Math 365 Lecture Notes
Section 5.1 – The Set of Rational Numbers

☆Definitions

1) Rational Number –

2) Numerator –

3) Denominator –

4) Fraction –

5) Proper Fraction –

6) Improper Fraction –

☆Early Fractions

1) Egyptians used fractions in the form $\frac{1}{a}$
2) Babylonian notation for fractions:
3) Note the similarity to 23° 42′ 16″
4) $\frac{a}{b}$ as a fraction with the fraction bar is of Hindu origin

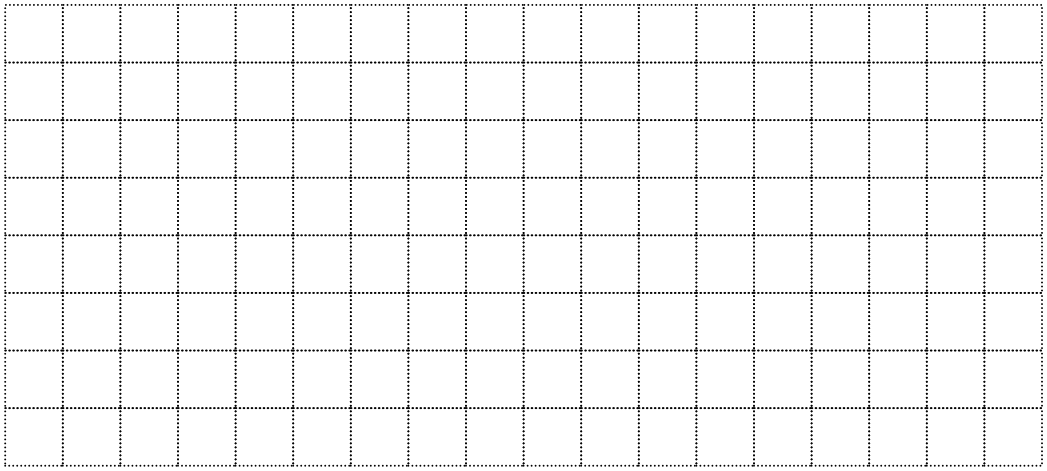
☆Ways to Use Fractions

1) Division problem:
2) Part of a whole:
3) Ratio:
4) Probability:

☆Fundamental Law of Fractions:

$\frac{a}{b}$ is any fraction and n ≠ 0, then $\frac{a}{b} = \frac{an}{bn}$

☆Activity 1



☆Activity 2

By the end of this section you should be able to:

1. Explain the meaning of *a*/*b*.
2. Solve equations with fractions
3. Simplify Fractions

☆Solve equations with fractions

1) Use the Fundamental Law of Fractions to rewrite each fraction with the same denominator.

2) Simplify fractions by factoring

3) Simplest Form:

4) Practice Problems

a. $\frac{x^2+x}{x+x^3}$ b. $\frac{5+5x}{5x^2}$ c. $\frac{a^2-b^2}{a-b}$

☆Showing two fractions are equal

1) Write both fractions in simplest form

2) Rewrite fractions with the least common denominator

3) Rewrite fractions with "any" common denominator

☆Properties and Theorems:

☆Ordering fractions

☆Denseness Property

1) definition

2) example:
   a. Find two fractions between 5/12 and 3/4.

   b. Find two fractions between 2/3 and 3/4.

   c. Alternate solution to part b above: