

1.10 Order of Operations with Rational Numbers

Ex. 1) Follow the rules of BEDMAS to solve:

***Remember:** divide and multiply in the order they appear

a) $-1\frac{2}{5} + \frac{-2}{3} \div 2\frac{2}{3} \rightarrow$ what first??

$$= -\frac{7}{5} - \frac{2}{3} \div \frac{8}{3}$$

$$= -\frac{7}{5} - \frac{2}{3} \times \frac{3}{8}$$

$$= -\frac{7}{5} - \frac{1}{4}$$

$$= \frac{-28 - 5}{20}$$

$$= \frac{-33}{20} = -1\frac{13}{20}$$

b) $1\frac{1}{4} \left(\frac{-3}{4} - \frac{1}{3} \right)$

$$= \frac{5}{4} \left(\frac{-9}{12} - \frac{4}{12} \right)$$

$$= \frac{5}{4} \left(\frac{-13}{12} \right)$$

$$= \frac{-65}{48}$$

$$= -1\frac{17}{48}$$

Ex. 2) Calculate each expression using $a = \frac{1}{4}$, $b = \frac{-3}{2}$, $c = 1\frac{1}{3}$

a) $ab - c$

$$= \frac{1}{4} \left(\frac{-3}{2} \right) - 1\frac{1}{3}$$

$$= \frac{-3}{8} - \frac{4}{3}$$

$$= \frac{-9}{24} - \frac{32}{24}$$

$$= \frac{-41}{24}$$

$$= -1\frac{17}{24}$$

b) $\frac{(a-c)}{b}$

$$= \frac{\frac{1}{4} - \frac{4}{3}}{\frac{-3}{2}}$$

$$= \frac{3-16}{12} \div \frac{3}{2}$$

$$= \frac{-13}{12} \times \frac{2}{-3}$$

$$= \frac{-13}{-18}$$

$$= \frac{13}{18}$$

c) $(a-b)^2$

$$= \left(\frac{1}{4} + \frac{3}{2} \right)^2$$

$$= \left(\frac{1}{4} + \frac{6}{4} \right)^2$$

$$= \left(\frac{7}{4} \right)^2$$

$$= \frac{49}{16}$$

explain when
the answer
would be $\frac{49}{4}$!

Ex.3) Simplify.

$$a) \quad \frac{7}{10} - \frac{1}{2} \times \frac{2}{5}$$

$$= \frac{7}{10} - \frac{2}{10}$$

$$= \frac{5}{10}$$

$$= \frac{1}{2}$$

$$b) \quad \frac{4}{5} \times \left[\frac{3}{8} + \left(\frac{-7}{4} \right) \right]$$

$$= \frac{4}{5} \times \left[\frac{3}{8} - \frac{14}{8} \right]$$

$$= \frac{4}{5} \times \frac{-11}{8}$$

$$= \frac{-11}{10}$$

$$= -1\frac{1}{10}$$

$$c) \quad \left(\frac{-3}{5} + \frac{1}{2} \right) \div \left(-\frac{3}{2} \right)$$

$$= \left(\frac{-6}{10} + \frac{5}{10} \right) \times \frac{2}{-3}$$

$$= \frac{-1}{10} \times \frac{2}{-3}$$

$$= \frac{2}{30} = \frac{1}{15}$$

$$e) \quad \left(\frac{-2}{5} + \frac{1}{10} \right) \times \frac{1}{3} - 2\frac{1}{4}$$

$$= \left(\frac{-4}{10} + \frac{1}{10} \right) \times \frac{1}{3} - \frac{9}{4}$$

$$= \frac{-3}{10} \times \frac{1}{3} - \frac{9}{4}$$

$$= -\frac{1}{10} - \frac{9}{4}$$

$$= \frac{-2}{20} - \frac{45}{20}$$

$$= \frac{-47}{20} = -2\frac{7}{20}$$

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

$$= \frac{5}{2} + \frac{7}{3} \times \frac{7}{4}$$

$$= \frac{5}{2} + \frac{49}{12}$$

$$= \frac{30}{12} + \frac{49}{12} = \frac{79}{12}$$

$$f) \quad \frac{3}{4} - \left(\frac{-1}{2} \right) \left(\frac{5}{8} \right) \div \left(\frac{-3}{4} \right)$$

$$= \frac{3}{4} + \frac{5}{16} \times \frac{4}{-3}$$

$$= \frac{3}{4} - \frac{5}{12}$$

$$= \frac{9}{12} - \frac{5}{12}$$

$$= \frac{4}{12} \quad \text{Reduce!}$$

$$= \frac{1}{3}$$