

## Pre and Post Test

1. If a tree has a trunk that measures 10 inches in diameter, can it have branches that have a total diameter of 38 inches? Yes or No \_\_\_\_\_.
2. If a tree trunk grows from 2 inches in diameter to 4 inches in diameter, how much more area does the tree trunk have? \_\_\_\_\_.
3. If a tree trunk grows from 2 inches in diameter to 4 inches in diameter, how much more volume does it hold per linear foot? \_\_\_\_\_.
4. If a cube-shaped box measuring 20cm on each side was stretched so that it measured 40cm on each side, how much more volume would it hold? \_\_\_\_\_.
5. In the example above, how many times would its volume have increased? \_\_\_\_\_.

### Answers:

1. Yes, because the trunk has an efficiency of scale.
2. 2 divided in half = 1,  $1 \times \pi = 3.14$   
4 divided by 2 = 2,  $2 \times 2 \times \pi = 12.56$   
The tree has 9.42 more square inches.
3. 2 inches in diameter =  $3.14 \times 1 = 3.14$   
4 inches in diameter =  $12.56 \times 1 = 12.56$
4. 20cm to 40cm is double, or  $2 \times 2 = 4$ , but since the shape is a cube, then it is 4 to the third power, or  $4 \times 4 \times 4 = 64$  or  $40 \times 40 \times 40 = 64,000\text{ccm}$
5.  $20 \times 20 \times 20 = 8,000\text{ccm}$   
 $40 \times 40 \times 40 = 64,000$  or 8 times or 2 to the third power.