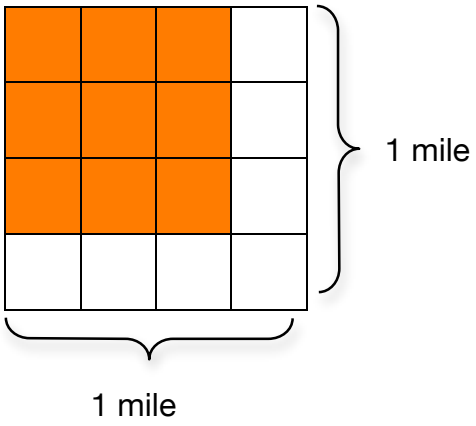
Multiplying Fractions
Extend Your Learning
Answers and Explanations

Solve each problem. Draw a sketch to justify your answer.

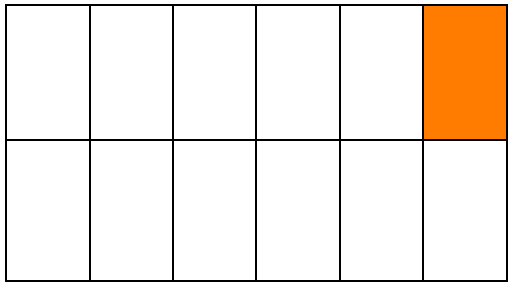
1. A rectangular field is $\frac{3}{4}$ mile wide and $\frac{3}{4}$ mile long. What is the area of the field in square miles?

   You want to find the area of a rectangular field that measures 3/4 mile by 3/4 mile. The square represents one square mile. The shaded region represents the area of the rectangular field. The shaded region measures 3/4 mile by 3/4 mile and is equal to 9/16 of the whole square mile. When you multiply the numerators, 3 x 3, you get the number of shaded parts. When you multiply the denominators, 4 x 4, you get the total number of parts. The field is 9/16 of a square mile.



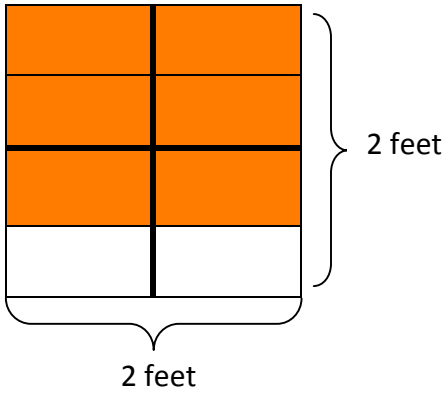
2. Your brother and his friends ate $\frac{5}{6}$ of a large pan of brownies. You ate $\frac{1}{2}$ of what was left. What fraction of the pan of brownies did you eat?

   The rectangle represents one pan of brownies and the shaded region represents the amount of brownies you ate. Your brother and friends ate 5/6 of the pan of brownies, so two parts remain in the pan. Half of that, or one part, is left. You want to find 1/2 of 1/6 of the pan of brownies. The shaded region measures 1/2 by 1/6. There is one shaded part out of 12 total parts, so the shaded region equals 1/12 of the pan of brownies. When you multiply the numerators, 1 x 1, you get the number of shaded parts. When you multiply the denominators, 2 x 6, you get the total number of parts. You ate 1/12 of the pan of brownies.



3. A poster board measures $1\frac{1}{2}$ feet by 2 feet. What is the area in square feet?

You want to find the area of a rectangle that measures 1½ feet by 2 feet. The square represents a poster board that measures 2 feet by 2 feet. The shaded region represents the area of the poster board you have. The shaded region measures 1½ feet by 2 feet. There are six shaded parts, and each part represents ½ square foot. Six halves is three, so the shaded region equals 3 square feet. The area of the poster board is 3 square feet.



4. I have a ribbon that measures $2\frac{1}{4}$ yards long. I use $\frac{2}{3}$ of the ribbon for a project. How many yards did I use?

You want to find 2/3 of 2¼ yards of ribbon. You can represent the ribbon with a model similar to a number line and find the length of the line that represents the amount of the ribbon used. The line represents 3 yards of ribbon. Two and one fourth is equal to nine fourths. You can divide the nine parts into three equal sections of 3/4 yard each. The shaded region represents the amount of ribbon used. The shaded region is 6/4 yards long. The length of the ribbon used is 6/4, or 1½ yards long.