Name _____ LBR 1.4

Common Denominators

Algorithm:

If the denominators are the same; add or subtract the numerators. That answer goes over the denominator.

$\frac{5}{8}+\frac{2}{8}=$ 5+2=7 so... $\frac{7}{8}$

$\frac{7}{10}-\frac{4}{10}=$ 7-4=3 so... $\frac{3}{10}$

Unlike Denominators

Algorithm:

- Find a common denominator by multiplying.
- Rewrite equivalent fractions
- Add or subtract numerators
- That answer goes over denominator.

$\frac{3}{5}+\frac{7}{10}=$

$\frac{6}{10}+\frac{7}{10}=6+7=13$ so... $\frac{13}{10}$ or $1\frac{3}{10}$

$\frac{5}{8}-\frac{1}{4}=$

$\frac{5}{8}-\frac{2}{8}=$ 5-2=3 so... $\frac{3}{8}$

Mixed Numbers (No Borrowing)

Algorithm:

- Add or subtract whole #'s.
- make sure they have same denominators.
- Add or subtract numerators. Put over denominator.
- Combine whole # & fraction.

$1\frac{1}{12}+3\frac{2}{12}=$

1+3=4

$\frac{1}{12}+\frac{2}{12}=\frac{3}{12}$ → $4\frac{3}{12}$

$10\frac{11}{16}-3\frac{5}{16}=$

10-3=7

$\frac{11}{16}-\frac{5}{16}=\frac{6}{16}$ → $7\frac{6}{16}$

Subtraction of Mixed Numbers with Borrowing (assuming common denominator)

Algorithm:

- If numerator of 1st fraction is smaller than num. of 2nd frac. then borrow one from whole # (as a frac w/ common denominator e.g. $\frac{6}{6}$)
- Add to original fraction
- Subtract frac. (& whole #'s)
- combine whole # & frac. for answer.

$9\frac{4}{6}-3\frac{5}{6}=$

$9\frac{4}{6}+\frac{6}{6}=\frac{10}{6}$

$-3\frac{5}{6}\quad -\frac{5}{6}$

5 → $5\frac{5}{6}$

OR

Improper fractions:

$9\frac{4}{6}=\frac{49}{6}$

$3\frac{5}{6}=\frac{23}{6}$

49-23=26 so... $\frac{26}{6}$

$5\frac{5}{6}$

BORROWING

Example 1:

$3\frac{1}{3} - 1\frac{5}{6}$ (*2)

$2\frac{3}{6} - 1\frac{5}{6}$ (*2)

$2\ \frac{2}{6} + \frac{6}{6} = 2\frac{8}{6}$

$2\frac{8}{6} - 1\frac{5}{6}$

$2 - 1 = 1$

$\frac{8}{6} - \frac{5}{6} = \frac{3}{6}$

$1\frac{3}{6}$

$1\frac{3}{6} = \boxed{1\frac{1}{2}}$

1. make common denominator
2. 1st fraction is smaller than 2nd fraction so borrow from whole #.
3. Subtract whole #'s & fractions.
4. Simplify

Same problem with Improper Fractions:

$3\frac{1}{3} - 1\frac{5}{6}$

$\frac{10}{3} - \frac{11}{6}$ (*2)

$\frac{20}{6} - \frac{11}{6} = \frac{9}{6} = 1\frac{3}{6}$ or $\boxed{1\frac{1}{2}}$

Example 2:

Borrowing

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

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

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

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

$$\boxed{1\frac{1}{3}}$$

Improper Fraction:

$$2\overset{+}{\rightarrow}\frac{2}{3} - \frac{4}{3}$$

$$\overset{*}{\uparrow}$$

$$\frac{8}{3} - \frac{4}{3} = \frac{4}{3} \text{ or } \boxed{1\frac{1}{3}}$$