

Teaching Fractions in 4th Grade

- Notes on teaching **Block #1** on Fractions
 - Key Ideas.
 - Remember not to drown the students with practicing fraction skills.
 - The most important thing is that they understand the concept of a fraction. What does $3/5$ really mean?
 - We must return to this again, and again – each time using something different as a manipulative.
 - Beware of Circles! Student can get stuck with picturing fractions as circles. Don't start with Pizza. It is best to start with something that is not circular, such as an apple.
 - Equivalence should be taught out of experience and observation.
 - They see that $2/4$ is the same as $1/2$, $3/6$ is the same as $1/2$, etc.
 - Make a game of it! You give a fraction and they write down as many equivalent fractions as they can think of. Everyone writes one answer on the board!
 - Reducing. $10/15 \rightarrow$ The question we ask ourselves is “What is this the same as?”
 - Adding and Subtracting fractions with like denominators. Pose the question: “What happens if the denominators aren't the same?” This waits until Block #2!
 - Also in this block (other than fractions): Vertical Multiplication (with 2-digit multipliers)
- Notes on teaching **Block #2** on Fractions
 - Review. As always, begin by reviewing the first fraction block.
 - Common Denominators. Often, we want to convert two fractions into equivalent fractions that have the same denominator. Examples: $1/4$ and $1/6$; $1/2$ and $3/8$; $1/3$ and $1/5$; $2/3$ and $3/5$
Important: Ask the students why this would be useful. Answer: it's important for seeing which fraction is bigger ($2/3$ or $3/5$) and for adding and subtracting fractions with unlike denom.
 - Adding and Subtracting fractions with unlike denominators. Take your time with this and build up to it carefully. Example using $1/3 + 2/5$: On the left side of the blackboard, write $1/3$ (in blue) and then write (in white) as many equivalent fractions as the students can think of. Do the same on the right side with $2/5$. Then ask them: “How does this help us figure out $1/3 + 2/5$?” Answer: we just have to find two fractions that have the same denominator. Therefore $1/3 + 2/5 = 5/15 + 6/15 = 11/15$. Go through the same thing each of the next three days with different fraction addition problems.
 - Also in this block (other than fractions): Intro to Long Division (see Long Division lesson plans).
- Notes on teaching **Block #3** on Fractions
 - More work with finding common denoms
 - Intro to Multiplying Fractions Key Ideas:
 - **Do it quickly! Lead them to discover the shortcut, and then use the shortcut**
 - Don't intro using circles. Cross-canceling waits until 5th grade.
 - Start with simple examples, and then build up. (It's OK if not everyone gets it fully.)
 - $1/2 \times 12$; $1/3 \times 15$; $2/3 \times 15$; $1/2 \times 1/4$ (see below apple demo);
 $1/3 \times 1/5$; $1/4 \times 1/5$; $3/4 \times 1/5$; (now they see the trick!); $2/3 \times 4/5$
 - Use something visual like an apple.
 - Take a $1/4$ of an apple and cut it in half, then ask, “What is each piece equal to?” Ans: $1/8$
then we write into our books: $1/2 \times 1/4 = 1/8$
 - Do the same by cutting $1/2$ an apple into $1/4$.
 - Ask them what they think it would be for $1/3 \times 1/5$.
 - Intro to Mixed and Improper, but keep it simple and brief.
 - Division of Fractions can wait until 5th grade.
 - Also in this block (other than fractions): More work with Long Division.