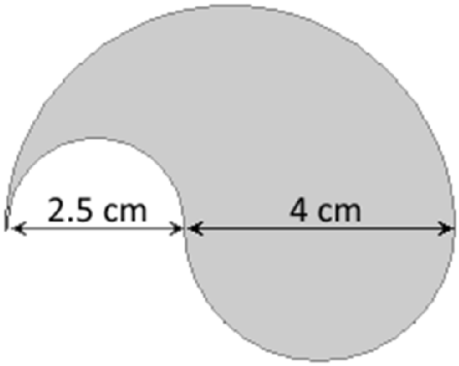
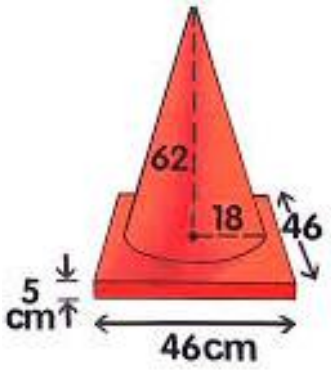
Unit 0 Practice Quiz – Composite Shapes and Relationships

Victim: _____

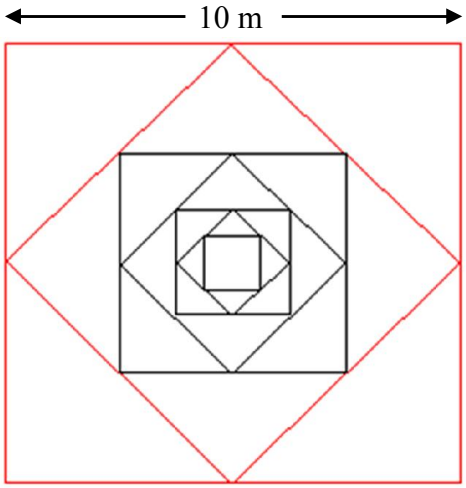
1. Calculate the ***perimeter*** and ***area*** of the following shape:



2. Calculate the ***surface area*** and ***volume*** of the following shape:



3. Consider the diagram at the right. It consists of a series of squares within squares. Each square is formed by connecting the midpoints of the square that is immediately larger than it.



(a) Explain why the area of each square is exactly ***half*** of the area of the square that is immediately larger than it. (**Hint:** There is a way of demonstrating this that involves much less work than using the Pythagorean Theorem!)

(b) Complete the following table. (The squares are numbered according to their size. Square 1 is the largest, square 2 is the second largest, square 3 is the third largest and so on.)

Square Number	Area (m^2)
1	100
2	
3	
4	
5	
6	

(c) Imagine that the process of forming squares within squares continues indefinitely. This means that the squares get smaller and smaller and that there are infinitely many of them. Explain why no matter how many squares are formed, the ***total area*** of all the squares will always be less than 200 m^2.

(d) Write an equation that relates the area of a square to its square number. (The square number should be the independent variable and the area should be the dependent variable.)