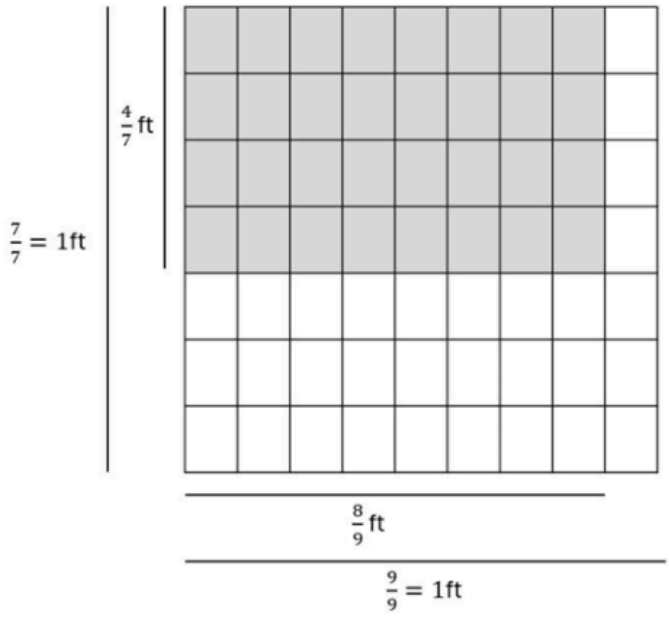
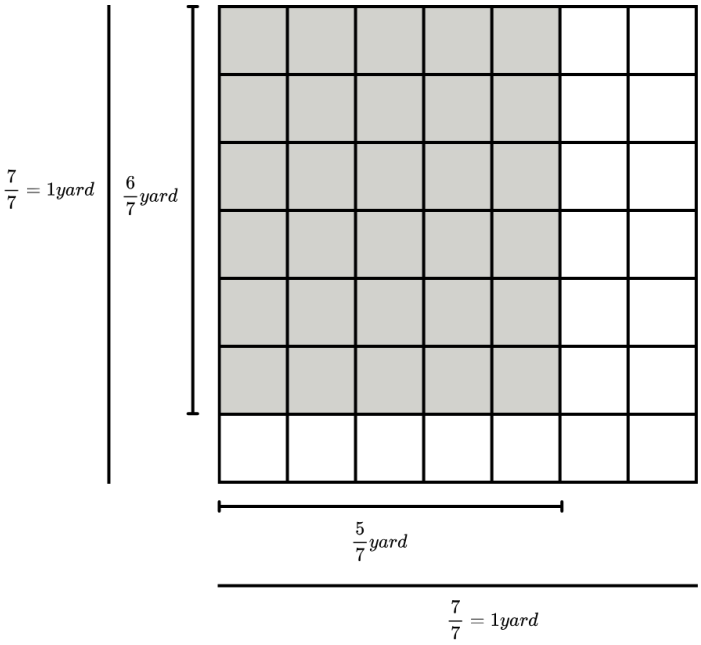
5.M.2: Find the area of a rectangle with fractional side lengths by modeling with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	
Reporting Category: Computing with Decimals and Fractions	**Subdomain**: Measurement and Data Analysis
5.M.2 Instructional Framework	
Assessed On: ☐ Checkpoint 1 ☐ Checkpoint 2 ☐ Checkpoint 3 ☑ Summative	
Content Limits: ● Multiply whole numbers by fractions or fractions by fractions (can include mixed numbers and improper fractions). ● The vocabulary “lowest terms” and "simplify” should not be used.	
Clarifications: ● The keypad in the ILEARN testing system does not allow students to enter a comma between each period in a multi-digit number. (Example: 13,323 would be entered as 13323.)	
Calculator Availability: Not Allowed	
Expected Academic Vocabulary: area model, partition, area, fraction, numerator, denominator, multiplication (multiply), product	
Examples of Context and Varying Difficulty Levels	
Context: Easy	Includes a fraction multiplied by a whole number. Fractions with denominator less than or equal to 5. Includes unit fractions.
Context: Medium	Multiply two proper fractions, with denominator(s) between 5 and 10.
Context: Difficult	Multiply two fractions, which can include improper fractions and mixed numbers. At least one fraction has a double digit denominator.
Proficiency Level Descriptors and Example Items	
Looking Back: 4.M.4 ILEARN Item Specification	**Looking Ahead**: 6.GM.3 ILEARN Item Specification
Below Proficiency: Find the area of a given rectangle with fractional side lengths using a model.	
An area model is given.	This is DOK 1 because

 Enter the area, in square feet, of the shaded rectangle. **Answer:** 32/63 or any equivalent answer	students must identify the area using the model. This is medium difficulty because it involves multiplying two proper fractions, with denominator(s) between 5 and 10.
A gardener is planning their garden plot. It is 1-yard by 1-yard. ● They will plant vegetables in $\frac{1}{7}$ yard by $\frac{1}{7}$ yard square sections. ● The vegetables will cover a length of $\frac{6}{7}$ yard and a width of $\frac{5}{7}$ yard, as given in the model.	This is DOK 1 because students must identify the area using the model. This is medium difficulty because it involves multiplying two proper fractions, with denominator(s) between 5 and 10.



What is the total area the vegetables will cover, in square yards?

a. $\frac{30}{49}$ yd^2

b. $\frac{11}{14}$ yd^2

c. $\frac{30}{19}$ yd^2

d. $\frac{35}{42}$ yd^2

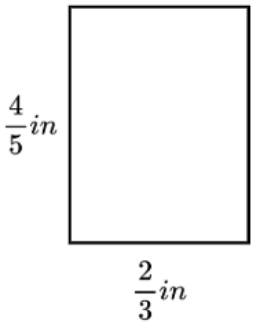
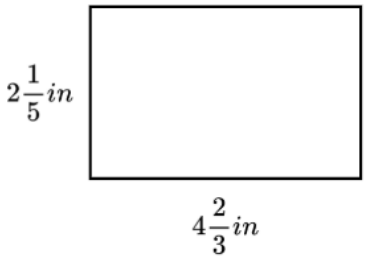
Answer: a

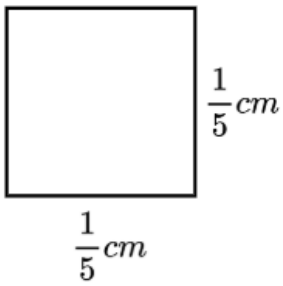
Approaching Proficiency: Calculate the area of a rectangle with fractional side lengths.

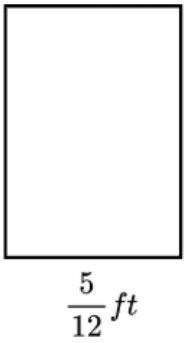
A rectangle is given.

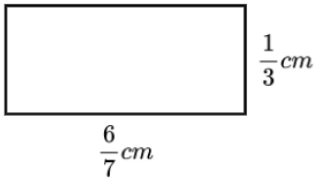
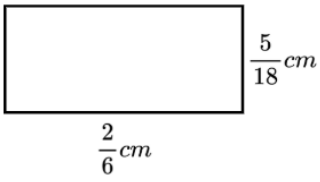
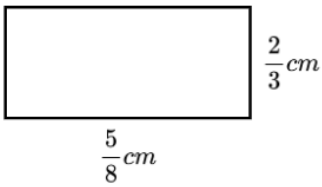
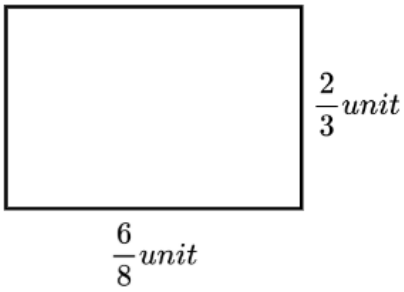
This is DOK 2 because students must calculate the area using the formula.

This is easy because it includes fractions with denominators less than or equal to 5.

 Enter the area, in square inches, of the rectangle. **Answer:** 8/15 or any equivalent answer	
A rectangle is given.  Enter the area, in square inches, of the rectangle. **Answer:** $\frac{154}{15}$ or any equivalent answer	This is DOK 2 because students must calculate the area using the formula. This is difficult because it involves multiplying two mixed numbers.
A clothes maker has a rectangular piece of fabric. • The length of the fabric is $\frac{6}{8}$ yard. • The width of the fabric is $\frac{1}{8}$ yard.	This is DOK 2 because students must calculate the area using the formula. This is medium difficulty because it involves multiplying two proper fractions, with

$\frac{1}{8}yd$ ☐ $\frac{6}{8}yd$ Enter the area, in square yards, of the fabric. ☐ **Answer:** $\frac{6}{64}$ or any equivalent answer	denominator(s) between 5 and 10.
At Proficiency: Calculate the number of unit squares with fractional sides needed to represent the area of a given rectangle with fractional side lengths.	
A square has the given length and width.  Square tiles with side lengths of $\frac{1}{5}$ centimeters will be used to cover the square. How many tiles are required to cover the entire square? ☐ **Answer:** 1	This is DOK 2 because students must calculate the area using the formula. This is easy because it includes fractions with denominators less than or equal to 5 and unit fractions.
A student has a notecard that measures $\frac{5}{12}$ foot by $\frac{8}{12}$ foot.	This is DOK 2 because students must calculate the area using the formula. This is difficult because

 $\frac{8}{12}\,ft$ $\frac{5}{12}\,ft$ ● She covers the entire notecard with square stickers. ● The sides of each square sticker measure $\frac{1}{12}$ foot. ● None of the stickers overlap. Enter the number of stickers needed to cover the entire notecard. **Answer:** 40	it includes fractions with denominators greater than 10.
Above Proficiency: Identify or construct rectangles with the same fractional area and different fractional sides as one given.	
A rectangle is given. **Figure A: Rectangle**  $\frac{2}{4}cm$ $\frac{5}{6}cm$ Which rectangle has the same area as Figure A? a.  $\frac{1}{2}cm$ $\frac{6}{12}cm$	This is DOK 3 because students must calculate the area using the formula and then represent it another way. This is medium difficulty because it involves multiplying two proper fractions, with denominator(s) between 5 and 10.

b.  c.  d.  **Answer:** d	
A rectangle, with side measurements, is given. **Figure A: Rectangle**  Construct a rectangle that: ● Has the same fractional area as Figure A, and ● Has different fractional side lengths as Figure A. **Answer:** Answers may vary. The model should have an area equivalent to 1/2 units squared. Example:	This is DOK 3 because students must calculate the area using the formula and then represent it another way. This is medium difficulty because it involves multiplying two proper fractions, with denominator(s) between 5 and 10.

 $\frac{6}{9}$ unit $\frac{6}{8}$ unit	