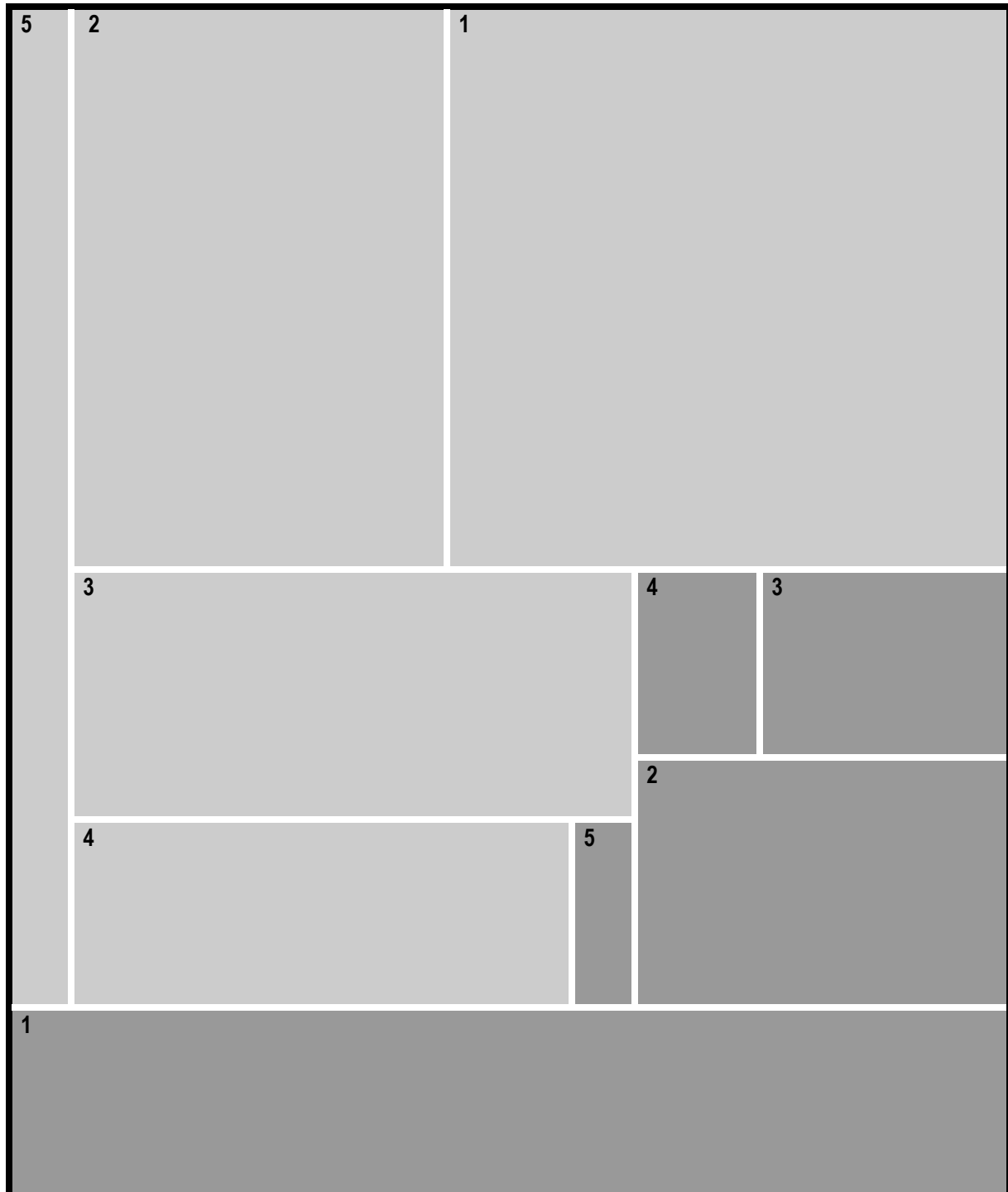


5.3.1 Investigating Exponential Decay: Tiling a Floor

INTRODUCTION:

A lavish hotel is undergoing a renovation and has hired an interior design team to finish the very large rectangular floor in its foyer. It has been decided to use light and dark grey marble slabs to cover the 16 m by 19 m surface. (See diagram below.)



5.3.1 Investigating Exponential Decay: Tiling a Floor (continued)

INSTRUCTIONS

- Using the scale 1 cm represents 1 m and a ruler, determine the actual length, width and area for each indicated dark grey slab and record your results in the table below.

Dark Grey Slabs				First Differences	Ratio
Slab Number	Length (m)	Width (m)	Area (m ²)		
1					
2					
3					
4					
5					

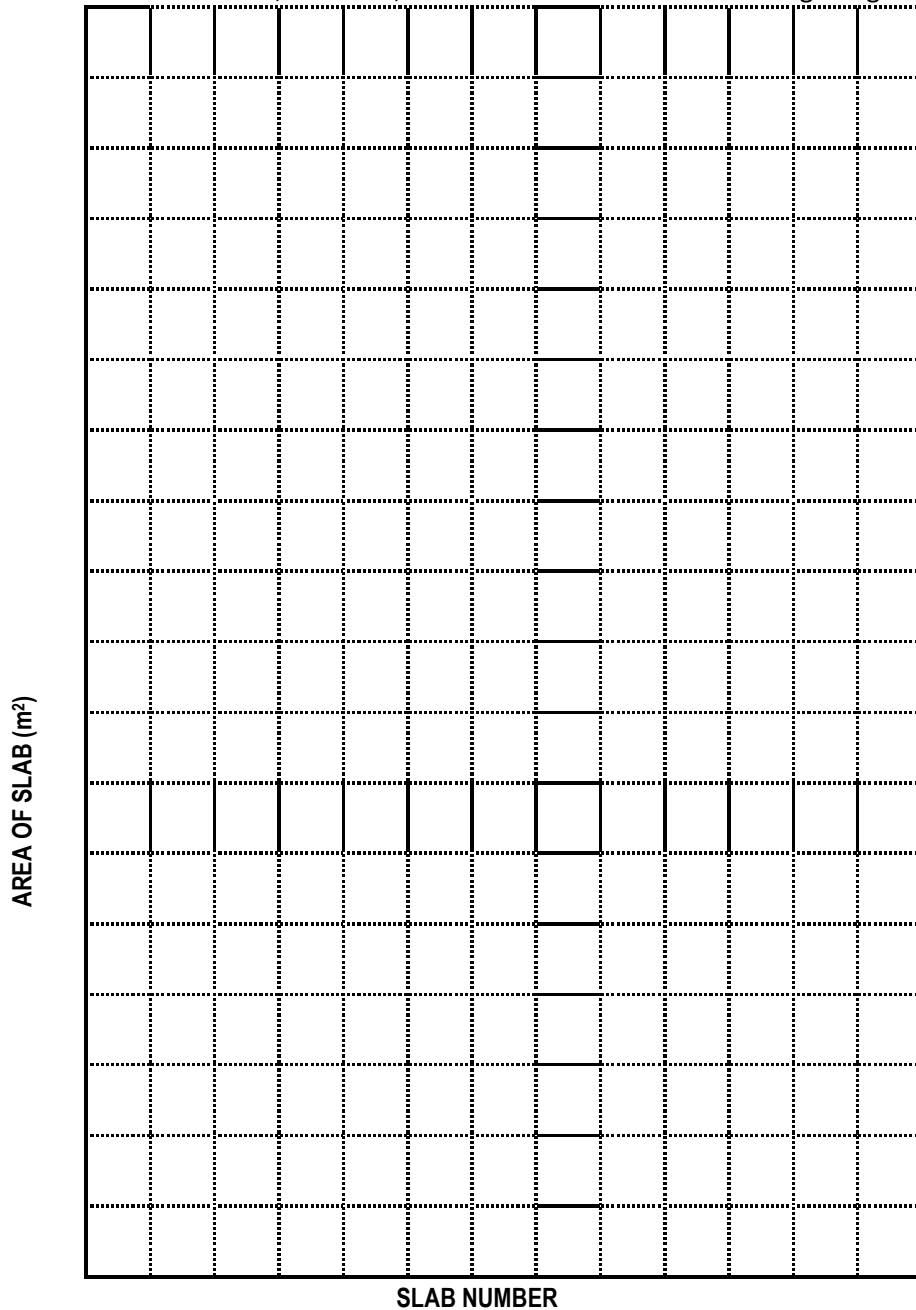
- Repeat step 1 for each indicated light grey slab and record your results in the table below.

Light Grey Slabs				First Differences	Ratio
Slab Number	Length (m)	Width (m)	Area (m ²)		
1					
2					
3					
4					
5					

- Contrast these First Differences with those of exponential growth data?
- Calculate the ratios between consecutive Areas in each table. What do these values tell us about the data?

5.3.1 Investigating Exponential Decay: Tiling a Floor (continued)

5. Neatly sketch 2 graphs on the same grid below using your data from the tables. (Note: This is DISCRETE data; however, the smooth curve assists in seeing the general shape of the graph.)



6. Refer back to your table and calculate the **total** area covered by each type of marble.
7. The light grey marble costs \$ 700/m² and the dark grey marble costs \$ 950 /m². Determine the amount of money saved by using light grey for the whole foyer area instead of covering the area with the combination of light and dark grey marble slabs as shown in the diagram.