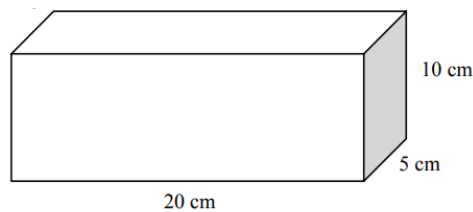


1. What is the volume of an iron cube measures 10cm X 10cm X 10cm?
2. If the same iron cube weighs 7.9kg, what is its density?
3. A loaf of bread has a volume of 2270 cm^3 and a mass of 454 g. What is the density of the bread?
4. Calculate the mass of a liquid with a density of 2.5 g/mL and a volume of 15 mL.
5. Different kinds of wood have different densities. The density of oak wood is generally 0.7 g/cm^3 . If a 35 cm^3 piece of wood has a mass of 25 g, is the wood likely to be oak?

6. A carver begins work on the following block of granite that weighs 2700 g. What is the density of the granite?



7. A 800g boulder has a density of 8 g/cm^3 . What is the volume of the boulder?
8. The country of Bulgaria has a population of 7,037,935. The country has an area of $110,879 \text{ km}^2$. What is the population density of Bulgaria?
9. The country of Colombia has a population of 45,239,079. The country has an area of $1,138,910 \text{ km}^2$. What is the population density of Columbia?

Extra Problems

The density of pine is generally about 0.5 g/cm^3 . What is the mass of a 800 cm^3 piece of pine?

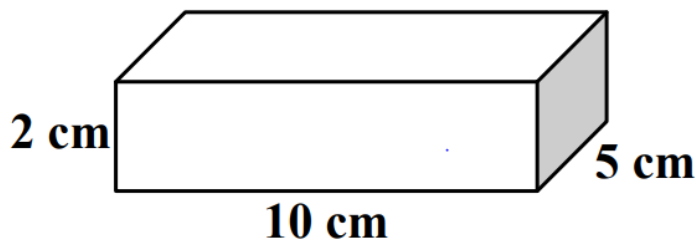
A chef fills a 50 mL container with 43.5 g of cooking oil. What is the density of the oil?

A student measures the mass of an 8 cm^3 block of brown sugar to be 12.9 g. What is the density of the brown sugar?

A machine shop worker records the mass of an aluminum cube as 176 g. If one side of the cube measures 4 cm, what is the density of the aluminum?

A block of wood has a density of 0.6 g/cm^3 and a volume of 1.2 cm^3 . What is the mass of the block of wood?

Calculate the volume of a liquid with a density of 5.45 g/mL and a mass of 65 g.

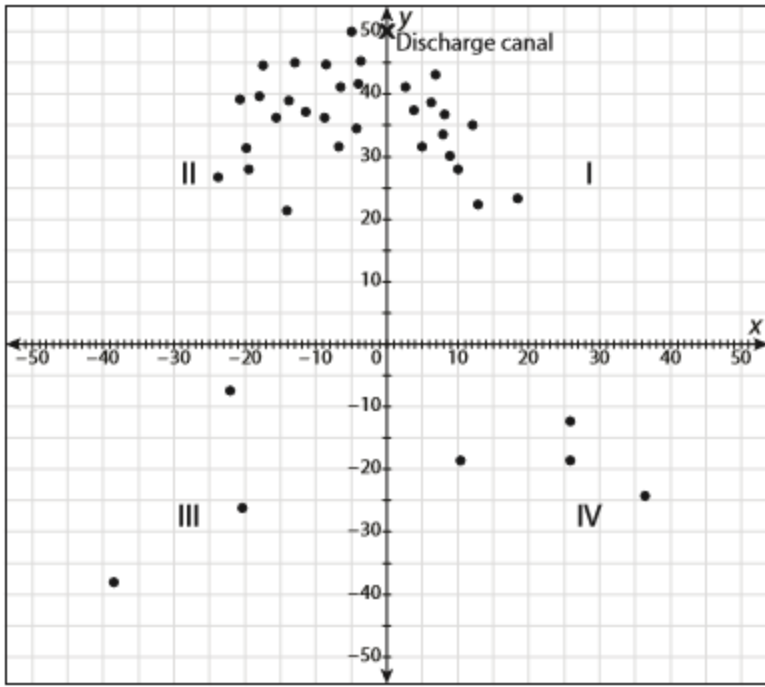


Adrian recently bought an office building at a rate of \$10 per square foot, and spent \$750,000 on renovations. If the building has 30,000 square feet of office space, what is the price per square foot that Adrian would need to sell the building for to break even on his investment?

A student group conducted a sample of plants in local meadows. The students dropped a $1.25 \text{ m} \times 1.75 \text{ m}$ rectangular plastic frame onto a section of a meadow, then they recorded and counted every type of plant found within the rectangle. They did this 6 times in each meadow, at evenly spaced locations throughout the meadows. For one meadow measuring $100 \text{ m} \times 200 \text{ m}$, the counts of black-eyed Susan plants within the rectangle were 2, 10, 7, 19, 5, and 13. What is a reasonable estimate of density of this plant throughout the entire meadow? How should a person looking for black-eyed Susans interpret this result?

4. The next day, the same student group sampled a different meadow that measured $75 \text{ m} \times 125 \text{ m}$. One of the rectangular plastic frames had broken on the way home the previous day, so one member of the group brought a circular hoop with a diameter of 1.2 m to replace the broken rectangle. The students recorded and counted 0, 14, 3, 9, and 11 black-eyed Susans in the rectangles, and 6 black-eyed Susans in the hoop. a. Estimate the density of this plant throughout the entire meadow. What is a reasonable estimate of the total black-eyed Susan population in this meadow? b. Compare the estimated density for this meadow with the estimated density in the meadow from problem 3. In which meadow would you expect to have the best luck finding a blackeyed Susan quickly, and why

Manatees are known to gather in the warmer waters surrounding power plants, which dispose of heated wastewater using discharge canals. The diagram shows the distribution of manatees on a cool winter day in the hot-water discharge basin surrounding a Gulf Coast power plant, as seen on an aerial security photograph. The plant's discharge canal is marked by an X at the end of the positive y-axis. Each data point represents 10 manatees, and each quadrant represents an area measuring 50 yards by 50 yards.



Calculate the density of manatees in each of the four quadrants. Then, calculate the average density of the manatees for all four combined quadrants that make up the discharge basin. Contrast and compare the densities, explain any variations, and make note of any other factors that should be included in relation to the reasonableness of the results and units.

Calculate the density in manatees per square yard for each quadrant