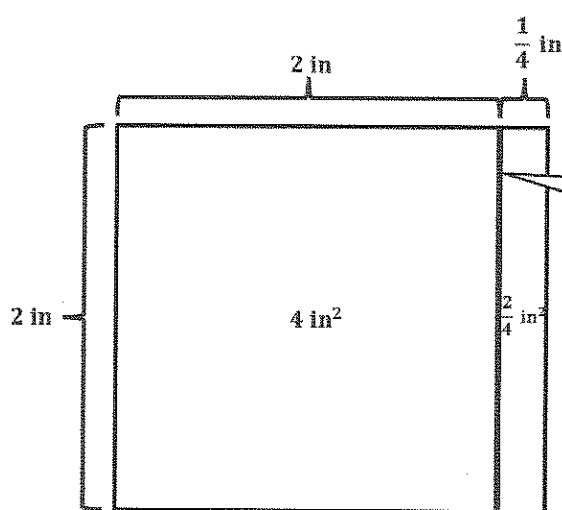## G5-M5-Lesson 12

1. Measure the rectangle to the nearest $\frac{1}{4}$ inch with your ruler, and label the dimensions. Use the area model to find the area.

> I can use an inch ruler to measure this figure.
> The length is $2\frac{1}{4}$ inches and the width is 2 inches.

> I draw a vertical line partitioning the rectangle into whole inches and a fraction of an inch.

2 in　　　　$\frac{1}{4}$ in

2 in

4 in²　　　$\frac{2}{4}$ in²

> I solve by using the area model.
> 2 in × 2 in = 4 in²
> 2 in × $\frac{1}{4}$ in = $\frac{2}{4}$ in²

$4 \text{ in}^2 + \frac{2}{4} \text{ in}^2$

> I add the two partial areas together to find the total area.

$= 4 \text{ in}^2 + \frac{1}{2} \text{ in}^2$

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

$\text{Area} = 4\frac{1}{2} \text{ in}^2$

2. Find the area of rectangle with the following dimensions. Explain your thinking using the area model.

$2\frac{3}{4}$ ft $\times$ $1\frac{3}{4}$ ft

> The length is $2\frac{3}{4}$ feet, and the width is $1\frac{3}{4}$ feet.

> I partition my area model into whole foot parts and fraction of a foot parts.

2 ft $\frac{3}{4}$ ft

1 ft | 2 ft^2 | $\frac{3}{4}$ ft^2

$\frac{3}{4}$ ft | $\frac{6}{4}$ ft^2 | $\frac{9}{16}$ ft^2

> I mutliply to find the four partial areas.
>
> $1 \text{ ft} \times 2 \text{ ft} = 2 \text{ ft}^2$
>
> $1 \text{ ft} \times \frac{3}{4} \text{ ft} = \frac{3}{4} \text{ ft}^2$
>
> $\frac{3}{4} \text{ ft} \times 2 \text{ ft} = \frac{6}{4} \text{ ft}^2$
>
> $\frac{3}{4} \text{ ft} \times \frac{3}{4} \text{ ft} = \frac{9}{16} \text{ ft}^2$

$2 + \frac{3}{4} + \frac{6}{4} + \frac{9}{16}$

$= 2 + \frac{9}{4} + \frac{9}{16}$

$= 2 + 2\frac{1}{4} + \frac{9}{16}$

$= 2 + 2\frac{4}{16} + \frac{9}{16}$

$= 4\frac{13}{16}$

Area $= 4\frac{13}{16}$ ft^2

3. Zikera is putting carpet in her house. She wants to carpet her living room, which measures $12 \text{ ft} \times 10\frac{1}{2}$ ft. She also wants to carpet her bedroom, which is $10 \text{ ft} \times 7\frac{1}{2}$ ft. How many square feet of carpet will she need to cover both rooms?

Area of the living room:

$12 \text{ ft} \times 10\frac{1}{2}$ ft

$(12 \times 10) + \left(12 \times \frac{1}{2}\right)$

$= 120 + 6$

$= 126$

Area $= 126$ ft^2

> I find the area of the living room by multiplying the length and width. It is 126 square feet.

Area of the bedroom:

$10 \text{ ft} \times 7\frac{1}{2}$ ft

$10 \times \frac{15}{2}$

$= \frac{150}{2}$

$= 75$

Area $= 75$ ft^2

> I find the area of the bedroom by multiplying the length and width. It is 75 square feet.

$126 \text{ ft}^2 + 75 \text{ ft}^2 = 201 \text{ ft}^2$

She will need 201 square feet of carpet to cover both rooms.

> I combine both the area of both rooms to find the total area. The total is 201 square feet.

24   Lesson 12:   Measure to find the area of rectangles with fractional side lengths.

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