



Lessons

*Your source for free online math lessons based on
the Common Core standards*

<http://www.mathwarehouse.com/topic/>.

Terms of Use: By downloading this file you are agreeing to the Terms of Use
Described at <http://www.mathwarehouse.com/copyright.php>

Lesson begins on next page

4th Grade: Bringing Order to Disorder: Ordering Dissimilar Fractions

Ordering: it's one of the first math lessons in kindergarten, and it continues to be an important concept up through graduate school. Today, in your fourth grade math lesson, you're going to be looking at ordering a set of numbers that may seem un-order-able to the uninitiated: dissimilar fractions.

What is the secret to ordering fractions who use mismatching names and don't want to stand in line? Find out their other, secret names!

You'll want to do this 4th grade fractions lesson after you've introduced equivalent fractions and given your students the tools to recognize and generate equivalent fractions. A free fourth grade lesson plan that covers those topics is available *here*.

Objective: Your students will learn to compare two and more fractions with different numerators and different denominators. They'll practice two different ways of doing this: 1) creating common denominators and numerators, and 2) comparing to a benchmark fraction such as $\frac{1}{2}$.

Materials:

- Name card holder pockets that can go around children's necks
- *My Name Is* Fraction Name Flashcards, [Set 1](#) and [2](#) (Set 1 has just 16 cards if you have more students than this, print out multiples.)
- [Quick Quiz](#), one copy per student

Method:

Start on a positive note: today, we get to play a fun new game! Remember, if you have fun with this, your students will too, and there's no better way to wire the brain for optimal learning than by making learning fun.

Hand out "My name is" fraction cards from your first stack to everyone in the class. Duplicates are not a problem. Have them insert the cards in the transparent pouches and hang them from their neck.. Explain that the fraction on this card is their name for the rest of the class; and that it will be especially important during a new game that is going to be played.

Use your cellphone or MP3 player to turn on some music, and tell the students to mill around or 'dance' while the music is on. As soon as the music is off, they need to line up in order of their fractions. If they're super-fast, there might be a prize.

Play the music, turn it off, and give the students a small amount of time to make sense of their fractions and try to order themselves. Equivalent fractions stand share one place in the line (standing side by side) . You do not need to wait for them to be done before calling a halt.

Observe that it was pretty difficult, and ask why. If no-one brings it up, you can observe that though we've learned to order fractions with similar denominators or numerators—fractions where the division size or number of portions was equal-- we never learned anything about how to order fractions where both the top and the bottom were different. These fraction names could just as well be in different languages; they simply don't want to be compared!

If the fraction names are in different languages and so can't be compared, what is one way we could compare them?

Allow your students discussion time to consider this problem. If they do not arrive at the solution, give it to them: Even if fractions can't be easily compared in their current state, you can translate them into similar languages so they are comparable! Remind them that one quantity can be described by more than one fraction; and that these different fractions that refer to the same portion are called equivalent fractions. Ask them how they might find other versions of their fraction names.

[Note: if your students came up with the alternative method of ordering dissimilar fractions—comparing to a benchmark—validate their thinking, then go on to discuss creating common denominators and numerators as an alternative way.]

Summarize their responses on the board, and review any bit that needs reviewing. Then invite them to the table at the front of the room, where you've created a big messy draw pile of all the remaining fractions. Give them some time to look through these cards and find their own equivalent fractions. Offer unobtrusive help to anyone who needs it.

When they've all got their cards, tell them you're to play the game again, and ask them whether it will be easier this time. Lead the discussion round to the fact that equivalent fractions, being representations of the same quantity, stand in the same place on the number line. Demonstrate how students can order themselves easily by comparing the fractions, finding pairs with the same numerator or the same denominator, and choosing an order based on that.

Give everyone a chance to compare cards and order themselves, then applaud them on their work and return everyone to their seats. If they've made reasonable time, offer them a token prize.

Write your findings on the board: we can compare dissimilar fractions by renaming them as equivalent fractions with common denominators or numerators.

Now write $\frac{1}{3}$ and $\frac{3}{4}$ on the board, and ask them if they can tell you quickly which is larger. Talk them through using $\frac{1}{2}$ as a benchmark fraction— $\frac{1}{3}$ is smaller than $\frac{1}{2}$ because 3 is larger than 2, and $\frac{3}{4}$ is larger than $\frac{2}{4}=\frac{1}{2}$ because 3 is larger than 2. So since $\frac{1}{3}$ is smaller than $\frac{1}{2}$ and $\frac{3}{4}$ is larger, $\frac{1}{3}$ is smaller than $\frac{3}{4}$. Ask which symbol you should put between the two fractions, and if necessary, offer a short review of $>$, $=$, and $<$.

Now collect all the flashcards—the pile of originals and the pile of new names—distribute original fractions again, and give the students another chance to collect their new names from the draw pile. Ordering should be faster this time. Be available to help anyone who is struggling.

Ask your students to take the Quick Quiz out and time themselves to see how fast they are able to order the fractions on that page.

This Lesson Plan and The Common Core

In Fourth Grade Number and Operations—Fractions item 2, the Common Core State Standards for Mathematics reads:

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 $\frac{1}{2}$. 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.

Other Resources

This lesson plan (available as a pdf download) is only one in a series of engaging, fun math lesson plans coordinated to the Common Core and easy to use in the classroom. Browse through the other lessons at <http://www.mathwarehouse.com/topic>, and enjoy the wealth of other math resources available at [Mathwarehouse.com](http://www.mathwarehouse.com)

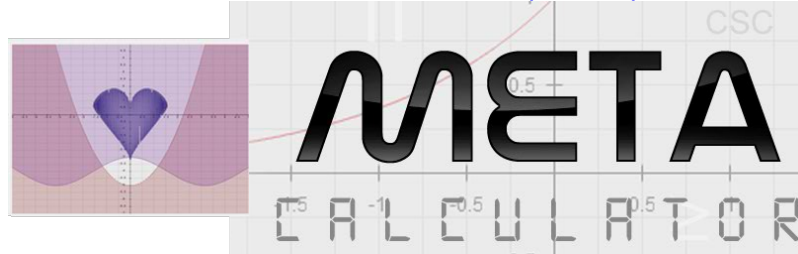
© www.mathwarehouse.com All Rights Reserved

Terms of Use: By downloading this file you are agreeing to the Terms of Use Described at <http://www.mathwarehouse.com/copyright.php>.

Our Other Websites

Check out our Free Online Graphing Calculator

www.meta-calculator.com/online/



And our free Chart Wizards at

www.meta-chart.com

