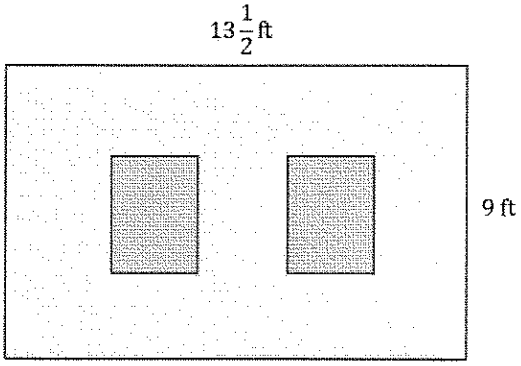
G5-M5-Lesson 14

1. Sam decided to paint a wall with two windows. The gray areas below show where the windows are. The windows will not be painted. Both windows are $2\frac{1}{2}$ ft by $4\frac{1}{2}$ ft rectangles. Find the area the paint needs to cover.



I can subtract the area of the two windows from the area of the wall to find the area that the paint needs to cover.

Area of 1 window:

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

$\frac{5}{2} \times \frac{9}{2}$

$= \frac{45}{4}$

$= 11\frac{1}{4}$

Area $= 11\frac{1}{4}$ ft^2

The area of 1 window is $11\frac{1}{4}$ ft^2.

Area of the wall:

$13\frac{1}{2}$ ft $\times$ 9 ft

$(13 \times 9) + \left(\frac{1}{2} \times 9\right)$

$= 117 + \frac{9}{2}$

$= 117 + 4\frac{1}{2}$

$= 121\frac{1}{2}$

Area $= 121\frac{1}{2}$ ft^2

Area of 2 windows:

1 unit $= 11\frac{1}{4}$ ft^2

2 units $= 2 \times 11\frac{1}{4}$ ft^2

$(2 \times 11) + \left(2 \times \frac{1}{4}\right)$

$= 22 + \frac{2}{4}$

$= 22\frac{1}{2}$

Area $= 22\frac{1}{2}$ ft^2

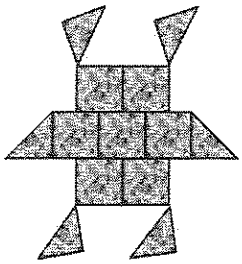
I can double the area of 1 window to find the area of 2 windows. The total area is $22\frac{1}{2}$ ft^2.

I can subtract the area of the 2 windows from the area of the wall.

$121\frac{1}{2}$ ft^2 $- 22\frac{1}{2}$ ft^2 $= 99$ ft^2

The paint needs to cover 99 square feet.

2. Mason uses square tiles, some of which he cuts in half, to make the figure below. If each square tile has a side length of $3\frac{1}{2}$ inches, what is the total area of the figure?



Total tiles:

7 whole tiles + 6 half tiles = 10 tiles

I can count the tiles in the figure. There are a total of 10 tiles.

Area of 1 tile:

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

$\frac{7}{2} \times \frac{7}{2}$

$= \frac{49}{4}$

$= 12\frac{1}{4}$

I can find the area of 1 square tile. $3\frac{1}{2}$ in $\times 3\frac{1}{2}$ in $= 12\frac{1}{4}$ in^2.

Area $= 12\frac{1}{4}$ in^2

Area of 10 tiles:

To find the area of 10 tiles, I can multiply the area of 1 tile by 10.

1 unit $= 12\frac{1}{4}$ in^2

10 units $= 10 \times 12\frac{1}{4}$ in^2

$(10 \times 12) + \left(10 \times \frac{1}{4}\right)$

$= 120 + \frac{10}{4}$

$= 120 + 2\frac{2}{4}$

$= 122\frac{1}{2}$

The total area of the figure is $122\frac{1}{2}$ *square inches.*