

## Fireplace Galore

In the main building of the Desmond estate there are 6 fireplaces; all are unique and beautiful. Most of the fireplaces are tiled. Many of the tiles are whole while some of them are cut into smaller pieces.



Let's estimate the number of tiles needed for the fireplace by finding the area of a single tile and the area of the fireplace.

What is the area of a single tile?

To find the area of the fireplace, first find the area of the outside of the fireplace, then find the area of the opening. Once both areas are recorded subtract the opening area from the outside area to find the area of the tiled portion. Divide the area by the area of one tile to determine how many tiles are needed.

Our calculation above is just an estimate, since some of the actual tiles used are whole tiles, while other tiles had to be cut to fit in place. Let's count how many tiles were actually used.

Whole tiles: \_\_\_\_\_ Less than half: \_\_\_\_\_ More than half: \_\_\_\_\_

To estimate how many tiles were used in total use the formula  $A + .5(B + C)$ , where  $A$  is the number of whole tiles,  $B$  is the number of less than half tiles, and  $C$  is the number of more than half tiles.

How close was your estimate? What was the percent error? \_\_\_\_\_

Why would there be an error? How you could you resolve this issue in the future?

Suppose you had a box of 3"x3" tiles, 6"x6" tiles or 8"x8" tiles at Desmond. How many tiles would you need to have in the box in order to resurface the fireplace.