

M151: Modeling With Geometry Post-Badge Task

Reflecting on Badge Learning

Now that you have learned more about modeling with geometry, respond to the questions that follow. These are the same questions you responded to before the start of this badge.

The Task

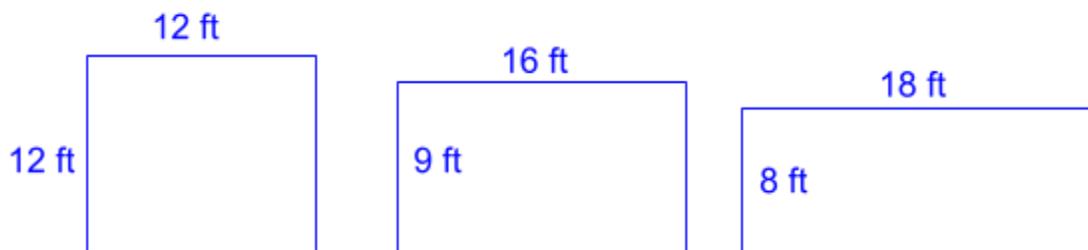
Your older sibling has moved out of the house so you are getting a bigger bedroom! Your current bedroom has an area of 144 square feet. You currently have a full size bed (75in L x 54in W) and 2 nightstands.

QUESTION 1 Create two possible bedroom floor plans each with an area of 144 square feet. Use a sheet of graph paper or technology to create these drawings to scale. Label the dimensions on each drawing.

In the space below, answer this question: Given both options, which bedroom floor plan would you rather have as your bedroom? Why?



*Answers will vary. Teachers should double check that images are drawn to scale.
Possible student responses:*



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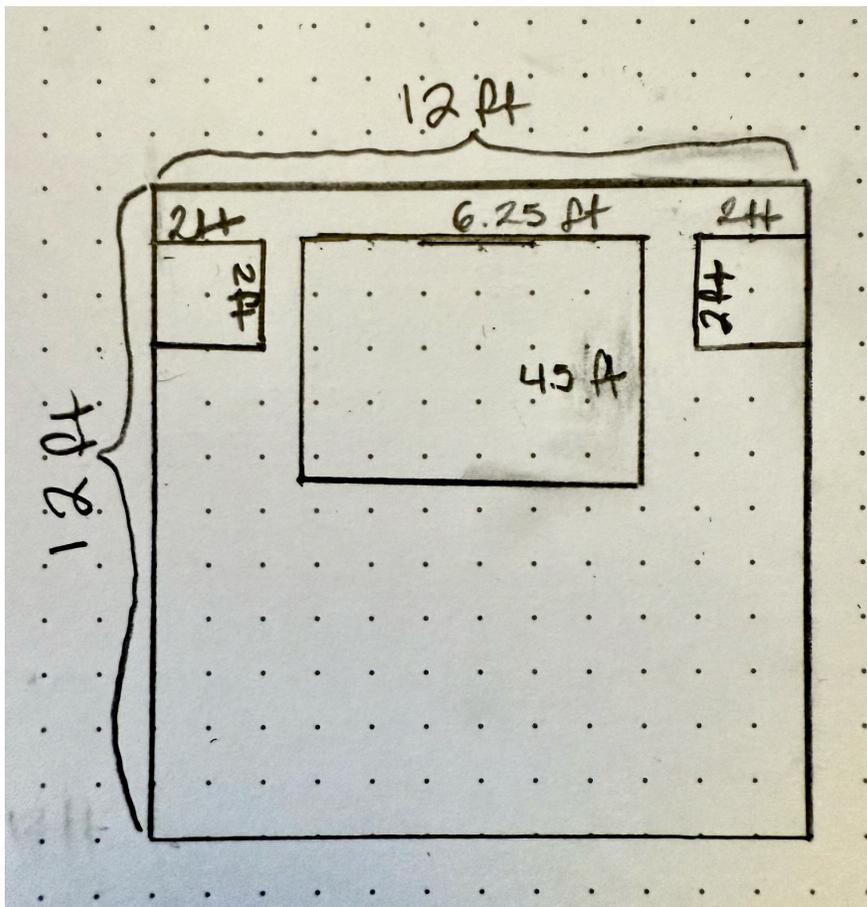
QUESTION 2

- On the bedroom floor plan you selected, create a drawing of your bed, to scale, in the location you would put it in that room.
- Decide where you would put your nightstands. What is the maximum possible area of each nightstand based on where you want to put them? Explain your reasoning with visual and mathematical justifications.

Answers will vary. Teachers should double check that images are drawn to scale.

Possible student response:

The maximum possible area of each night stand is 4 square feet. This makes sense because there are 3 feet on each side of the full size bed. I left 1 foot for a walking path, leaving 2 feet of length to the wall. For the width, I also decided 2 feet, since the bed is 4.25 feet long. The side measurement of a nightstand is typically not more than half of a bed size, making 2 feet a reasonable maximum length.



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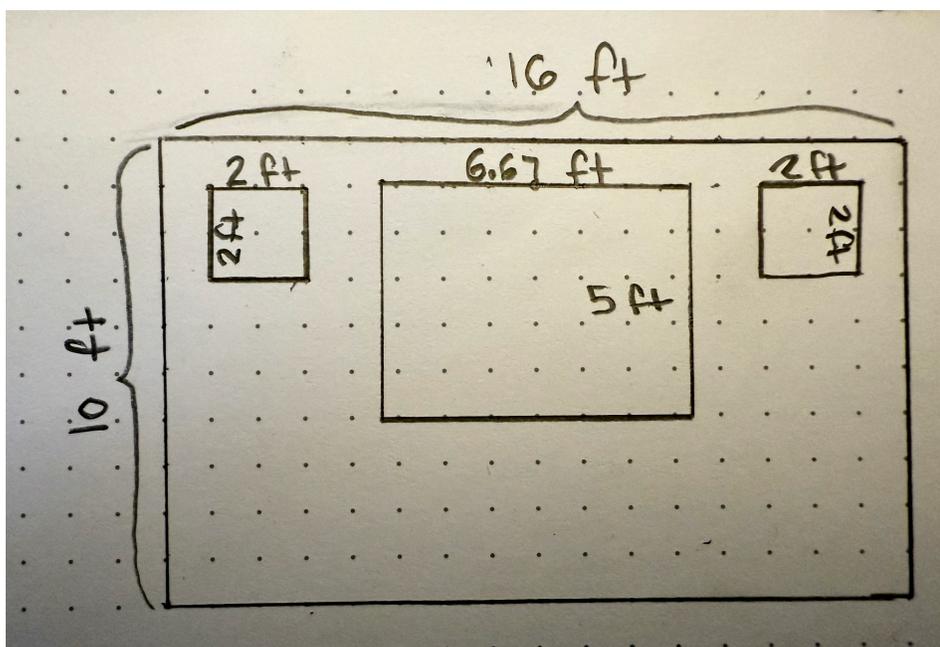
QUESTION 3

Your new bedroom has a greater area than your previous bedroom. Your new bedroom has an area of 160 square feet. Even better, you got a bed upgrade! Your sibling left behind their queen-size bed (80in L x 60in W). Create a scale drawing of your new bedroom. Draw the queen-size bed and your nightstands.

What is the current area of the unused floor space? Explain with written/mathematical justifications.



Answers will vary. Teachers should double check that images are drawn to scale. Possible student response: Reasonable new bedroom dimensions are 16ft x 10ft and 20ft x 8ft.



original area	$10 \times 16 = 160 \text{ ft}^2$
side tables	$4 + 4 = 8 \text{ ft}^2$
bed	$6.67 \times 5 = 33.35 \text{ ft}^2$

$160 - 33.35 - 8 = 118.65 \text{ ft}^2$
of unused space

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QUESTION 4

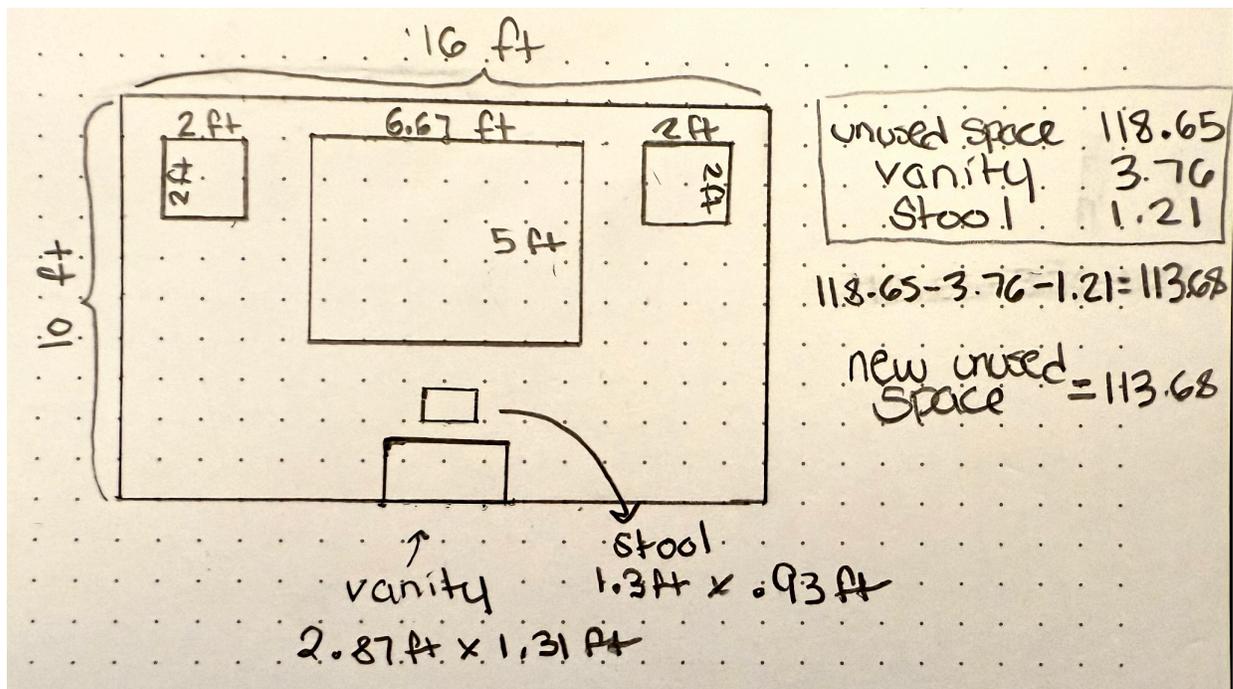
Now you get to accessorize your new room! Tap into your inner interior designer. Do you want corner shelves, a circular coffee table, or a gaming desk? The choice is yours! Decide which accessories you want to add to your new room.

Add to your room design by doing the following:

1. Research the dimensions of the accessories you want to include. Draw your accessories in the new room. Label the dimensions.
2. Explain how much unused floor space you have left.



Answers will vary. Teachers should double check that images are drawn to scale. Possible student responses should include accessories drawn to scale. Unused floor space should be calculated by subtracting from the answer in Question 3.



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QUESTION 5 What else did you learn that was not reflected in Questions 1-4?



Answers will vary.

QUESTION 6 Compare your answers to these questions now to your answers from the earlier attempt. What do you notice about your progress?



Answers will vary. Look for students to explain what they know now compared to what they knew when responding to the pre-test.