Textbook Examples of Fraction Equivalence

For each textbook example:

- What does it mean for two fractions to be equivalent in that representation?

- How can the representation be used to generate equivalent fractions?

- What are the limitations or challenges of representing equivalent fractions in this way?

Example A: Equation

Use your fraction pieces to help you solve the following problems.

Example:
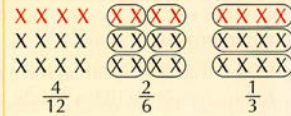
$$4 \cdot \frac{1}{8} = \frac{1}{2}$$

$$\frac{4}{8} = \frac{1}{2}$$

Bell, M., Hartfield, R., Pitvorec, K., Bell, J., Isaacs, A., Saecker, P., et al. (2007). *Everyday mathematics: The University of Chicago school mathematics project, Student math journal, Grade 1* (Vol. 2, p. 190). Chicago, IL: Wright Group/McGraw-Hill.

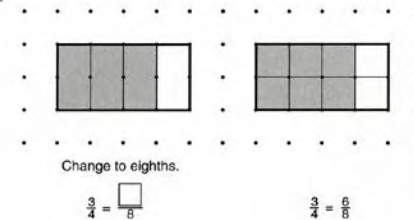### Example B: Set model

Example B

Name the red part of the set in 3 different ways.

$$\frac{4}{12} \qquad \frac{2}{6} \qquad \frac{1}{3}$$

Charles, R. I., Crown, W., Fennell, F., Caldwell, J. H., Ramos, J. F., Tate, W. et al. (2004). *Scott Foresman-Addison Wesley Mathematics* (pp. 410). Glenview, IL: Pearson Education, Inc.
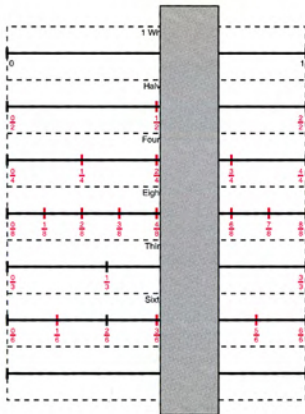
Example C: Area model

Example:

Change to eighths.

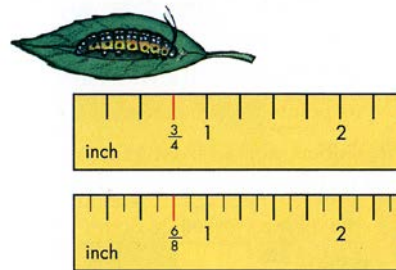$$\frac{3}{4} = \frac{\square}{8} \qquad \frac{3}{4} = \frac{6}{8}$$

A TIMS Curriculum from the University of Illinois at Chicago. (1998). *Math Trailblazers: A mathematical journey using science and language arts, Discovery assignment book, Grade 5* (pp. 77) Dubuque, IA: Kendall/Hunt Publishing Company.

Example D: Number line

Bell, M., Hartfield, R., Bell, J., Isaacs, A., Bretzlauf, J., McBride, J., et al. (2007). *Everyday mathematics: The University of Chicago school mathematics project, Teacher's lesson guide, Grade 3* (Vol. 2, pp. 673), Chicago, IL: Wright Group/McGraw-Hill.

Example E: Ruler

Manfre, E., Moser, J. M., Lobato, J. E., & Morrow, L. (1992). *Heath mathematics connections* (pp. 266). Lexington, MA: D.C. Heath and Company.

Example F: Multiplication and division

You can multiply the numerator and the denominator by any number except zero to find equivalent fractions. Sometimes you can divide to find equivalent fractions.

Find equivalent fractions for $\frac{4}{6}$.

One Way

Multiply the numerator and denominator by the same number. Try 3.

$$\frac{4}{6} = \frac{4 \times 3}{6 \times 3} = \frac{12}{18}$$

So, $\frac{4}{6}$ is equivalent to $\frac{12}{18}$.

Another Way

Divide the numerator and denominator by the same number. Try 2.

$$\frac{4}{6} = \frac{4 \div 2}{6 \div 2} = \frac{2}{3}$$

So, $\frac{4}{6}$ is equivalent to $\frac{2}{3}$.

Maletsky, E. M., Andrews, A. G., Luckie, L. A., Burton, G. M., McLeod, J. C., Johnson, H. C., et al. (2002). *Harcourt math, California edition, Grade 4* (pp. 321). Orlando, FL: Harcourt School Publishers.