

Dividing Fractions with Models and Reciprocals

Grade 6 math · Worksheet Answer Key · Standards: 6.NS.A.1

Every problem has a full worked solution with the final answer in bold. Look at where the divisor was flipped, and check that each quotient is larger or smaller than expected.

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

Problem 1 Pieces of Ribbon

$$6 \div \frac{1}{2} = 6 \times 2 = 12.$$

Answer: **12 pieces.**



$$12 \times \frac{1}{2} = 6.$$

Problem 2 Finding Reciprocals

$$(c) 1 \frac{2}{3} = \frac{5}{3}.$$

Answer: **(a) $\frac{7}{3}$; (b) $\frac{1}{5}$; (c) $\frac{3}{5}$; (d) 9.**

Problem 3 Reading a Model

Count the groups: 12 quarters $\div$ 3 quarters = 4. Check: $3 \div \frac{3}{4} = 3 \times \frac{4}{3} = 4$.

Answer: **4 scoops.**



4 groups of 3 quarters.

Problem 4 Whole Numbers by Unit Fractions

(a) $4 \times 3 = 12$. (b) $5 \times 8 = 40$. (c) $9 \times 4 = 36$.

Answer: **(a) 12; (b) 40; (c) 36.**

Problem 5 Unit Fractions by Whole Numbers

(a) $\frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$.

(b) $\frac{1}{4} \times \frac{1}{5} = \frac{1}{20}$.

Answer: **(a) $\frac{1}{6}$; (b) $\frac{1}{20}$.**

Problem 6 Same Denominators

(a) $\frac{3}{4} \times 8 = 6$. (b) $\frac{2}{3} \times 6 = 4$. (c) $\frac{5}{6} \times 12 = 10$.

Answer: **(a) 6; (b) 4; (c) 10.**

Problem 7 Fraction by Fraction

(a) $\frac{3}{5} \times \frac{3}{2} = \frac{9}{10}$.

(b) $\frac{7}{8} \times \frac{4}{3} = \frac{28}{24} = 1 \frac{1}{6}$.

(c) $\frac{4}{9} \times \frac{15}{8} = \frac{60}{72} = \frac{5}{6}$.

Answer: **(a) $\frac{9}{10}$; (b) $1 \frac{1}{6}$; (c) $\frac{5}{6}$.**

Problem 8 Fraction by Whole Number

(a) $\frac{5}{6} \times \frac{1}{4} = \frac{5}{24}$.

(b) $\frac{3}{8} \times \frac{1}{6} = \frac{3}{48} = \frac{1}{16}$.

Answer: **(a) $\frac{5}{24}$; (b) $\frac{1}{16}$.**

Problem 9 Whole Number by Fraction

(a) $6 \times \frac{8}{3} = 16$. (b) $10 \times \frac{6}{5} = 12$. (c) $4 \times \frac{3}{2} = 6$.

Answer: **(a) 16; (b) 12; (c) 6.**

Problem 10 Mixed Number Model

Nine quarters in groups of 3 make 3 groups. Rule: $\frac{9}{4} \times \frac{4}{3} = \frac{36}{12} = 3$.

Answer: **3**.

Problem 11 Mixed Number by Fraction

(a) $\frac{3}{2} \times \frac{8}{3} = \frac{24}{6} = 4$.

(b) $\frac{10}{3} \times \frac{6}{5} = \frac{60}{15} = 4$.

Answer: **(a) 4; (b) 4**.

Problem 12 Fraction by Mixed Number

(a) $\frac{5}{6} \times \frac{3}{5} = \frac{15}{30} = \frac{1}{2}$.

(b) $\frac{3}{4} \times \frac{4}{9} = \frac{12}{36} = \frac{1}{3}$.

Answer: **(a) $\frac{1}{2}$; (b) $\frac{1}{3}$** .

Problem 13 Mixed Number by Mixed Number

(a) $\frac{15}{4} \times \frac{2}{3} = \frac{30}{12} = 2 \frac{1}{2}$.

(b) $\frac{21}{4} \times \frac{3}{7} = \frac{63}{28} = \frac{9}{4} = 2 \frac{1}{4}$.

Answer: **(a) $2 \frac{1}{2}$; (b) $2 \frac{1}{4}$** .

Problem 14 Spot the Error

Leo forgot to flip the divisor. The correct step is $\frac{2}{3} \times \frac{4}{1} = \frac{8}{3} = 2 \frac{2}{3}$. The answer must be greater than $\frac{2}{3}$ because quarters are small.

Answer: **$2 \frac{2}{3}$** .

Problem 15 Baking Batches

$\frac{21}{4} \div \frac{7}{8} = \frac{21}{4} \times \frac{8}{7} = \frac{168}{28} = 6$.

Answer: **6 batches**.

Problem 16 Cutting a Roll

$$15\frac{1}{2} \div \frac{5}{8} = 15\frac{1}{2} \times \frac{8}{5} = \frac{120}{10} = 12.$$

Answer: **12 pieces.**

Problem 17 Sharing Brownies

$$\frac{4}{5} \div 8 = \frac{4}{5} \times \frac{1}{8} = \frac{4}{40} = \frac{1}{10}.$$

Answer: $\frac{1}{10}$ **of the pan.**

Problem 18 Missing Side

$$\text{Length} = \text{area} \div \text{width} = \frac{15}{4} \div \frac{3}{2} = \frac{15}{4} \times \frac{2}{3} = \frac{30}{12} = 2\frac{1}{2}.$$

$$\text{Check: } 2\frac{1}{2} \times 1\frac{1}{2} = \frac{5}{2} \times \frac{3}{2} = \frac{15}{4}.$$

Answer: **2 $\frac{1}{2}$ yards.**

Problem 19 Walking Speed

$$(a) \frac{9}{4} \div \frac{3}{4} = \frac{9}{4} \times \frac{4}{3} = 3 \text{ miles per hour.}$$

$$(b) 3 \times 2\frac{1}{2} = \frac{15}{2} = 7\frac{1}{2}.$$

Answer: **(a) 3 miles per hour; (b) 7 $\frac{1}{2}$ miles.**

Problem 20 Cooking Oil

$$(a) \frac{16}{3} \div \frac{2}{3} = \frac{16}{3} \times \frac{3}{2} = 8.$$

$$(b) 5 \times \frac{2}{3} = \frac{10}{3}, \frac{16}{3} - \frac{10}{3} = \frac{6}{3} = 2.$$

Answer: **(a) 8 loaves; (b) 2 cups.**