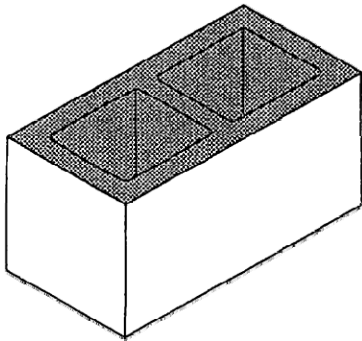


# The Difference Between “Net Area” vs. “Gross Area”

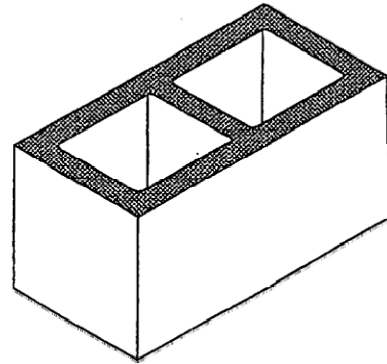
Illustration of the difference between  
“Net Area” and “Gross Area”

## GROSS AREA



$$\begin{aligned} \text{Gross Area} &= 119 \text{ sq. in.} \\ &= W \times L \\ &= 7.63 \times 15.63 \\ &= 119.25 \text{ sq. in.} \end{aligned}$$

## NET AREA



$$\begin{aligned} \text{Net Area} &= 62 \text{ sq. in.} \\ &= \text{Gross Area} \times \% \text{ Solid} \\ &= 119.25 \times 0.52 \\ &= 61.88 \text{ sq. in.} \end{aligned}$$

PSI (Pounds per sq. in.) on Gross Area

Total Crushing Load (pounds)  
From compression testing machine  
Gross sq. in.

$$\frac{120000}{119} = \mathbf{1008 \text{ psi}}$$

PSI (Pounds per sq. in.) on Net Area

Total Crushing Load (pounds)  
From compression testing machine  
Net sq. in.

$$\frac{120000}{62} = \mathbf{1935 \text{ psi}}$$

**Question:** *If a block tests 1000 psi on its gross area and is 50% hollow; what is the psi on its net area?*

**Note:** *This load is confusing to many people. When the sample (cylinder, block, mortar sample, whatever) is placed into the compression testing machine, the machine imparts a load in pounds. At some point the machine crushes the sample and the machine records that amount of pounds that it took to do that—the total crushing load.*