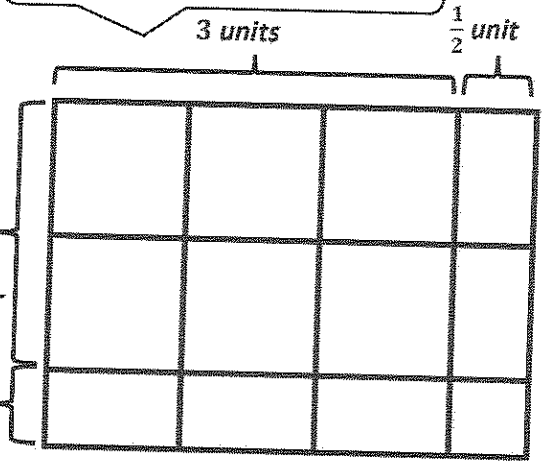
G5-M5-Lesson 11

1. Cindy tiled the following rectangles using square units. Sketch the rectangles, and find the areas. Then, confirm the area by multiplying.

   a. **Rectangle A:**

I look at Rectangle A's dimensions, $3\frac{1}{2}$ units by $2\frac{1}{2}$ units.

I can draw a length of $3\frac{1}{2}$ units.



Rectangle A is $3\frac{1}{2}$ units long by $2\frac{1}{2}$ units wide.

Area = $8\frac{3}{4}$ units^2

I draw a width of $2\frac{1}{2}$ units.

$$3\frac{1}{2} \times 2\frac{1}{2}$$
$$= (2 \times 3) + \left(2 \times \frac{1}{2}\right) + \left(\frac{1}{2} \times 3\right) + \left(\frac{1}{2} \times \frac{1}{2}\right)$$
$$= 6 + \frac{2}{2} + \frac{3}{2} + \frac{1}{4}$$
$$= 6 + 1 + 1\frac{1}{2} + \frac{1}{4}$$
$$= 6 + 1 + 1\frac{2}{4} + \frac{1}{4}$$
$$= 8\frac{3}{4}$$

I can look at the rectangle above to help me multiply.

2 units × 3 units = 6 units^2

2 units × $\frac{1}{2}$ unit = $\frac{2}{2}$ unit^2 = 1 unit^2

$\frac{1}{2}$ unit × 3 units = $\frac{3}{2}$ units^2 = $1\frac{1}{2}$ units^2

$\frac{1}{2}$ unit × $\frac{1}{2}$ unit = $\frac{1}{4}$ unit^2

I rename $1\frac{1}{2}$ as $1\frac{2}{4}$ so I can add.

The area of Rectangle A is $8\frac{3}{4}$ square units.

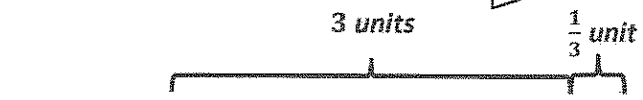
b. **Rectangle B:**

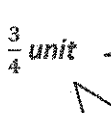
Rectangle B is

$3\frac{1}{3}$ units long by $\frac{3}{4}$ unit wide.

Area = $2\frac{1}{2}$ units^2

I draw a length of $3\frac{1}{3}$ units.





I draw and label the width as $\frac{3}{4}$ unit.

I can multiply to find the area.

$$3\frac{1}{3} \times \frac{3}{4}$$
$$= \left(\frac{3}{4} \times 3\right) + \left(\frac{3}{4} \times \frac{1}{3}\right)$$
$$= \frac{9}{4} + \frac{3}{12}$$
$$= 2\frac{1}{4} + \frac{1}{4}$$
$$= 2\frac{2}{4}$$
$$= 2\frac{1}{2}$$

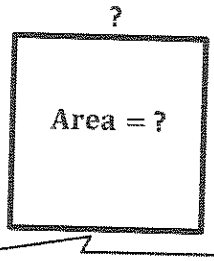
I can look at the rectangle above to help me multiply.
$\frac{3}{4}$ unit × 3 units = $\frac{9}{4}$ unit^2 = $2\frac{1}{4}$ unit^2
$\frac{3}{4}$ unit × $\frac{1}{3}$ unit = $\frac{3}{12}$ unit^2 = $\frac{1}{4}$ unit^2

The area of Rectangle B is $2\frac{1}{2}$ square units.

2. A square has a perimeter of 36 inches. What is the area of the square?

All four sides are equal in a square.

Since the perimeter of the square is 36 inches, I will use 36 inches divided by 4 to find the length of one side. 36 inches ÷ 4 = 9 inches



I can draw a square and label both the area and the side length with a question mark.

$\text{Perimeter} = 36 \text{ in}$

$36 \text{ in} \div 4 = 9 \text{ in}$

Area is equal to length times width. I will multiply 9 inches times 9 inches to find an area of 81 square inches.

$$\begin{aligned}\text{Area} &= \text{length} \times \text{width} \\ &= 9 \text{ in} \times 9 \text{ in} \\ &= 81 \text{ in}^2\end{aligned}$$

The area of the square is 81 in^2.