3.5 The student will

a) divide regions and sets to represent a fraction; and

b) name and write the fractions represented by a given model (area/region, length/measurement, and set). Fractions (including mixed numbers) will include halves, thirds, fourths, eighths, and tenths.

UNDERSTANDING THE STANDARD (Teacher Notes)	**ESSENTIAL UNDERSTANDINGS**	**ESSENTIAL KNOWLEDGE AND SKILLS**
• A fraction is a way of representing part of a whole (as in a region/area model or a measurement model) or part of a group (as in a set model). Fractions are used to name a part of one thing or a part of a collection of things. • In each fraction model, the parts must be equal (i.e., each pie piece must have the same area; the size of each chip in a set must be equal; the measures such as the red cuisenaire rod or the connecting cube must be equal). Wholes are broken into equal-sized parts and reassembled into wholes. • The denominator (bottom number) tells how many equal parts are in the whole or set. The numerator (top number) tells how many of those parts are being described. • Students should have opportunities to make connections among fraction representations by connecting concrete or pictorial representations with oral language and symbolic representations. • Informal, integrated experiences with fractions at this level will help students develop a foundation for deeper learning at later grades. Understanding the language of fractions (e.g., *thirds* means "three equal parts of a whole," $\frac{1}{3}$ represents one of three equal-size parts when a pizza is shared among three students, or *three-fourths* means "three of four equal parts of a whole") furthers this development.	**All students should** • Understand that the denominator tells the number of equal parts in a whole and the numerator tells how many equal size parts are being considered.	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to** • Name and write fractions and mixed numbers represented by drawings or concrete materials for halves, thirds, fourths, eighths, and tenths. • Represent a given fraction or mixed number, using concrete materials, pictures, and symbols for halves, thirds, fourths, eighths, and tenths. For example, write the symbol for one-fourth, and represent it with concrete materials and pictures.

3.6 The student will compare the numerical value of two fractions having like and unlike denominators, using concrete or pictorial models involving areas/regions, lengths/measurements, and sets.

UNDERSTANDING THE STANDARD (Teacher Notes)	ESSENTIAL UNDERSTANDINGS	ESSENTIAL KNOWLEDGE AND SKILLS
• Comparing unit fractions (a fraction in which the numerator is one) builds a mental image of fractions and the understanding that as the number of pieces of a whole increases, the size of one single piece decreases (e.g., $\frac{1}{5}$ of a bar is smaller than $\frac{1}{4}$ of a bar). • The denominator tells the number of equal parts into which a whole is divided. The numerator tells how many equal parts are described by the fraction. • Comparing fractions to a benchmark (e.g., close to 0, less than $\frac{1}{2}$, exactly $\frac{1}{2}$, greater than $\frac{1}{2}$, or close to 1) facilitates the comparison of fractions when using concrete materials or pictorial models. • Appropriate concrete materials for this standard include fraction circles, fraction bars, and pattern blocks.	**All students should** • Understand that the value of a fraction is dependent on both the number of parts in a whole (denominator) and the number of those parts being considered (numerator).	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to** • Compare the values of two fractions having like denominators where the denominators are 2, 3, 4, 8, or 10, using concrete or pictorial models. Use the terms *greater than*, *less than*, or *equal to* or symbols >, <, or = to compare their values. • Compare the values of two unit fractions (a fraction in which the numerator is one), having unlike denominators, where the denominators are 2, 3, 4, 8, or 10, using concrete or pictorial models. Use the terms *greater than*, *less than*, or *equal to* or symbols >, <, or = to compare their values. • Compare the values of two fractions having unlike denominators where the denominators are 2, 3, 4, 8, and 10, using concrete or pictorial models. Use the terms *greater than*, *less than*, or *equal to* or symbols >, <, or = to compare their values.

3.11 The student will add and subtract with proper fractions having like denominators of 10 or less, using concrete materials and pictorial models representing areas/regions, lengths/measurements, and sets.

UNDERSTANDING THE STANDARD (Teacher Notes)	ESSENTIAL UNDERSTANDINGS	ESSENTIAL KNOWLEDGE AND SKILLS
• A proper fraction is a fraction whose numerator is smaller than its denominator. A proper fraction is another name for a fraction between zero and one. • The concepts of addition and subtraction applied to fractions are the same as these concepts applied to whole numbers. • Reasonable answers to problems involving addition and subtraction of fractions can be established by using benchmarks such as 0, $\frac{1}{2}$, and 1. For example, $\frac{3}{5}$ and $\frac{4}{5}$ are each greater than $\frac{1}{2}$, so their sum is greater than 1. • Concrete materials and pictorial models representing area/regions (circles, squares, and rectangles), length/measurements (fraction bars and strips), and sets (counters) can be used to add and subtract fractions having like denominators of 10 or less.	**All students should** • Understand that computation with fractions uses the same concepts as whole number computation.	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to** • Demonstrate a fractional part (halves, thirds, fourths, eighths, and tenths) of a whole, using region/area models (e.g., pie pieces, pattern blocks, geoboards, drawings); set models (e.g., chips, counters, cubes, drawings); and measurement models (e.g., nonstandard units such as cuisenaire rods, connecting cubes, and drawings). • Name and write fractions and mixed numbers represented by drawings or concrete materials for halves, thirds, fourths, eighths, and tenths. • Represent a given fraction or mixed number, using concrete materials, pictures, and symbols, for halves, thirds, fourths, eighths, and tenths. For example, write the symbol for one-fourth and represent it with concrete materials and/or pictures. • Add and subtract with proper fractions having denominators of 10 or less, using concrete materials and pictorial models representing area/regions (circles, squares, and rectangles), length/measurements (fraction bars and strips), and sets (counters).

Intended Learning Outcomes:

1. Name and write fractions and mixed numbers represented by drawings or concrete materials for halves, thirds, fourths, eighths, and tenths
2. Represent a given fraction or mixed number, using concrete materials, pictures, and symbols for halves, thirds, fourths, eighths, and tenths. For example, write the symbol for one-fourth, and represent it with concrete materials and pictures.
3. Compare the values of two fractions having like denominators where the denominators are 2, 3, 4, 8, or 10, using concrete or pictorial models. Use the terms *greater than, less than,* or *equal to* or symbols >, <, or = to compare their values.
4. Compare the values of two unit fractions (a fraction in which the numerator is one), having unlike denominators, where the denominators are 2, 3, 4, 8, or 10, using concrete or pictorial models. Use the terms *greater than, less than,* or *equal to* or symbols >, <, or = to compare their values.
5. Compare the values of two fractions having unlike denominators where the denominators are 2, 3, 4, 8, and 10, using concrete or pictorial models. Use the terms *greater than, less than,* or *equal to* or symbols >, <, or = to compare their values.
6. Demonstrate a fractional part (halves, thirds, fourths, eighths, and tenths) of a whole, using
   region/area models (e.g., pie pieces, pattern blocks, geoboards, drawings);
   set models (e.g., chips, counters, cubes, drawings); and
   measurement models (e.g., nonstandard units such as cuisenaire rods, connecting cubes, and drawings).
7. Add and subtract with proper fractions having denominators of 10 or less, using concrete materials and pictorial models representing area/regions (circles, squares, and rectangles), length/measurements (fraction bars and strips), and sets (counters)

Table of Specifications

	Cognitive Levels					
Content	**Knowledge**	**Comprehension**	**Application**	**Analysis**	**Synthesis**	**Evaluation**
fractions and mixed numbers represented by drawings or concrete materials for halves, thirds, fourths, eighths, and tenths	♦					
a given fraction or mixed number, using concrete materials, pictures, and symbols for halves, thirds, fourths, eighths, and tenths			♦			
the values of two fractions having like and unlike denominators where the denominators are 2, 3, 4, 8, or 10, using concrete or pictorial models				♦		
a fractional part (halves, thirds, fourths, eighths, and tenths) of a whole, using region/area models; set models; and measurement models					♦	
proper fractions having denominators of 10 or less, using concrete materials and pictorial models representing area/regions, length/measurements, and sets			♦			

Day 1: What are fractions? Introduction

- Denominator
- Numerator
- Parts
- Wholes

Day 2: What are fractions? (cont.)

Day 3: Graphing

Day 4: What are fractions in sets? How can we divide unit fractions of sets?

- Whole
- Parts
- Dividing equally into groups

Day 5: Comparing Fractions (<, >, =)

- Make Fraction Strips

Day 6: Comparing Fractions cont.

Day 7: Comparing Fractions cont.

Day 8: Equivalent fractions

Day 9: Pattern Blocks: Fractions, Equivalent Fractions, and Mixed Numbers

Day 10: Review (stations)

Day 11: Fraction Test