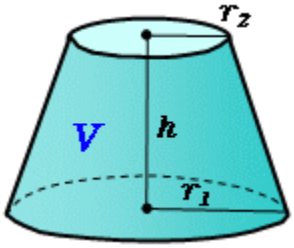
Poké Ball Problem

To determine the amount of Poké Balls Team Rocket can get from the cache in Coit Tower, the first step is to determine the volume of an individual Poké Ball. I was unable to find any official source for the dimensions of Poké Balls for either the anime or the games, but I did find a fan-made diagram that estimates these values. If we assume the dimensions of a Poké Ball listed on this image are correct: https://am23.akamaized.net/tms/cnt/uploads/2011/12/pokeball2-550x520.jpg , then a Poké Ball has a diameter of 2.50 inches, a circumference of 7.85 inches, and a volume of 8.18 in^3.

Coit Tower is 212 feet tall and has a diameter of approximately 38 feet.[i] The tower is slightly slanted, so that it is 18 inches narrower in diameter at the top. To calculate the total volume of Coit Tower, we can use the following formula for a truncated circular cone:

$$V = \frac{1}{3}\pi(r1^2 + r1r2 + r2^2) * h$$



Where r1 is 19 feet, r2 is 17.5 feet, and h is 212 feet. Inserting these values into the equation above, we calculate the total volume to be approximately 2.22 * 10^5 ft^3 which is equivalent to 3.84 * 10^8 in^3.

In general, about 74% of empty space can be filled by closely-packed spheres[ii], so the total volume of Poké Balls that can fit in Coit Tower is (3.84 * 10^8 in^3/ 8.18 in^3) x 0.74 = 34,738,386 Poké Balls in total for Team Rocket to take.

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[i] https://sfrecpark.org/wp-content/uploads/CoitTowerBrochure_V5.pdf
[ii] https://en.wikipedia.org/wiki/Close-packing_of_equal_spheres