

Estimating the height of a building

[Engineering](#)



Therefore, the calculation of the height of the building will be as follows;

$$15 * 7 = 108$$

This means that the height of the tower from the first floor is 108ft. However, in order to find the total height of the building from the ground floor, 15ft have to be added to the total 108ft. Therefore, the total estimated height of the tower from the ground floor to the indicated place will be 123ft.

$$108 + 15 = 123\text{ft}$$

This estimation method is better since there is no information provided about the height of the floors. Even though the estimation method cannot provide accurate data, it is the best method for estimating the length of the tower up to the indicated place.

Question 2

In order to calculate the total load the foundation of the tower must carry, assumptions have to be made based on the universal measurements used for the construction of towers and buildings. One can assume that the tower is 8m wide and 16m long, the wall, that is above the foundation, is 1.0kN/m, the piers are 300mm, and the walls are 200mm thick. The mass of the concrete used in the construction is 2400kg/m³. Below is the calculation for each floor which will later be multiplied by the number of floors present in the tower.

Wall load – for each side $16 \times 1.0\text{kN}$

16kN

Foundation load –for each side, $16 \times 24\text{kN} \times 0.2$

76.8kN

Floor load - for each side $7/32 \times 998\text{kN}$

<https://assignbuster.com/estimating-the-height-of-a-building/>

218. 4kN

Floor load - $1/8 \times 998\text{kN}$

124. 8kN

Total

324kN

From the calculations above, the total amount of load on the foundation is equaled to $324 \times 10 = 3240\text{kN}$. Factor 10 has been used since it is the number of floors that are evident in the image provided. The result obtained is a rough estimate since there are no accurate data provided by the image.