

Teacher Key: Fractions That Act on Quantities

Use and look-fors. Use the completed area model before the blank rectangle; explain each factor relative to the whole. Page 3 develops a fraction as a quotient. Division on page 2 remains within unit-fraction/whole-number cases.

1. 2 selected equal areas out of 6 in the whole; they cover one of 3 equal shares. Selecting only $\frac{2}{3}$ of a half is less than the half.
2. $\frac{6}{12} = \frac{1}{2}$. A 4-by-3 partition has 12 equal areas; six overlap.
3. $\frac{1}{3}, \frac{2}{3}, 1$. A factor below 1 shrinks the positive amount; 1 preserves it; a factor above 1 enlarges it.
4. The claimed $\frac{2}{5}$ is smaller than $\frac{1}{2}$ though a positive quantity was added. Correct sum: $\frac{5}{6}$. Other results: $\frac{11}{12}$ and $\frac{7}{12}$.
5. $3 \div \frac{1}{4} = 12$ pieces. Check: $12 \times \frac{1}{4} = 3$ meters.
6. $\frac{1}{3} \div 2 = \frac{1}{6}$ liter each; dividing the amount into two equal shares halves it.
7. Each child gets one fourth of each of 3 loaves, or $\frac{3}{4}$ loaf. There are 4 children sharing 3 loaves, not 3 children sharing 4.
8. $2 \div 3 = \frac{2}{3}$ loaf each. One third from each of 2 loaves gives two thirds.
9. $5 \div 2 = \frac{5}{2} = 2\frac{1}{2}$ loaves each. Check $2 \times \frac{5}{2} = 5$. Fair means equal shares, not shares below one loaf.

Teacher Decisions and Follow-Up

Listen for

The learner identifies the whole, explains the selected part, and predicts the effect of a factor below, equal to, or above 1.

Reduce support when

The learner connects an area or sharing model to its equation and solves a changed example with a reasonable estimate and a multiplication check.

Return to a model when

If multiplication is assumed always to enlarge, compare taking half, all, and one-and-a-half times the same quantity.

A short sequence to compare

Compare $\frac{1}{2} \times \frac{2}{3}$, $1 \times \frac{2}{3}$, and $\frac{3}{2} \times \frac{2}{3}$. Explain the results as scaling the same starting amount.

Delayed check: 1–2 weeks later

Five identical loaves are shared equally by four people. How much does each receive? Separately, find $\frac{3}{4}$ of $\frac{2}{3}$ meter and explain why the result is smaller than $\frac{2}{3}$ meter.

Delayed-check interpretation

Each receives $\frac{5}{4} = 1 \frac{1}{4}$ loaves. Three fourths of $\frac{2}{3}$ meter is $\frac{6}{12} = \frac{1}{2}$ meter. A scale factor of $\frac{3}{4}$ selects less than all of the starting length.

Record accuracy, conceptual explanation, and independent transfer separately. Note prompts or models supplied. These are instructional cues, not fixed mastery thresholds. Use the separate delayed-check booklet for student copies.