FRACTIONS: SOME KEY TERMS

1. Division (Long division): **Dividend**: Number you are dividing.
   **Divisor**: Number you are dividing by.
   **Quotient**: Answer to the division.
   **Remainder**: Number remaining after division.
   \[
   \begin{array}{c}
   \text{Quotient} \\
   \text{Divisor} \\
   \hline
   \text{Dividend} \\
   \hline
   \text{...} \\
   \text{Remainder}
   \end{array}
   \]
   *E.g.*, \(45 \div 8\)
   \[
   \begin{array}{r}
   5 \\
   8) 47 \\
   -40 \\
   \hline
   07
   \end{array}
   \]

2. Fractions: Fractions represent parts of a whole.
   \[
   \frac{\text{Numerator}}{\text{Denominator}}
   \]
   • Different kinds of fractions:
     a) **Proper**: Numerator is smaller than the denominator. *E.g.*, \(\frac{8}{47}\)
     b) **Improper**: Numerator is larger than the denominator. *E.g.*, \(\frac{47}{8}\)
     c) **Mixed Fraction**: It is a whole number with a fraction. *E.g.*, \(5\frac{7}{8}\)

3. Improper Fraction to Mixed Fraction: A mixed fraction for an improper fraction can be calculated using long division.
   *E.g.*, Using the above example under Division: \(47 \div 8 = \frac{47}{8}\), we have
   \[
   \begin{array}{l}
   \text{Quotient (Answer/Whole number)} = 5 \\
   \text{Divisor (denominator)} = 8 \\
   \text{Remainder (numerator)} = 7
   \end{array}
   \]
\[
\frac{47}{8} = 5 \frac{7}{8} = \text{Quotient} \frac{\text{Remainder}}{\text{Divisor}}
\]

4. **Mixed Fraction to Improper Fraction**: An improper fraction for a mixed fraction can be calculated by:

   First, multiplying the denominator by the whole number and adding the numerator to this number. This is your **new numerator** for the improper fraction.

   \[E.g., \ 4 \frac{5}{6} = \frac{4 \times 6 + 5}{6} = \frac{29}{6}\]

5. **Multiple**: Multiples of a number are the list of numbers occurring in the times table of that number.

   \[E.g., \ \text{The times table of 8 is:} \quad 8 \times 1 = 8 \]
   \[8 \times 2 = 16 \]
   \[8 \times 3 = 24 \]
   \[\ldots \text{ etc.}\]

   \[8, 16, 24, \ldots \text{ are the multiples of 8.}\]

6. **Least Common Multiple**: You can always find the least common multiple by listing the multiples of each denominators.

   \[E.g., \ \text{We want the least common multiple for 8, 6 and 12}\]

   Multiples of 8: 8, 16, 24, 32,\ldots
   
   Multiples of 6: 6, 12, 18, 24, 30,\ldots
   
   Multiples of 12: 12, 24, 36, 48,\ldots

   We can see 24 is the first common element of the lists. Then we know 24 is the **least common multiple**.

7. **Reciprocal**: The reciprocal of a fraction is the flipped fraction, i.e., the numerator becomes the new denominator and the denominator becomes the new numerator.

   \[E.g., \ \text{Reciprocal of } \frac{4}{5} \text{ is } \frac{5}{4}.\]