

Teaching Tip - Improper Fractions and Mixed Numbers

Too often, this topic is taught by rule, with little or no understanding. Which is a pity, because this topic is so easy to teach *with* understanding.

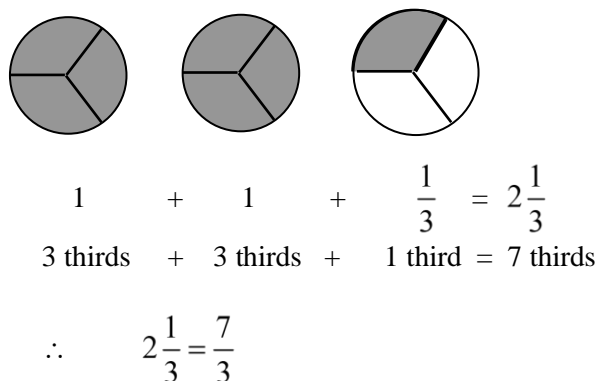
This topic is best taught with diagrams. I use pizza pictures, as it is easy to see that the unit is one circle. The pictures are *scaffolds*, which means that after sufficient practice, most students will be able to discard them. Some students will discard them quickly, while others will need them for a long time.

Once the students are successful using diagrams, you can encourage students to abandon diagrams by choosing unwieldy numbers, e.g. ask students to write $9 \frac{1}{5}$ as an improper fraction.

Problem : Write $2 \frac{1}{3}$ as an improper fraction.

Ask students to draw 3 pizzas and to accurately divide them into 3rds, by eye.

The diagram alongside shows that $2 \frac{1}{3}$ is equivalent to $\frac{7}{3}$.



Problem: Write $\frac{11}{4}$ as an improper fraction.

Draw a pizza and divide it into quarters.

One pizza equals 4 quarters, so we need at least one more pizza. Draw a 2nd pizza and divide it into quarters. Two pizzas equal 8 quarters, so we need to draw at least one more pizza.

We need 3 more quarters to make 11 quarters.

$$\begin{aligned} \text{So } \frac{11}{4} &= \frac{4}{4} + \frac{4}{4} + \frac{3}{4} \\ &= 1 + 1 + \frac{3}{4} \\ &= 2 \frac{3}{4} \end{aligned}$$

