

Grade 5 · Multiplying Fractions · Worksheet

Answer Key

Common Core 5.NF.B.3, 5.NF.B.4, 5.NF.B.5, 5.NF.B.6 · mathovore.fr

Every solution shows each step. Compare your method as well as your final answer.
Answers are in simplest form, and mixed numbers are shown where the question asks for them.

Grade 5 Common Core: 5.NF.B.3 · 5.NF.B.4 · 5.NF.B.5 · 5.NF.B.6

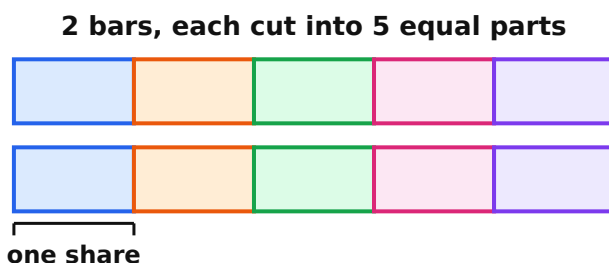
Problem 1: Division as a fraction

- a. $3 \div 5 = \frac{3}{5}$
b. $7 \div 8 = \frac{7}{8}$
c. $11 \div 3 = \frac{11}{3}$. Since $11 = 3 \times 3 + 2$, $\frac{11}{3} = 3\frac{2}{3}$.

Answers: $\frac{3}{5}$, $\frac{7}{8}$, $3\frac{2}{3}$

Problem 2: Sharing pizzas

Each pizza is cut into 5 equal slices. A friend takes one slice from each pizza, so each gets 2 slices of size $\frac{1}{5}$. Also $2 \div 5 = \frac{2}{5}$.



The same color is one friend's share: 2 fifths.

Answer: $\frac{2}{5}$ of a pizza

Problem 3: Whole number times a unit fraction

Six pieces of size $\frac{1}{4}$ make $\frac{6}{4}$. Four fourths fill 1 whole and 2 fourths remain: $\frac{6}{4} = 1\frac{2}{4} = 1\frac{1}{2}$.



$$6/4 = 1 \frac{1}{2}$$

One whole plus two fourths.

Answer: $1\frac{1}{2}$

Problem 4: Fraction of a whole number

- a. $\frac{3}{5} \times 10 = \frac{30}{5} = 6$
 b. $\frac{5}{8} \times 24 = \frac{120}{8} = 15$

Answers: **6 and 15**

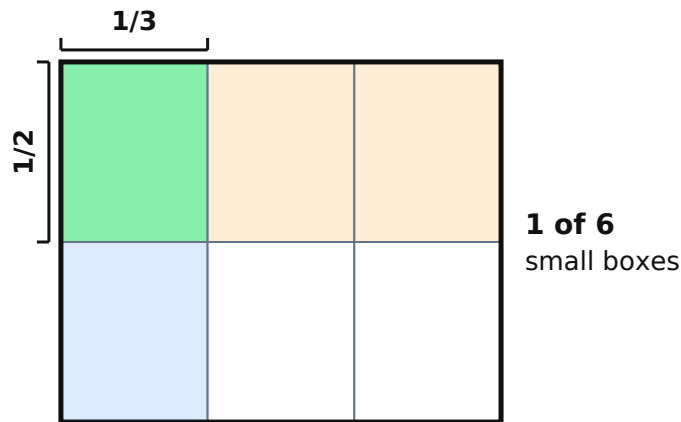
Problem 5: Whole number times a fraction

$$4 \times \frac{3}{8} = \frac{12}{8} = \frac{3}{2} = 1\frac{1}{2}$$

Answer: $1\frac{1}{2}$

Problem 6: Half of a third

The overlap is 1 box out of $3 \times 2 = 6$ boxes. So $\frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$.



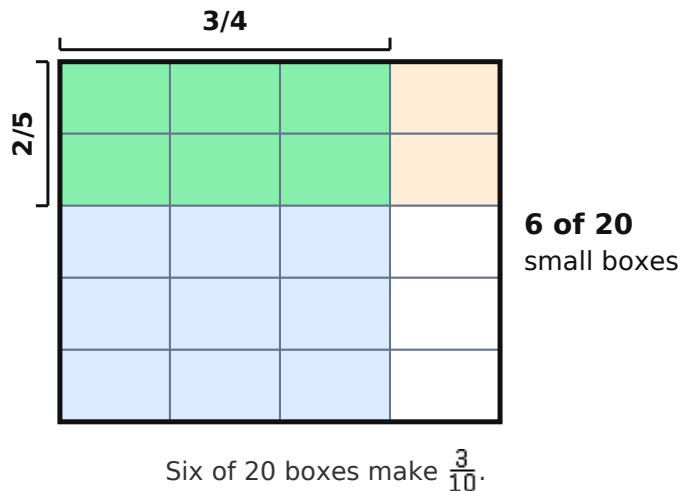
One of six boxes is shaded twice.

Answer: $\frac{1}{6}$

Problem 7: Area model product

Columns: $\frac{3}{4}$. Rows: $\frac{2}{5}$. The overlap has 6 of 20 boxes.

$$\frac{3}{4} \times \frac{2}{5} = \frac{6}{20} = \frac{3}{10}$$



Answer: $\frac{3}{4} \times \frac{2}{5} = \frac{3}{10}$

Problem 8: Multiplying two fractions

- a. $\frac{3}{5} \times \frac{2}{9} = \frac{3 \times 2}{5 \times 9} = \frac{6}{45} = \frac{2}{15}$
 b. $\frac{5}{8} \times \frac{4}{15} = \frac{5 \times 4}{8 \times 15} = \frac{20}{120} = \frac{1}{6}$
 c. $\frac{7}{10} \times \frac{5}{6} = \frac{7 \times 5}{10 \times 6} = \frac{35}{60} = \frac{7}{12}$

Answers: $\frac{2}{15}$, $\frac{1}{6}$, $\frac{7}{12}$

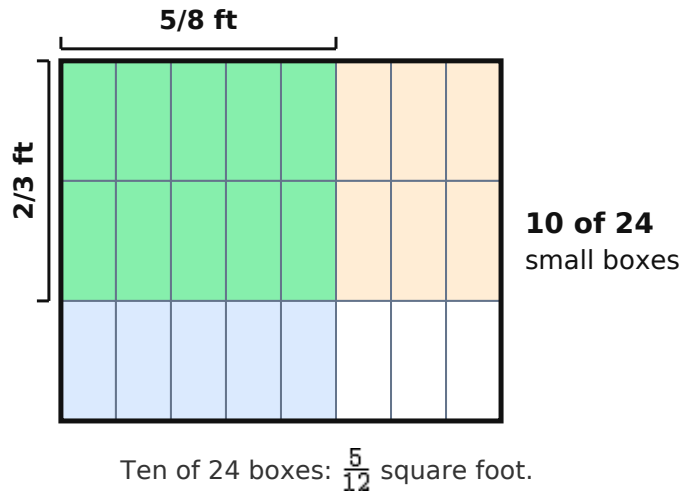
Problem 9: Simplify first

- a. 8 and 16 share the factor 8; 3 and 9 share 3. $\frac{8}{9} \times \frac{3}{16} = \frac{1 \times 1}{3 \times 2} = \frac{1}{6}$
 b. 14 and 21 share 7; 5 and 15 share 5. $\frac{14}{15} \times \frac{5}{21} = \frac{2 \times 1}{3 \times 3} = \frac{2}{9}$

Answers: $\frac{1}{6}$ and $\frac{2}{9}$

Problem 10: Area of a small rectangle

Area = width $\times$ height. $\frac{5}{8} \times \frac{2}{3} = \frac{10}{24} = \frac{5}{12}$. The green part is 10 of 24 boxes.

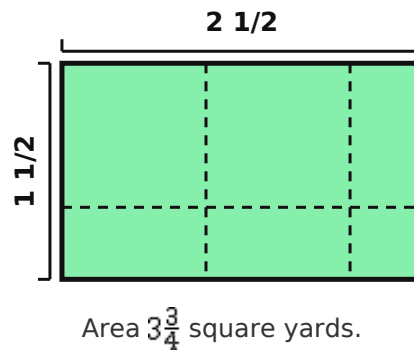


Answer: $\frac{5}{12} \text{ ft}^2$

Problem 11: Tiling with mixed numbers

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

Check by splitting the rug: 2 whole squares, a strip along the bottom of area $2 \times \frac{1}{2} = 1$, a strip along the right of area $1 \times \frac{1}{2} = \frac{1}{2}$, and a corner of area $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$. Total: $2 + 1 + \frac{1}{2} + \frac{1}{4} = 3\frac{3}{4}$.



Answer: $3\frac{3}{4} \text{ yd}^2$

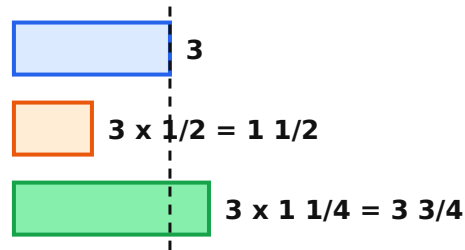
Problem 12: Greater, less, or equal

- $\frac{7}{8}$ is less than 1, so the product shrinks $5: \frac{7}{8} \times 5 < 5$.
- $1\frac{1}{4}$ is greater than 1: $4 \times 1\frac{1}{4} > 4$.
- $\frac{2}{3}$ is less than 1: $\frac{2}{3} \times \frac{3}{4} < \frac{3}{4}$.
- Multiplying by 1 keeps the number: $1 \times \frac{9}{10} = \frac{9}{10}$.

Answers: **less than, greater than, less than, equal to**

Problem 13: Scaling bars

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



The third bar is longer than the dashed line at 3.

Since $\frac{5}{4} > 1$, the product $3\frac{3}{4}$ is greater than 3. Answer: $1\frac{1}{2}$ and $3\frac{3}{4}$; the second is greater

Problem 14: Mixed number times whole number

- a. $2\frac{1}{4} = \frac{9}{4}$. $\frac{9}{4} \times 4 = 9$
- b. $1\frac{2}{3} = \frac{5}{3}$. $3 \times \frac{5}{3} = 5$

Answers: **9 and 5**

Problem 15: Mixed number times fraction

- a. $\frac{5}{2} \times \frac{8}{5} = \frac{40}{10} = 4$
- b. $\frac{3}{4} \times \frac{8}{3} = \frac{24}{12} = 2$

Answers: **4 and 2**

Problem 16: Two mixed numbers

- a. $\frac{10}{3} \times \frac{9}{5} = \frac{90}{15} = 6$
- b. $\frac{9}{4} \times \frac{4}{3} = \frac{36}{12} = 3$

Answers: **6 and 3**

Problem 17: Missing factor

- a. $\frac{5}{12}$ is half of $\frac{5}{6}$, so the factor is $\frac{1}{2}$. Check: $\frac{5}{6} \times \frac{1}{2} = \frac{5}{12}$.
- b. The denominator 4 became 8 and the numerator 3 became 9: the factor is $\frac{3}{2}$. Check: $\frac{3}{4} \times \frac{3}{2} = \frac{9}{8}$.

Answers: $\frac{1}{2}$ and $\frac{3}{2}$

Problem 18: Trail mix for hikers

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

Answer: $1\frac{2}{3}$ **pounds**

Problem 19: Spending part of \$24

$$\frac{3}{8} \times 24 = \frac{72}{8} = 9.$$

Answer: **\$9**

Problem 20: Little League practice

$$1\frac{1}{2} \times 5 = \frac{3}{2} \times 5 = \frac{15}{2} = 7\frac{1}{2}.$$

Answer: $7\frac{1}{2}$ **hours**

Problem 21: Farmers market tomatoes

$$3\frac{3}{4} = \frac{15}{4}. \frac{2}{3} \times \frac{15}{4} = \frac{30}{12} = \frac{5}{2} = 2\frac{1}{2}.$$

Answer: $2\frac{1}{2}$ **pounds**

Problem 22: Garden plot

$$4\frac{1}{2} = \frac{9}{2} \text{ and } 2\frac{2}{3} = \frac{8}{3}. \frac{9}{2} \times \frac{8}{3} = \frac{72}{6} = 12.$$

Answer: 12 yd^2

Problem 23: Brownie pan

Given away: $\frac{2}{3} \times \frac{3}{4} = \frac{1}{2}$ of the pan. Left: $\frac{3}{4} - \frac{1}{2} = \frac{1}{4}$ of the pan. She eats half of it: $\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$.

Answer: $\frac{1}{8}$ **of the pan**