

9.2 PROJECT

DESIGNING A SWIMMING POOL

In this project, you will use the knowledge gained in Section 9.2 to design a swimming pool with a concrete walkway and estimate some of the costs involved in installing the pool.

Suppose you are designing a swimming pool for an apartment complex. You are given a few guidelines and a specific location in which to build the pool, but you are able to create the pool however you wish. The overall design phase will consist of designing the pool, estimating costs, and reflecting on your choices.

Design

1. Determine the shape of the pool. The shape of the pool can be square, circular, or rectangular. If the pool is circular, the depth should be constant. If the pool is square or rectangular, the pool can have a depth that steadily increases from one side to the other to provide a deep end and a shallow end. Create a sketch of the pool.
2. Consider what a reasonable length, width, and depth would be for the pool. Add measurements to your sketch in feet.
3. The concrete walkway around the pool needs to be the same width all the way around and wide enough to allow the use of poolside lounge chairs and provide enough room to safely walk. Determine the width you would use for the walkway and add it to your sketch. The depth of the concrete should be 6 inches. (**Note:** Assume poolside lounge chairs have a length of 6 feet.)

Cost Estimation after the Pool is Installed

4. Once the pool is constructed, the interior surface will need to be painted with two coats of swimming pool paint. Calculate the surface area of the pool. The paint you will use costs \$50 per gallon and covers 250 square feet per gallon. How many gallons will you need for the two coats of paint? How much will the paint cost?
5. Determine the volume of the pool in both cubic feet and gallons using the conversion factor $1 \text{ cubic foot} \approx 7.48 \text{ gallons}$. (Assume the pool is filled to the top.) To fill the swimming pool with water, it will cost \$9 for every 1000 gallons of water. How much will the water cost to fill the pool one time, rounded to the nearest dollar?
6. Calculate the volume of concrete (in cubic feet) the walkway around the pool will require. It will cost \$4 per cubic foot to have the concrete poured. How much will it cost to pour the concrete?

Analysis

7. Do any of the costs seem unreasonable? Explain your answer.
8. What can you change in your plan to decrease the overall cost after the pool is installed?
9. What are some cost factors that were not considered in this project for the design and installation of the pool?