac{-24}{3} = \boxed{-8}$