Lesson Summary

There are a few basic assumptions that are made when working with volume:

(a) The volume of a solid is always a number greater than or equal to 0.

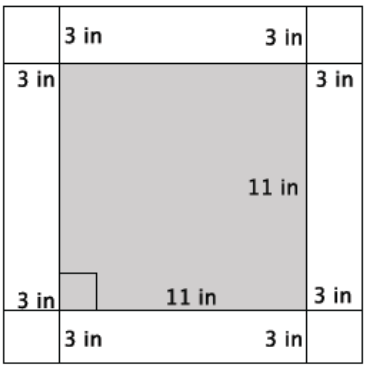
(b) The volume of a unit cube (i.e., a rectangular prism whose edges all have a length of 1) is by definition 1 cubic unit.

(c) If two solids are identical, then their volumes are equal.

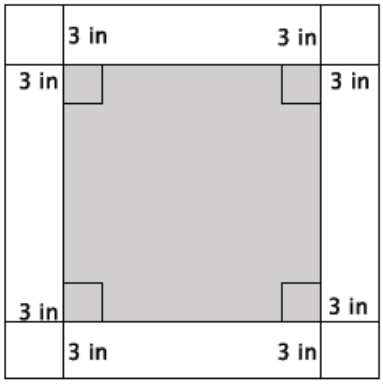
(d) If two solids have (at most) their boundaries in common, then their total volume can be calculated by adding the individual volumes together. (These figures are sometimes referred to as composite solids.)

Problem Set

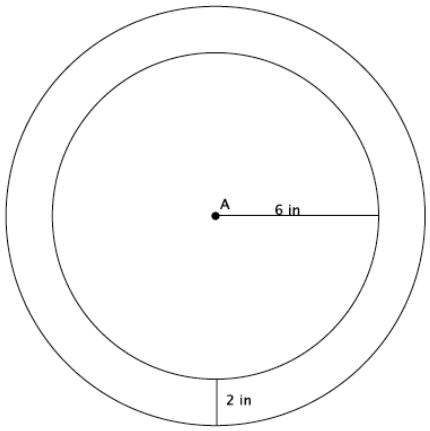
1. Calculate the area of the 3-inch white border of the square figure below.



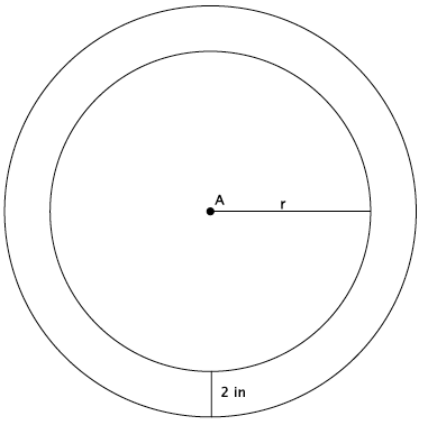
2. Write a function that would allow you to calculate the area, A, of a 3-inch white border for any sized square picture measured in inches.



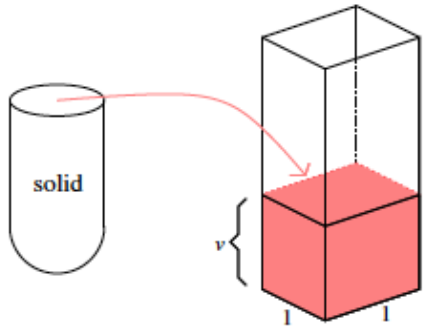
3. Dartboards typically have an outer ring of numbers that represent the number of points a player can score for getting a dart in that section. A simplified dartboard is shown below. The center of the circle is point A. Calculate the area of the outer ring. Write an exact answer that uses π (*do not* approximate your answer by using 3.14 for π).



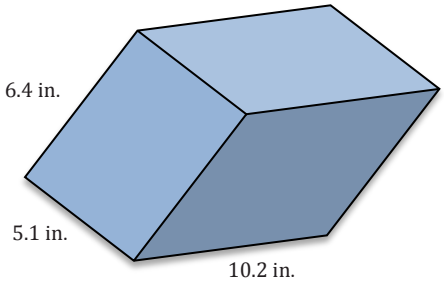
4. Write a function that would allow you to calculate the area, A, of the outer ring for any sized dartboard with radius r. Write an exact answer that uses π (*do not* approximate your answer by using 3.14 for π).



5. The shell of the solid shown was filled with water and then poured into the standard rectangular prism, as shown. The height that the volume reaches is 14.2 in. What is the volume of the shell of the solid?

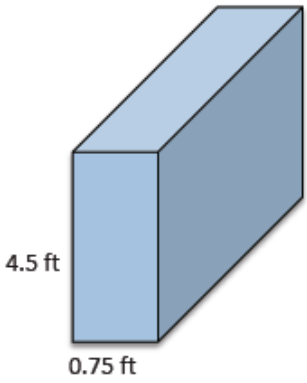


6. Determine the volume of the rectangular prism shown below.



7. The volume of the prism shown below is $972\ \text{cm}^3$. What is its length?

8. The volume of the prism shown below is $32.7375\ \text{ft}^3$. What is its width?



9. Determine the volume of the 3-dimensional figure below. Explain how you got your answer.