

Jenga Lab

Name _____ Date _____ Group _____ Period _____

Objectives:

- 1-To calculate the density of one Jenga block and compare this to the densities of two and then four Jenga Blocks.
- 2-To apply what is learned about the density of Jenga blocks to other substances/materials.

Procedures:

- 1-Determine the volume of one of the four Jenga blocks using the same technique as in the [volume lab](#).
- 2-Measure the lengths of each of the three sides that meet at any corner of the Jenga block as you did in the [volume lab](#).
 - a- Use the hand lens to make a more precise measurement of the lengths.
 - b- Then record these measurements to the nearest 0.01 cm. in the chart and calculate its volume using the formula: $V = L \times W \times H$
- 3- Next carefully mass the Jenga block to the nearest 0.01 g. Then, by using the formula, **density = mass ÷ volume**, calculate the density in grams / cm³.
- 4- Assume that the volume of 2 Jenga blocks is double the volume of just one Jenga block, and multiply the volume of the block you calculated from step 2 b above, times 2. Record this doubled volume in Data Chart 2.
- 5- Place two of the Jenga blocks on the balance and measure their mass. Record this also in Data Chart 2.
- 6- Repeat steps 4 and 5 with four Jenga blocks.
- 7- Calculate the densities of two and four Jenga blocks and record this in Data Chart 2.

Materials: Triple beam Balance, ruler, four Jenga blocks, hand lens

Safety: General

Observations:

Data Chart 1

$$V = L \times W \times H$$

$$D = M \div V$$

Object	Length of Side 1 to 0.01 cm	Length of Side 2 to 0.01 cm	Length of Side 3 to 0.01 cm	Volume in cm ³ to 0.01 cm ³	Mass in grams to 0.01g	Density in g/cm ³ (round to nearest .1 g/cm ³)
1 st Jenga block						

Data Chart 2

$$D = M \div V$$

Object	Volume of 1 Jenga block in cm ³ to 0.01 cm ³	Multiply Volume by	Combined Volume in cm ³ to 0.01 cm ³	Mass in grams to 0.01g	Density in g/cm ³ (round to nearest .1 g/cm ³)
2 Jenga blocks		2 x			
4 Jenga blocks		4 x			

Question 1. How does the density for one Jenga block compare to the density of two and then four Jenga blocks. (Complete sentence answer)

Question 2. Suppose you were given a sample of a substance that had a density of 4 g/cm^3 . Based on what you've learned in this activity, what would the density be if you had twice as much of the same substance? (Complete sentence answer)
