Grade 4 Unit 2.1

Comparing Fractions

Key Content from This Unit:

By using visual models, students extend their understanding of equivalent fractions. They are able to recognize and generate equivalent fractions. Students are able to explain why two fractions are equivalent, and why the number and size of parts differ, but the fractions are the same size. Students also compare two fractions with unlike numerators and unlike denominators by using different methods such as visual models, creating common numerators or denominators, or comparing them to benchmarks (0, 1/2, 1). Students also record these comparisons using the symbols (<, >, =).

Vocabulary to Know:

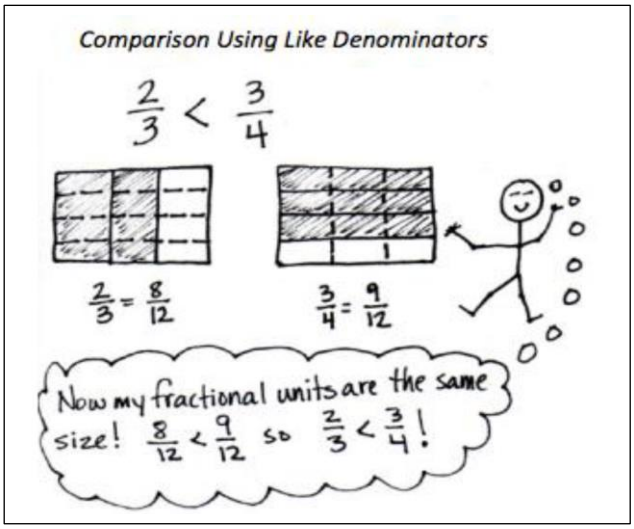
Benchmark Fraction **-** a known reference fraction by which other fractions can be measured, e.g. 0, ½, ¼, ¾, 1

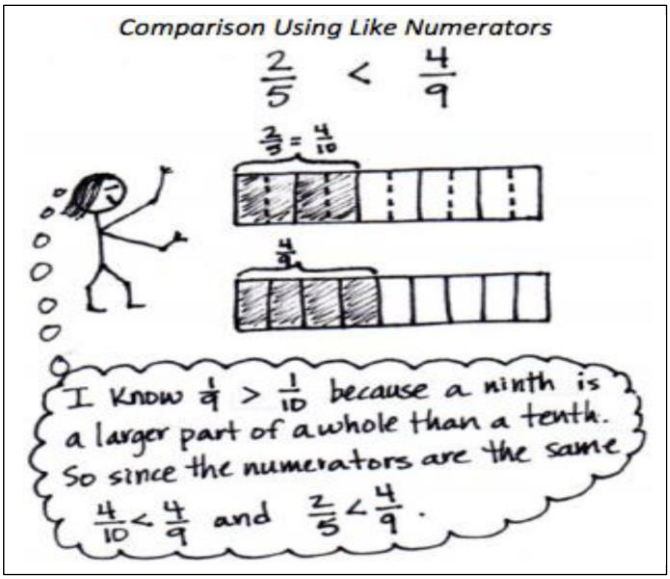
Equivalent Fractions - fractions that name the same size or amount

Denominator - bottom number in a fraction, represents the number of parts the whole is divided into.

Numerator - top number in a fraction refers to, refers to the number of parts of the whole.

Mixed number - number made up of a whole number and a fraction.





What came before this:

In third grade, students developed understanding of fractions as numbers. Students used number lines and visual models to understand and compare fractions with like numerators or denominators. They learned that *equivalent* means the same size.

What comes after this:

In later units, students will add and subtract fractions as well as solve problems involving fractions. They will continue to use visual models.

Common Core Focus:

- Explain how to generate equivalent fractions by using visual models.
- Explain how the number and size of parts differ but the two fractions are the same size.
- Recognize and generate equivalent fractions.
- Generate equivalent fractions in order to use same numerator or same denominator strategies when comparing fractions with different numerators and denominators.
- Using symbols (<, >, =) to record comparisons, and use visual models to justify conclusions.
- Use benchmarks to compare fractions.
- Recognize that the whole needs to be the same when comparing fractions.

Spotlight on the Math Practices

Construct Viable Arguments and Critique the Reasoning of Others

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace.

In this unit, students *construct viable arguments and critique the reasoning of others* when they:

- Attempt to prove or disprove answers through examples and counterexamples.
- Communicate and defend mathematical reasoning.

How Can You Help?

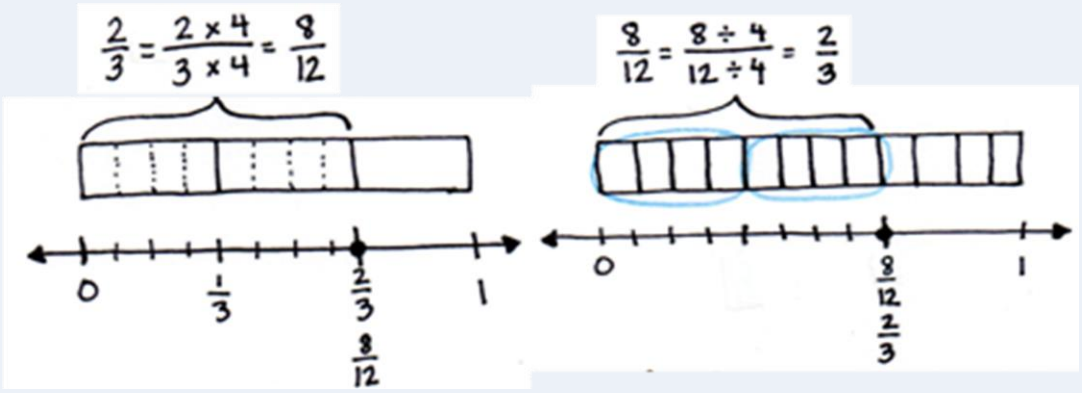
- Continue to practice and review multiplication and division math facts – this greatly supports work with fractions!
- Look for opportunities in daily life to discuss fractional parts and divide objects into equal parts.

KEY MATHEMATICAL MODELS of the COMMON CORE

Number line

Students use the tape diagram to transition to modeling equivalence on the number line. They see that, by multiplying, any unit fraction length can be partitioned into *n* equal lengths and that doing so multiplies both the total number of fractional units (the denominator) and the number of selected units (the numerator) by *n*.

The "Fraction" being multiplied is actually "one" in fraction form and everyone knows that anything multiplied by 1 results in the same amount. They also see that there are times when fractional units can be grouped together, or divided, into larger fractional units. When that occurs, both the total number of fractional units and the number of selected units are divided by the same number.



Some Resources to Help at Home

- http://www.mathplayground.com/Scale_Fractions.html - Explore equivalent fractions with a balance scale
- http://www.mathplayground.com/visual_fractions.html - Explore equivalent fractions in this game
- http://www.ixl.com/math/grade-4/compare-fractions - Comparing fractions
- http://illuminations.nctm.org/Activity.aspx?id=3510 - Create equivalent fractions by dividing and shading squares or circles, and match each fraction to its location on the number line