

Unit 2: Working With Rational Numbers

2.3 Problem Solving with Rationals as Fractions

Ex. Solve:

★ LCD to + or -

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

$$= \frac{-15}{20} - \frac{4}{20}$$

$$= \frac{-19}{20}$$

b) $-2\frac{1}{2} + 1\frac{9}{10}$

$$-2 + 1 \quad \frac{-1}{2} + \frac{9}{10}$$

$$-1 \quad \frac{-5}{10} + \frac{9}{10}$$

$$-\frac{1}{1} \quad \frac{4}{10} \frac{2}{5}$$

$$-\frac{5}{5} + \frac{2}{5} = \frac{-3}{5}$$

$$= \frac{-5}{2} + \frac{19}{10}$$

$$= \frac{-25}{10} + \frac{19}{10}$$

$$= \frac{-6}{10}$$

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

c) $-\frac{12}{5} \left(-\frac{1}{36}\right)$

★ pre-cancel x

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

d) $-2\frac{1}{8} \div 1\frac{1}{4}$

$$= -\frac{17}{8} \div \frac{5}{4}$$

$$= -\frac{17}{8} \times \frac{4}{5}$$

$$= -\frac{17}{10} \text{ or } -1\frac{7}{10}$$

★ x or ÷ must be improper

★ keep, change, flip

Ex. At the start of the week Jane had \$30. During the week she spent $\frac{1}{5}$ of the money on bus fares, another $\frac{1}{2}$ shopping, and $\frac{1}{4}$ of what was left over on snacks. How much money was left at the end of the week?

of = x

$$\text{bus } \frac{6}{1} \times \frac{1}{5} = \$6$$

$$\text{shopping } \frac{15}{1} \times \frac{1}{2} = \$15$$

\$21 spent so far

$$30 - 21 = \$9 \text{ left}$$

$$\text{snacks } \frac{9}{1} \times \frac{1}{4} = \frac{9}{4} = 2\frac{1}{4} = \$2.25$$

$$9 - 2.25 = \$6.75$$

Ex. Jane's height is $\frac{4}{5}$ of John's height and Jim's height is $\frac{3}{4}$ of Jane's height.

a) What fraction of John's height is Jim?



Jim is $\frac{3}{4}$ of Jane who is $\frac{4}{5}$ of John

Jim is $\frac{3}{4}$ of $\frac{4}{5}$

$$\frac{3}{4} \times \frac{4}{5} = \frac{3}{5}$$

Jim is $\frac{3}{5}$ the height of John

b) If John is 150 cm tall, how tall are Jane and Jim?

Jane: $\frac{4}{5} \times \frac{150}{1} =$ Jane
120 cm

Jim: $\frac{3}{4} \times \frac{120}{1} =$ Jim
90 cm