

Sakac Hall: Brick by Brick



History:

In 2003, there was an extremely high demand for on-campus student housing. In honor of Sr. Ann Sakac, the president of Mount Saint Mary College, they opened the new freshman dorm building called Sakac Hall. It was open for freshman women only. This beautiful building was the best on-campus living with a gorgeous view of the Hudson River. The architect tried to reflect the Dutch Colonial roots of the architecture in the city of Newburgh. His goal was to establish a modern collegiate style to attract incoming freshman. It was built by the Liscum McCormack VanVoorhis company for a total cost of \$12,170,000. The total area of the building is 82,000 square feet.

Problem:

Find the cost of all the bricks used to build the Sakac Hall dorm building on campus. You will have to find the number of bricks used by splitting the building into different portions then multiplying it by the cost of the bricks, which will be given. You must take into account that the shape of building and remember that it is not a perfect rectangle and the windows must be cut out. Even though the bricks are different colors the cost is the same amount.

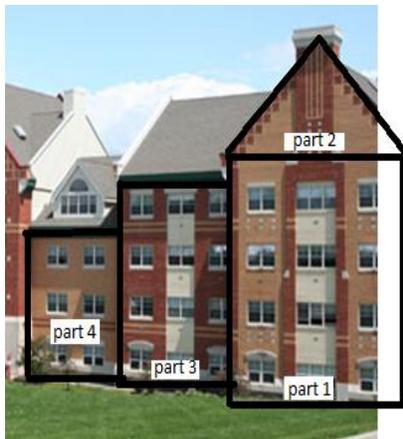


Figure 1



Figure 2



Figure 3

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Solution:

Step one: Split Sakac into 7 different columns. Notice that both sides are symmetrical with the exception of the middle column being different. Because the two sides are symmetrical, you can find the solution for only one side then simply multiply by two.

Step two: By splitting the building into the four parts Figure 1, find the number of bricks in each part then multiply by 2, for the other side of the front of the building. Remember to subtract the areas of the windows, because you will not use bricks to fill the windows. Also, for parts one and three, you must subtract the cement part in the middle of the column. **Parts 1 & 2 – 3450, Part 3 – 2824, Part 4 – 2560**

Step three: Now take the answer found in step two and multiply it by two again. This will take into account the back of the building. This answer will be later referred to as “A.”

$$3450 + 2824 + 2560 = 8834 \times 2 = 17,668$$

Step four: For the next step, you must find the number of bricks on the sides of the building, Figure 2. Finding one side and multiplying by two will be sufficient because these two sides are also symmetrical. Once again, don't forget to subtract the windows and cement section in the middle from your answer. This answer will later be referred to as “B.” **$1750 \times 2 = 3500$**

Step five: Now we must figure out how many bricks are used in the middle column, Figure 3. This one will be a little different because we must take into account the white portion that is not made of bricks and the doorway with the sign that reads “Sakac Hall.” The best way to separate this would be into one rectangle and two triangles on the upper portion. This answer will later be referred to as “C.”

$$2220 + 2610 = 4830$$

Step six: Each brick costs \$0.70. You must now multiply the total number of bricks you have found, A+B+C, by the cost of each brick. This will be your final answer. **Total number of bricks: $17,668 + 3500 + 4830 = 25,998$ bricks Total Cost: $25,998$ bricks \times $\$0.70 = \$18,198.60$**

Final Answer: It will cost \$18,198.60 to purchase all of the bricks necessary to build Sakac Hall.

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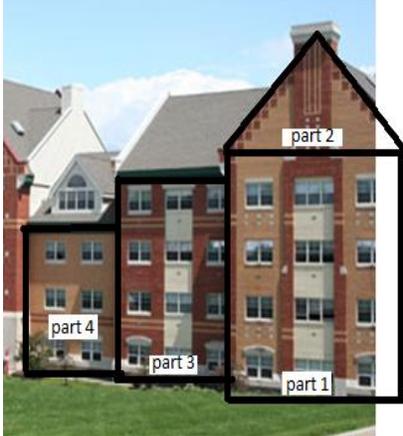


Figure 1



Figure 2



Figure 3

("School Designs." *Mount St. Mary College, Sakac Hall*. N.p., n.d. Web. 20 Apr. 2013. <http://schooldesigns.com/Project-Details.aspx?Project_ID=2045>.)