

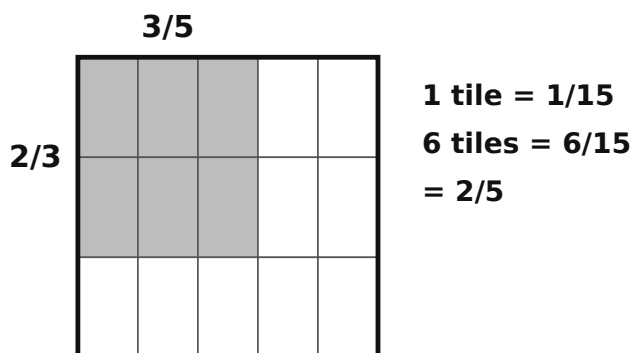
Grade 5 - Area of Rectangles with Fractional Sides - Test Answer Key

Common Core 5.NF.B.4b · maths-pdf.fr/en/

This answer key gives worked solutions and a scoring guide for each of the 9 test questions, worth 20 points in all. Use the scoring notes to award points for correct tile counts or setups even when the final simplification is missing.

Grade 5 · Common Core State Standards: **5.NF.B.4b**

Question 1 - Tiles in a unit square [2 pts]



The shaded rectangle covers 6 of 15 tiles.

(a) $5 \times 3 = 15$ tiles: **each tile is $\frac{1}{15}$ square unit.**

(b) $3 \times 2 = 6$ tiles, so $\frac{6}{15} = \frac{2}{5}$: **$\frac{2}{5}$ square unit.**

Scoring: 1 point for each correct answer.

Question 2 - Multiply the sides [2 pts]

(a)

Multiply the numerators and multiply the denominators: $\frac{3}{5} \times \frac{1}{4} = \frac{3 \times 1}{5 \times 4} = \frac{3}{20}$.

The area is $\frac{3}{20}$ square foot.

(b)

Multiply the numerators and multiply the denominators: $\frac{7}{8} \times \frac{2}{3} = \frac{7 \times 2}{8 \times 3} = \frac{14}{24}$.

Simplify: $\frac{14}{24} = \frac{7}{12}$.

The area is $\frac{7}{12}$ square yard.

Scoring: 1 point for each correct area in simplest form with square units.

Question 3 - Mixed number sides [2 pts]

(a)

Write the mixed number as improper fraction: $2\frac{1}{2} = \frac{5}{2}$.

Multiply the numerators and multiply the denominators: $\frac{5}{2} \times \frac{1}{3} = \frac{5 \times 1}{2 \times 3} = \frac{5}{6}$.

The area is $\frac{5}{6}$ square foot.

(b)

Write the mixed numbers as improper fractions: $1\frac{1}{2} = \frac{3}{2}$ and $1\frac{3}{4} = \frac{7}{4}$.

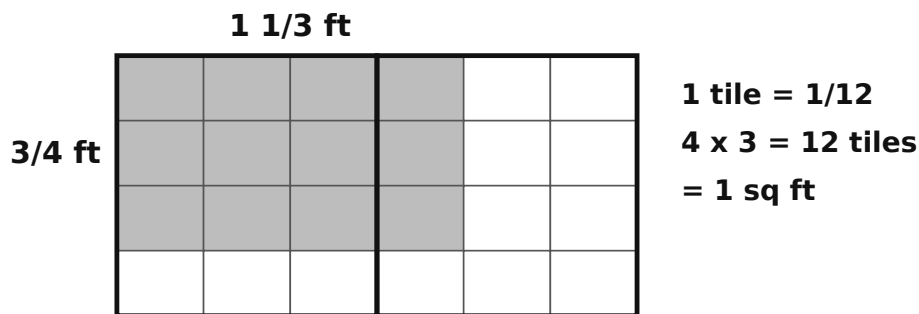
Multiply the numerators and multiply the denominators: $\frac{3}{2} \times \frac{7}{4} = \frac{3 \times 7}{2 \times 4} = \frac{21}{8}$.

Write as a mixed number: $\frac{21}{8} = 2\frac{5}{8}$.

The area is $2\frac{5}{8}$ square inches.

Scoring: 1 point for each correct area with square units.

Question 4 - Tiling two squares [3 pts]



Twelve tiles of $\frac{1}{12}$ square foot make 1 square foot.

(a) Each unit square has $3 \times 4 = 12$ tiles: $\frac{1}{12}$ **square foot.**

(b) $4 \times 3 = 12$: **12 tiles**.

(c) $12 \times \frac{1}{12} = 1$: **1 square foot**. Check: $\frac{4}{3} \times \frac{3}{4} = 1$.

Scoring: 1 point for each part.

Question 5 - Square tile [2 pts]

(a)

Multiply the numerators and multiply the denominators: $\frac{5}{6} \times \frac{5}{6} = \frac{5 \times 5}{6 \times 6} = \frac{25}{36}$.

The area is $\frac{25}{36}$ square foot.

(b) $\frac{25}{36}$ is less than $\frac{5}{6} = \frac{30}{36}$. Multiplying by a fraction less than 1 gives a smaller number.

Scoring: 1 point for the area; 1 point for the correct comparison with a reason.

Question 6 - Poster board [2 pts]

(a) $\frac{7}{4} \times \frac{5}{2} = \frac{35}{8} = 4\frac{3}{8}$: **$4\frac{3}{8}$ square feet**.

(b) The second poster has area $2 \times 2 = 4$ square feet. **The first poster is greater** because $4\frac{3}{8} > 4$.

Scoring: 1 point for each part.

Question 7 - Closet carpet [2 pts]

(a) $\frac{9}{4} \times \frac{4}{3} = \frac{36}{12} = 3$: **3 square feet**.

(b) $3 \times 6 = 18$: **\$18**.

Scoring: 1 point for each correct answer.

Question 8 - Area and perimeter [2 pts]

(a) $\frac{2}{3} \times \frac{1}{4} = \frac{2}{12} = \frac{1}{6}$: **$\frac{1}{6}$ square yard**.

(b) $2 \times \left(\frac{8}{12} + \frac{3}{12}\right) = 2 \times \frac{11}{12} = \frac{22}{12} = 1\frac{5}{6}$: **$1\frac{5}{6}$ yards**.

Scoring: 1 point for each correct answer with units.

Question 9 - Painted banner [3 pts]
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$\frac{3}{4}$ ft

area = 2 sq ft

$2\frac{2}{3}$ ft

Banner area: 2 sq ft; red part: $1\frac{1}{4}$ sq ft.

(a) $\frac{8}{3} \times \frac{3}{4} = \frac{24}{12} = 2$: **2 square feet.**

(b) $\frac{5}{8} \times 2 = \frac{10}{8} = 1\frac{1}{4}$: **$1\frac{1}{4}$ square feet.**

(c) $2 - 1\frac{1}{4} = \frac{3}{4}$: **$\frac{3}{4}$ square foot.**

Scoring: 1 point for each part.

Total
20 points