

# Dividing Fractions with Models and Reciprocals

## Grade 6 math · Worksheet · Standards: 6.NS.A.1

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Class: \_\_\_\_\_

These 20 problems cover the meaning of fraction division, visual models, reciprocals, and dividing fractions, whole numbers and mixed numbers.

The last six problems are word problems about baking, cutting, area and speed. They train standard 6.NS.A.1.

**Standards:** 6.NS.A.1 · **Level:** Grade 6

### Problem 1 Pieces of Ribbon (easy)

A ribbon is 6 feet long and is cut into pieces that are  $\frac{1}{2}$  foot long. How many pieces are there?

### Problem 2 Finding Reciprocals (easy)

Write the reciprocal of each number: (a)  $\frac{3}{7}$  (b) 5 (c)  $1\frac{2}{3}$  (d)  $\frac{1}{9}$ .

### Problem 3 Reading a Model (easy)

The model shows 3 cups of rice, split into quarter-cup parts and grouped in threes. Each group is one  $\frac{3}{4}$ -cup scoop. How many scoops can be filled?



*Each group is three quarter-cup parts.*

### Problem 4 Whole Numbers by Unit Fractions (easy)

Divide. (a)  $4 \div \frac{1}{3}$  (b)  $5 \div \frac{1}{8}$  (c)  $9 \div \frac{1}{4}$

### Problem 5 Unit Fractions by Whole Numbers (easy)

Divide. (a)  $\frac{1}{2} \div 3$  (b)  $\frac{1}{4} \div 5$

**Problem 6 Same Denominators** (easy)

Divide. (a)  $\frac{3}{4} \div \frac{1}{8}$  (b)  $\frac{2}{3} \div \frac{1}{6}$  (c)  $\frac{5}{6} \div \frac{1}{12}$

**Problem 7 Fraction by Fraction** (medium)

Divide and simplify. (a)  $\frac{3}{5} \div \frac{2}{3}$  (b)  $\frac{7}{8} \div \frac{3}{4}$  (c)  $\frac{4}{9} \div \frac{8}{15}$

**Problem 8 Fraction by Whole Number** (medium)

Divide. (a)  $\frac{5}{6} \div 4$  (b)  $\frac{3}{8} \div 6$

**Problem 9 Whole Number by Fraction** (medium)

Divide. (a)  $6 \div \frac{3}{8}$  (b)  $10 \div \frac{5}{6}$  (c)  $4 \div \frac{2}{3}$

**Problem 10 Mixed Number Model** (medium)

The model shows  $2\frac{1}{4}$  cups of oats as nine quarter-cup parts, grouped in threes. Use it to find  $2\frac{1}{4} \div \frac{3}{4}$ , then confirm with the division rule.



*Nine parts make 2 and 1/4 cups.*

**Problem 11 Mixed Number by Fraction** (medium)

Divide. (a)  $1\frac{1}{2} \div \frac{3}{8}$  (b)  $3\frac{1}{3} \div \frac{5}{6}$

**Problem 12 Fraction by Mixed Number** (medium)

Divide. (a)  $\frac{5}{6} \div 1\frac{2}{3}$  (b)  $\frac{3}{4} \div 2\frac{1}{4}$

**Problem 13 Mixed Number by Mixed Number** (medium)

Divide. (a)  $3\frac{3}{4} \div 1\frac{1}{2}$  (b)  $5\frac{1}{4} \div 2\frac{1}{3}$

**Problem 14 Spot the Error** (medium)

Leo wrote  $\frac{2}{3} \div \frac{1}{4} = \frac{2}{3} \times \frac{1}{4} = \frac{1}{6}$ . Explain his mistake and find the correct quotient.

**Problem 15 Baking Batches** (hard)

A baker has  $5\frac{1}{4}$  cups of flour. Each batch of muffins uses  $\frac{7}{8}$  cup. How many batches can the baker make?

**Problem 16 Cutting a Roll** (hard)

A roll of banner paper is  $7\frac{1}{2}$  yards long. A sign shop cuts pieces  $\frac{5}{8}$  yard long. The picture shows the pieces. How many pieces can be cut?



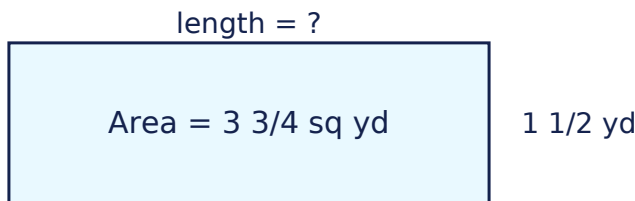
*Each piece is  $\frac{5}{8}$  yard long.*

**Problem 17 Sharing Brownies** (hard)

Eight friends share  $\frac{4}{5}$  of a brownie pan equally. What fraction of the whole pan does each friend get?

**Problem 18 Missing Side** (hard)

A rectangular garden has an area of  $3\frac{3}{4}$  square yards and a width of  $1\frac{1}{2}$  yards. Find its length.



*Area = length  $\times$  width.*

**Problem 19 Walking Speed** (hard)

A hiker walks  $2\frac{1}{4}$  miles in  $\frac{3}{4}$  hour at a steady pace. (a) Find the speed in miles per hour. (b) How far does the hiker walk in  $2\frac{1}{2}$  hours?

**Problem 20 Cooking Oil** (hard)

Each loaf uses  $\frac{2}{3}$  cup of oil, and a jug holds  $5\frac{1}{3}$  cups. (a) How many loaves can be made from one jug? (b) How much oil is left after 5 loaves?