Review Exercise Set 14

Exercise 1: Add.

\[
\frac{3}{8} + \frac{7}{8}
\]

Exercise 2: Add.

\[
\frac{4}{9} + \frac{5}{6}
\]

Exercise 3: Add.

\[
\frac{7}{5} + \frac{3}{4} + \frac{9}{20}
\]

Exercise 4: Subtract.

\[
\frac{17}{20} - \frac{11}{20}
\]

Exercise 5: Subtract.

\[
\frac{11}{21} - \frac{5}{6}
\]
Exercise 1: Add.

\[
\frac{3}{8} + \frac{7}{8}
\]

Since the fractions have common denominators, begin by combining the fractions over the common denominator and add the numerators.

\[
= \frac{3+7}{8} = \frac{10}{8}
\]

Now, convert the improper fraction into a mixed number and reduce

\[
= 1 \frac{2}{8} = 1 \frac{2}{2 \times 2 \times 2} = 1 \frac{1}{4}
\]

Exercise 2: Add.

\[
\frac{4}{9} + \frac{5}{6}
\]

These fractions don’t have a common denominator so begin by prime factoring the denominators to determine the Lowest Common Denominator (LCD). The LCD would be the highest power of each prime factor of both denominators.

Factorization of 9: \( 3 \times 3 = 3^2 \)
Factorization of 6: \( 3 \times 2 = 3 \times 2 \)
LCD: \( 3^2 \times 2 = 9 \times 2 = 18 \)

Multiply each fraction (numerator and denominator) by the missing factor necessary to get the LCD

9 has two 3’s but is missing a 2
6 has a 3 and a 2 but is missing a second 3
\[ \frac{4 \times 2}{9 \times 2} + \frac{5 \times 3}{6 \times 3} = \frac{8}{18} + \frac{15}{18} \]

Now, add the fractions and reduce to get the answer

\[ \frac{8 + 15}{18} = \frac{23}{18} = 1 \frac{5}{18} \]

Exercise 3: Add.

\[ 7 \frac{3}{5} + 4 \frac{9}{20} \]

Factorization of 5: 5
Factorization of 20: 2 * 2 * 5 = 2^2 * 5

LCD: 20

\[ = \frac{7 \times 4}{5 \times 4} + \frac{4 \times 9}{20} \]
\[ = \frac{12}{20} + \frac{9}{20} \]
\[ = \left(7 + 4\right)\frac{12 + 9}{20} \]
\[ = 11 \frac{21}{20} \]
\[ = 12 \frac{1}{20} \]
Exercise 4: Subtract.

\[
\begin{array}{c}
17 - 11 \\
20 - 20
\end{array}
\]

\[
= \frac{17 - 11}{20}
\]

\[
= \frac{6}{20}
\]

\[
= \frac{3}{10}
\]

Exercise 5: Subtract.

\[
\begin{array}{c}
11 - 5 \\
21 - 6
\end{array}
\]

Factorization of 21: 3 * 7

Factorization of 6: 2 * 3

LCD: 2 * 3 * 7 = 42

\[
= \frac{11 \times 2}{21 \times 2} - \frac{5 \times 7}{6 \times 7}
\]

\[
= \frac{22}{42} - \frac{35}{42}
\]

\[
= \frac{-13}{42}
\]