Area with Fractional Side Lengths

Area with Fractional Side Lengths: Find, Fix, and Work Backward

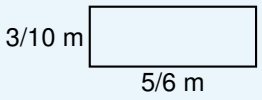
Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

Rectangle area is $A = l \times w$, even when the side lengths are fractions. Multiply the numerators and the denominators, then simplify. The result is in square meters because it counts parts of a one-meter-by-one-meter square.

Worked example

Find the area of the rectangle. Its side lengths are $\frac{5}{6}$ m and $\frac{3}{10}$ m.



1. Area is length times width: $A = \frac{5}{6} \times \frac{3}{10}$.

2. $5 \times 3 = 15$ and $6 \times 10 = 60$.

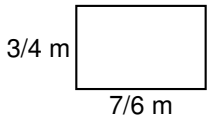
3. $A = \frac{15}{60} = \frac{1}{4}$ m^2.

Answer: $\frac{1}{4}$ m^2.

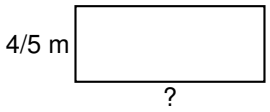
Practice Problems

Show your thinking.

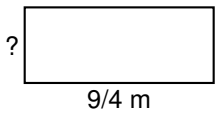
1. A student adds the side lengths $1\frac{1}{6}$ m and $\frac{3}{4}$ m to find area. Correct the operation and the unit.



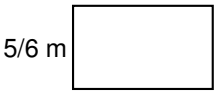
2. A rectangular mat has area $\frac{4}{3}$ m^2 and width $\frac{4}{5}$ m. Find its length.



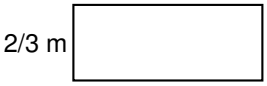
3. The rectangle has area $\frac{3}{2}$ m^2 and length $\frac{9}{4}$ m. Find the missing width.



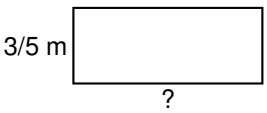
4. A rectangle has length $\frac{7}{5}$ m and width $\frac{5}{6}$ m. Its width is halved. Find both areas and the area decrease.



5. Design a rectangle with width $\frac{2}{3}$ m and area $\frac{1}{2}$ m^2. Supply the length and verify the area.



6. A rectangular mat has area $\frac{3}{4}$ m^2 and width $\frac{3}{5}$ m. Find its length.



Answer Key

1. $\frac{7}{8}$ m^2.
2. $1\frac{2}{3}$ m.
3. $\frac{2}{3}$ m.
4. Original $\frac{7}{6}$ m^2; new $\frac{7}{12}$ m^2; decrease $\frac{7}{12}$ m^2.
5. $\frac{3}{4}$ m.
6. $1\frac{1}{4}$ m.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Area is length times width: $A = \frac{7}{6} \times \frac{3}{4}$.
2. $7 \times 3 = 21$ and $6 \times 4 = 24$.
3. $A = \frac{21}{24} = \frac{7}{8}$ m^2.

Problem 2

1. Split the known width into 4 strips of $\frac{1}{5}$ m. Each strip has area $\frac{4}{3} \div 4 = \frac{1}{3}$ square meters.
2. 5 such strips span 1 m and cover $5 \times \frac{1}{3} = \frac{5}{3}$ square meters. So the length is $\frac{5}{3}$ m.
3. Check: $\frac{5}{3} \times \frac{4}{5} = \frac{4}{3}$ square meters.

Problem 3

1. Split the known length into 9 strips of $\frac{1}{4}$ m. Each strip has area $\frac{3}{2} \div 9 = \frac{1}{6}$ square meters.
2. 4 such strips span 1 m and cover $4 \times \frac{1}{6} = \frac{2}{3}$ square meters. So the width is $\frac{2}{3}$ m.
3. Check: $\frac{9}{4} \times \frac{2}{3} = \frac{3}{2}$ square meters.

Problem 4

1. Area is length times width: $A = \frac{7}{5} \times \frac{5}{6}$.
2. $7 \times 5 = 35$ and $5 \times 6 = 30$.
3. $A = \frac{35}{30} = \frac{7}{6}$ m^2.
4. New width: $\frac{5}{6} \div 2 = \frac{5}{12}$ m; new area $\frac{7}{5} \times \frac{5}{12} = \frac{7}{12}$ m^2.
5. Subtract the areas: $\frac{7}{6} - \frac{7}{12} = \frac{7}{12}$ m^2.

Problem 5

1. Split the known width into 2 strips of $\frac{1}{3}$ m. Each strip has area $\frac{1}{2} \div 2 = \frac{1}{4}$ square meters.
2. 3 such strips span 1 m and cover $3 \times \frac{1}{4} = \frac{3}{4}$ square meters. So the length is $\frac{3}{4}$ m.
3. Check: $\frac{3}{4} \times \frac{2}{3} = \frac{1}{2}$ square meters.

Problem 6

1. Split the known width into 3 strips of $\frac{1}{5}$ m. Each strip has area $\frac{3}{4} \div 3 = \frac{1}{4}$ square meters.
2. 5 such strips span 1 m and cover $5 \times \frac{1}{4} = \frac{5}{4}$ square meters. So the length is $\frac{5}{4}$ m.
3. Check: $\frac{5}{4} \times \frac{3}{5} = \frac{3}{4}$ square meters.

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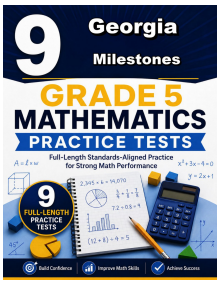

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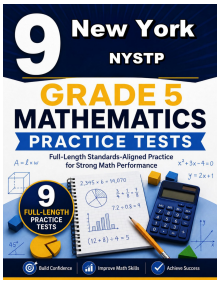

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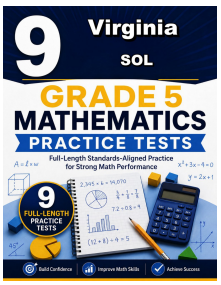

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