G5-M5-Lesson 10

1. Alex tiled some rectangles using square units. Sketch the rectangles if necessary. Fill in the missing information, and then confirm the area by multiplying.

Rectangle A:

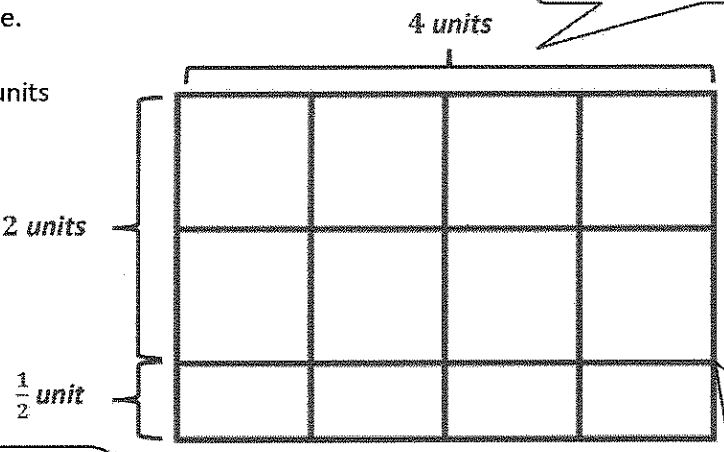
I look at Rectangle A's dimensions, 4 units by $2\frac{1}{2}$ units.

Rectangle A is

4 units long by $2\frac{1}{2}$ unit wide.

Area = 10 square units

I can draw a length of 4 units.



I can draw a rectangle and show a width of $2\frac{1}{2}$ units.

I can count the halves and see that there are 4 half square units, which is the same as 2 square units. I can multiply too.
4 units $\times \frac{1}{2}$ unit $= 2$ square units

I can count the squares and see that there are 8 whole square units. I can multiply too.
4 units $\times$ 2 units $= 8$ square units

8 square units + 2 square units = 10 square units

4 *units* $\times 2\frac{1}{2}$ *units*

$$(4 \times 2) + \left(4 \times \frac{1}{2}\right)$$
$$= 8 + \frac{4}{2}$$
$$= 8 + 2$$
$$= 10$$

I can confirm the area by multiplying the length and width.

The area of Rectangle A is 10 square units.

I can use the rectangle I drew and the distributive property to help me multiply.
4 units $\times$ 2 units $= 8$ square units
4 units $\times \frac{1}{2}$ unit $= \frac{4}{2}$ square units $= 2$ square units

2. Juanita made a mosaic from different colored rectangular tiles. Two blue tiles measured $2\frac{1}{2}$ inches × 3 inches. Five white tiles measured 3 inches × $2\frac{1}{4}$ inches. What is the area of the whole mosaic in square inches?

I can find the area of one blue tile.

$2\frac{1}{2}\text{ in} \times 3\text{ in}$

$(2 \times 3) + \left(\frac{1}{2} \times 3\right)$

$= 6 + \frac{3}{2}$

$= 6 + 1\frac{1}{2}$

$= 7\frac{1}{2}$

The area of 1 blue tile is $7\frac{1}{2}\text{ in}^2$.

To find the area of the two blue tiles, I can multiply the area by 2.

$1\text{ unit} = 7\frac{1}{2}\text{ in}^2$

$2\text{ units} = 2 \times 7\frac{1}{2}\text{ in}^2$

$= (2 \times 7) + \left(2 \times \frac{1}{2}\right)$

$= 14 + \frac{2}{2}$

$= 14 + 1$

$= 15$

The area of 2 blue tiles is 15 in^2.

I can find the area of one white tile.

$3\text{ in} \times 2\frac{1}{4}\text{ in}$

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

$= 6 + \frac{3}{4}$

$= 6\frac{3}{4}$

The area of 1 white tile is $6\frac{3}{4}\text{ in}^2$.

To find the area of five white tiles, I can multiply the area by 5.

$1\text{ unit} = 6\frac{3}{4}\text{ in}^2$

$5\text{ units} = 5 \times 6\frac{3}{4}\text{ in}^2$

$= (5 \times 6) + \left(5 \times \frac{3}{4}\right)$

$= 30 + \frac{15}{4}$

$= 30 + 3\frac{3}{4}$

$= 33\frac{3}{4}$

The area of 5 white tiles is $33\frac{3}{4}\text{ in}^2$.

$33\frac{3}{4}\text{ in}^2 + 15\text{ in}^2 = 48\frac{3}{4}\text{ in}^2$

I can add the two areas together to find the area of the entire mosaic.

The area of the whole mosaic is $48\frac{3}{4}$ square inches.