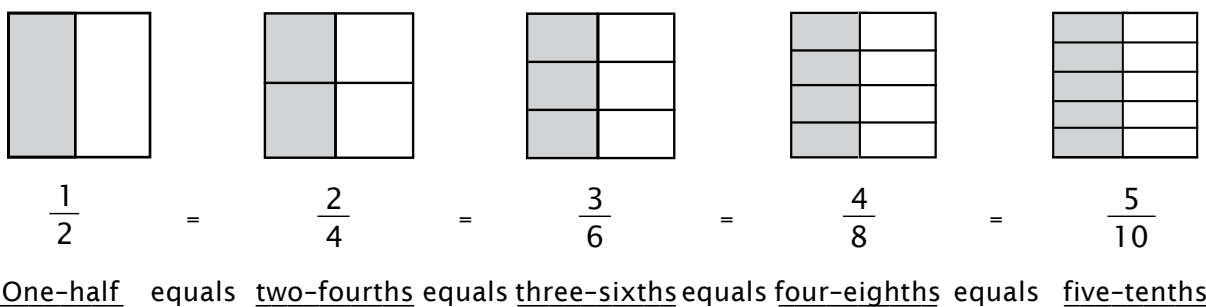


LESSON 4

Equivalent Fractions

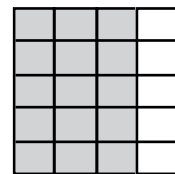
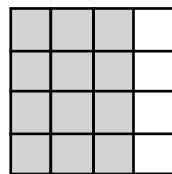
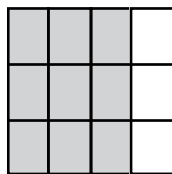
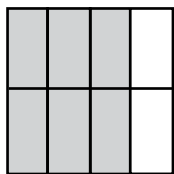
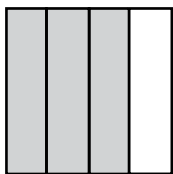
The next three sections in fractions—adding, subtracting, and dividing fractions, as well as reducing fractions—all hinge on *equivalent fractions*. I call this the watershed of fractions. You must understand this concept to thoroughly understand fractions. On paper, it is difficult to comprehend how $1/2$ could be the same as $2/4$ and $3/6$ and $4/8$. Look through the fractions kit now. Notice the colours are synchronized with the blocks. Orange is the colour for the two unit bar as well as the halves. Pink is for three in the blocks and thirds in the fraction kit, and so on. Begin by making $1/2$. Use the white piece for your background, then place the clear overlay with one black line through it vertically over the piece, then finally, place the small orange half piece between these two pieces. We begin with one (white piece), divide it, or cut it up, into two pieces (clear overlay), and count one of them (orange piece). After you have made $1/2$, then place the other clear overlay found in the halves pocket horizontally on top of this to show $2/4$. Take this piece off, and place the clear overlay from the thirds pocket horizontally on top to show $3/6$. Now, try the fourths and fifths overlays.

Example 1



At this point I tell a story, and then ask a question. Let's say you have one-half of a pizza left over from dinner, which you were planning to eat for lunch. Then the doorbell rings and two friends drop by. You invite them in, cut the pizza into three equal parts, and you each get one piece. After you cut the pizza, and before you give it to your friends, stop and think. Do you still have the same amount of pizza? Yes. But are there more pieces? Yes. What fraction did I have originally? One-half. Now what do I have (with the overlay added)? Three-sixths. Do I still have the same amount? Yes. (Take off the second overlay if needed to show that it is still one-half). But do I have more pieces (or equal parts)? Yes. Keep trying different overlays and combinations until you understand this critical concept, which I summarise by saying, "Same amount, more pieces."

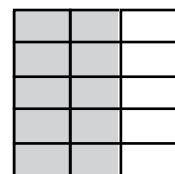
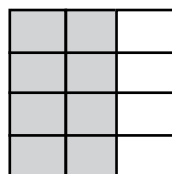
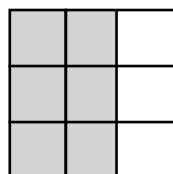
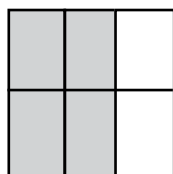
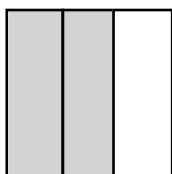
Example 2



$$\frac{3}{4} = \frac{6}{8} = \frac{9}{12} = \frac{12}{16} = \frac{15}{20}$$

three-
fourths equals six-
eighths equals nine-
twelfths equals twelve-
sixteenths equals fifteen-
twentieths

Example 3



$$\frac{2}{3} = \frac{4}{6} = \frac{6}{9} = \frac{8}{12} = \frac{10}{15}$$

two-
thirds equals four-
sixths equals six-
ninth equals eight-
twelfths equals ten-
fifteenths