

Sample Mini Lesson

Comparing two fractions with the same numerator or the same denominator by reasoning about their size.

Specifically:

What is a denominator and how do you visualize it?

TEKS (Texas) Alignment: 3.3(H)

compare two fractions having the same numerator or denominator in problems by reasoning about their sizes and justifying the conclusion using symbols, words, objects, and pictorial models.

Common Core Alignment: CCSS.MATH.CONTENT.3.NF.A.3.D

Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

Includes

- Scripted 20 minute mini lesson
- Printable Equivalent Bar Chart with number line
- Printable pie fractions
- Exit Ticket

Summary and Background information:

If a group of students have this misunderstanding, they may have chosen answers that say one third is bigger than half because 3 is bigger than 2. As we break down this misunderstanding, we have to go back to explaining what a denominator is and then allowing students to find patterns on their own.

Once they understand the pattern, they have to learn some assumptions that we make when we compare numbers:

1. When we compare fractions, the wholes have to be the same size. Half of a large pizza is not the same as half of a small pizza.
2. Every part of each whole must be the same size. When we create fractions, we break the entire whole into congruent pieces.

These assumptions are the foundation of comparing numbers and will help students better connect their understanding of the denominator.

Instructions to help students read an equivalent bar chart.

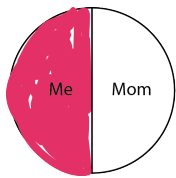
- Give each student equivalent bar chart (next page)
- Find the number line. Place left index finger on 0 and right index finger on 1. This is 1 whole. Keep moving down each bar to see that every whole is the same size.
- Show students where half is. They can now place one finger on the half line. What do you notice about each half? (they are the same size. There are two equal pieces. Denominator shows 2 equal pieces. They are large because whole is cut in only 2 pieces)
- Move down to one third, one fourth, one fifth, one sixth.
- Allow students to answer the following questions:
 - What is the denominator in One third? One fourth? etc
 - What do you notice about the denominator? Are there any patterns as we move down? (the denominator is increasing by 1)
 - What do you notice about the size of the fraction or distance from zero? (smaller, getting closer)
 - What conclusion can be made about denominators that are found in the same size whole?

Recognize that the value of a unit fraction decreases as the value of the denominator increases.

I was 9 years old, and I could smell the buttery, cheese-filled crust from my bedroom. I put my Nintendo controller down and rushed to the kitchen to see paper plates being passed around the table with a large, open box of my favorite food: pizza.

I counted the slices. My mouth began to water when all of a sudden I saw a shadow at the door.

It was my mom. She said, "Look buddy, you know you're not eating that whole pizza on your own."



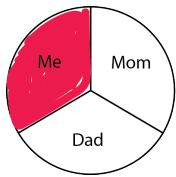
$$\frac{1}{2}$$

And so I gave her half of it.

"That's ok. I can't finish it all anyways," I thought. Now I'm getting $\frac{1}{2}$ of the pizza. That's not bad.

I picked up my first slice, and the cheese didn't want to let go. That's when dad walked in.

"Deal me in," he said. I put the slice down and counted again.

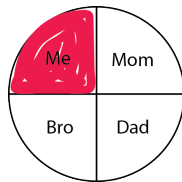


$$\frac{1}{3}$$

So now I only get $\frac{1}{3}$ of the pizza?

Then comes my older brother.

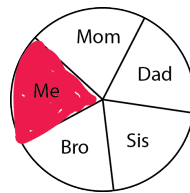
We're at $\frac{1}{4}$



$$\frac{1}{4}$$

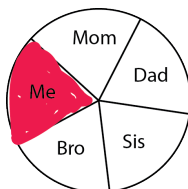
Then my sister. $\frac{1}{5}$! Is all I get?

This day just kept getting worse!

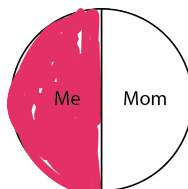


$$\frac{1}{5}$$

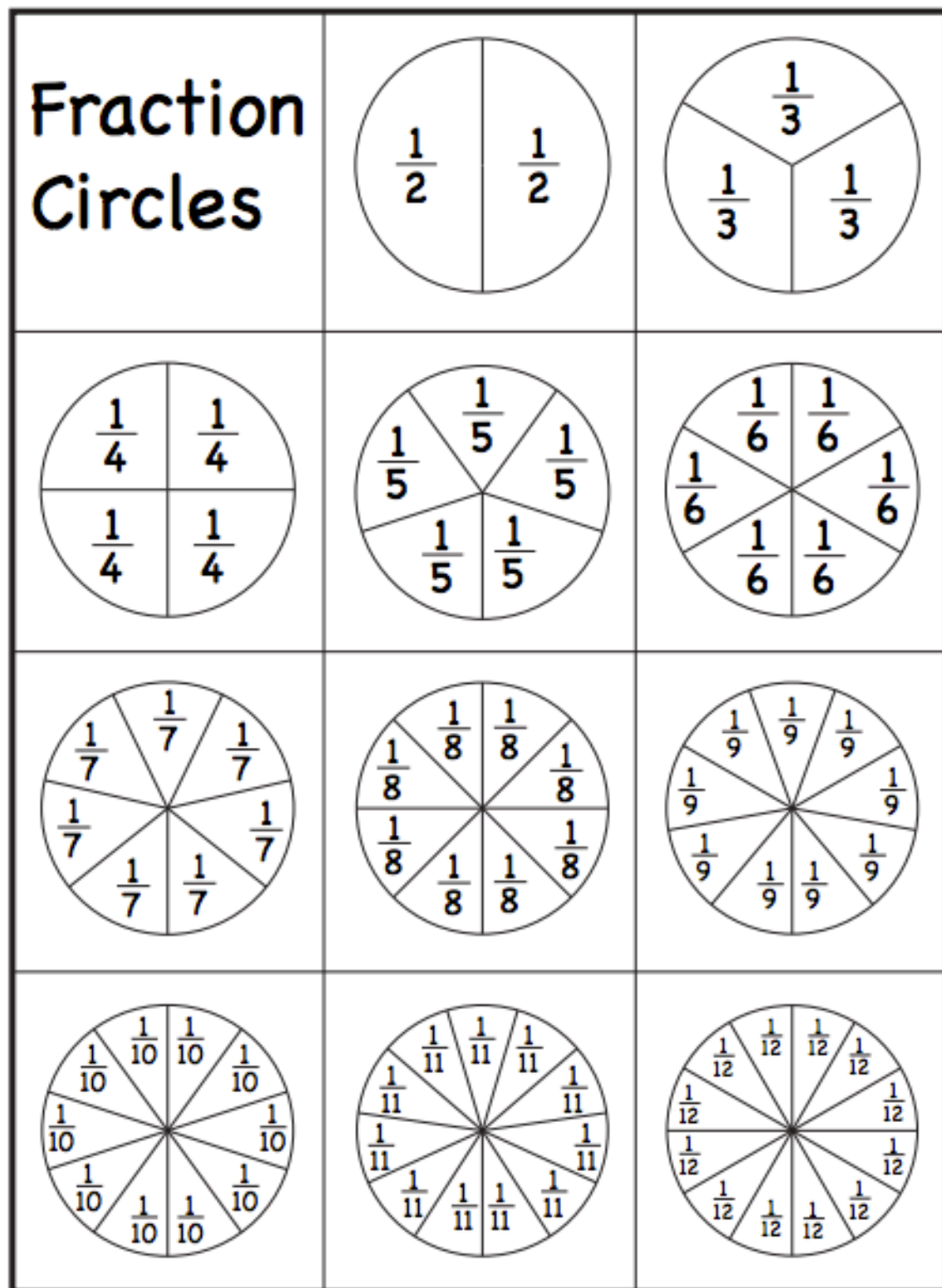
$\frac{1}{5}$ is actually less than the $\frac{1}{2}$ I started with when it was just me and mom. It's all because I have to share the same pizza with 5 people instead of just 2.



$$\frac{1}{5}$$



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



Students can use these to help them practice and understand denominators.

Exit Ticket:

- 1. What does the denominator represent?**
- 2. What's greater, one fourth or one sixth? Explain or draw a picture.**
- 3. Shade three fourths on the equivalent bar chart below.**

