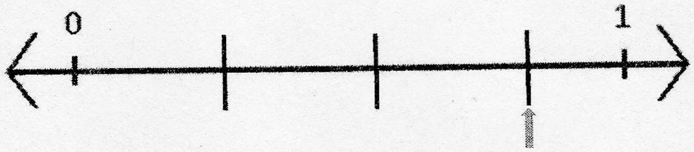
Poole Elementary 4th Grade Math Homework Helper

Unit 1- MCC4.NF.1

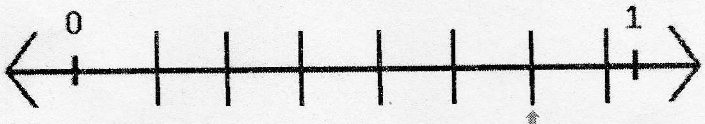
MCC.4.NF.1 Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

***In other words*...I know why two different fractions still take up the same amount of space or are equivalent.**

I can show that $\frac{3}{4}$ and $\frac{6}{8}$ are equivalent fractions by using number lines.

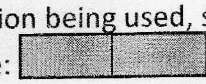


This is where $\frac{3}{4}$ is on a number line broken into 4 equal pieces. The third piece of 4 equal pieces is marked.



This is where $\frac{6}{8}$ is on a number line broken into 8 equal pieces. The sixth piece of 8 equal pieces is marked. I can see that these two different fractions are on the exact same spot on the number line so they take up the same amount of space and are equivalent.

***I also know*...how to change one fraction into a different fraction that is equivalent.**

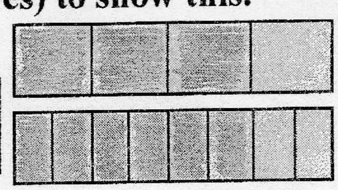
I can change one fraction into its equivalent fraction by either multiplying or dividing by a fraction that is equal to one. Any fraction that has the same number in the numerator and denominator equals 1, like $\frac{2}{2}$, $\frac{7}{7}$, or $\frac{112}{112}$. This is because the numerator (parts of the fraction being used, shaded in, etc.) are the same as the number of equal pieces in the denominator making 1 whole:  $\frac{2}{2}$.

I can multiply $\frac{3}{4}$ by $\frac{2}{2}$ to make an equivalent fraction. $\frac{3}{4} \times \frac{2}{2} = \frac{6}{8}$ This fraction is equivalent to $\frac{3}{4}$.

***And*...I can draw fraction models (pictures) to show this.**

I can draw fraction models to show that $\frac{3}{4} = \frac{6}{8}$.

These two fractions take up the same amount of space so they are equivalent.



This shows $\frac{3}{4}$ are shaded.

This shows $\frac{6}{8}$ are shaded.

Some new math words I am using with this standard: *Some of these may be review words*

Denominator – the number of equal parts a whole is broken into; it is the part of the fraction written below the line (the bottom number). For example: in the fraction $\frac{3}{5}$; 5 is the denominator.

Equivalent fraction – fractions that take up the same amount of space or have the same amount; even though the numerators and denominators are different. For example: $\frac{1}{7} = \frac{2}{14}$

Fraction – a number that names equal parts of a whole or group written as a number over a line and another number under a line. For example: $\frac{4}{9}$. It is a number smaller than one.

Numerator – the number of equal parts/pieces you are "working with" or that are represented by the fraction; it is the part of the fraction written above the line (top number). For example: in the fraction $\frac{3}{5}$; 3 is the numerator.

- Help your child by having her/him measure out 3 of $\frac{1}{4}$ cups of flour and 6 of $\frac{1}{8}$ cups of flour to see it is the same amount. Try it with different equivalent fractions.

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Unit 1- MCC4.NF.2

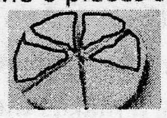
MCC.4.NF.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

***In other words*...I can see which of two fractions is bigger (or smaller) by looking at the numerators (the numbers above the line) and I can show my results using comparing symbols.**

When you are comparing just the numerators (top numbers) then the denominators (bottom numbers) *must* be the same. This is because the whole the fractions come from must be the same. In this case **the larger numerator is the larger fraction.**

For example: Xavier ate $\frac{2}{6}$ of his apple pie and Frankie ate $\frac{4}{6}$ of his apple pie. Who ate more? In order to figure out who ate more of his apple pie I need to compare the fractions: $\frac{2}{6}$ and $\frac{4}{6}$. The denominators are the same so I look at the numerators which are 2 (Xavier's pieces) and 4 (Frankie's pieces). Four is the larger number meaning Frankie ate 4 out of the 6 pieces so he ate more. Xavier only ate 2 out of the 6 pieces.

Xavier ate 2 out of 6 pieces.



Frankie ate 4 out of 6 pieces.

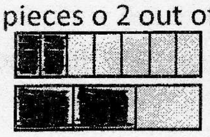
I show this as: $\frac{4}{6} > \frac{2}{6}$

***I also know*...how to see which of two fractions is bigger (or smaller) by looking at the denominators (the numbers below the line) and I can show my results using comparing symbols.**

When you are comparing just the denominators because the numerators are the same, **the fraction with the smaller denominator is the bigger fraction.** This is because each piece of a fraction with a smaller denominator is actually bigger than each piece of the other fraction that has a smaller denominator.

For example: Lara used $\frac{2}{7}$ of a bar of modeling clay and Nancy used $\frac{2}{3}$ of a bar of modeling clay. Who used more? In order to see who used more of her modeling clay I need to compare the fractions: $\frac{2}{7}$ and $\frac{2}{3}$. Since both numerators are the same I know that both Lara and Nancy each used two pieces of their modeling clay. Lara used 2 of $\frac{1}{7}$ pieces or 2 out of 7 pieces. Nancy used 2 of $\frac{1}{3}$ pieces o 2 out of 3 pieces. 2 out of 3 pieces are bigger so Nancy used more of the clay.

I can show this as: $\frac{2}{3} > \frac{2}{7}$

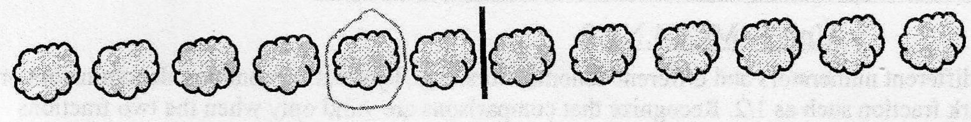


I can see that each of the $\frac{1}{3}$ pieces is bigger than the $\frac{1}{7}$ pieces so $\frac{2}{3}$ is bigger.

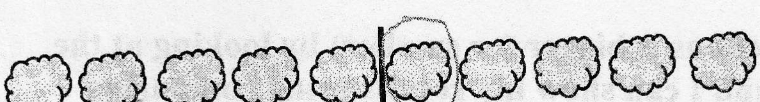
***And*... I can compare (to see which is bigger or smaller) two fractions by seeing how close the fractions are to $\frac{1}{2}$ (a common fraction or benchmark fraction).**

When I compare a fraction to $\frac{1}{2}$ first I look at the denominator. I figure out what number is half of the denominator. Then I look at the numerator to see if it is less than half the denominator or more than half the denominator. If it is more, it is greater than $\frac{1}{2}$. If it is less, it is less than $\frac{1}{2}$.

For example: Brenden bought $\frac{5}{12}$ a pound of granola. Tina bought $\frac{6}{10}$ a pound of granola. Who bought more? I look at each fraction alone and compare it to $\frac{1}{2}$. First I look at the denominator of $\frac{5}{12}$ and see that half of 12 is 6. I look at the numerator and see that 5 is less than 6 so $\frac{5}{12} < \frac{1}{2}$ (less than one half). Next I look at the denominator of $\frac{6}{10}$ and see that half of 10 is 5. I look at the numerator and see that 6 is greater than 5 so $\frac{6}{10} > \frac{1}{2}$ (greater than one half). Since $\frac{6}{10} > \frac{1}{2}$ and $\frac{5}{12} < \frac{1}{2}$ then $\frac{6}{10} > \frac{5}{12}$. *Tina bought more granola.*



Half of 12 is 6. The 5th piece is less than half so $\frac{5}{12} < \frac{1}{2}$



Half of 10 is 5. The 6th piece is more than half so $\frac{6}{10} > \frac{1}{2}$

And...I can change one of two fractions I am comparing into its equivalent fraction so the denominators will be the same.

By changing one of the fractions so the denominators of the fractions I am comparing are the same, can figure out which is bigger or smaller much easier.

<u>For example</u>: Peter and Timothy are arguing about how much chocolate milk their mom gave them. Peter has $\frac{2}{5}$ a cup. Timothy has $\frac{4}{10}$ a cup. Timothy thinks Peter has more and that this is unfair. Peter thinks Timothy has more and that this is unfair. Who is right? I need to see who has more so it will be easier if I convert (change) one of the fractions to an equivalent fraction. I will multiply $\frac{2}{5} \times \frac{2}{2}$ which makes the equivalent fraction of $\frac{4}{10}$. Now both fractions have the same denominator so I can see who has more. $\frac{4}{10} = \frac{4}{10}$. Peter and Timothy are both wrong because they both have the same amount of chocolate milk.

<u>Some new math words I am using with this standard:</u> *Some of these may be review words*

<u>"is equal to"</u> – uses the symbol " = " to show that two compared numbers (or fractions) have the same value. For example: $\frac{1}{2} = \frac{2}{4}$

<u>"is greater than"</u> – uses the symbol " > " to show that one number is bigger than another (the bigger number is written first) For example: $\frac{1}{2} > \frac{1}{4}$

<u>"is less than"</u> – uses the symbol " < " to show that one number is smaller than another (the smaller number is written first) For example: $\frac{1}{2} < \frac{3}{4}$

<u>Unit fraction</u> – a fraction that has a numerator of 1. For example: $\frac{1}{2}, \frac{1}{7}, \frac{1}{12}$

- Help your child by having him/her use a labeled ruler to identify $\frac{1}{2}$. Then have him/her measure different objects and see how close the object is to half (less than half and greater than half)
- Have your child measure out dry rice using different measuring cups to see which amount is less/greater. For example: Which is more: $\frac{3}{8}$ or $\frac{3}{4}$? Your child should fill a $\frac{1}{8}$ cup three times and dump the contents into a bowl. Then fill a $\frac{1}{4}$ cup three times and dump the contents into another bowl. Which bowl has more? Which bowl has less?