

Density & Population Density

Name: _____

Period: _____

- 1- The table below shows the mass and volume of different metals. Find the density of each.

Substance	Mass (grams)	Volume (cm ³)	Density (g/cm ³)
Aluminum	135	50	
Cesium	308.8	160	
Gold	482.5	25	
Lead	339	30	

- 2- The table shows the population and area of several countries. Find the population density for each country.

Country	Population	Area (km ²)	Density (people/km ²)
Singapore	5,183,700	710	
Bhutan	738,267	38,394	
Bangladesh	152,518,015	147,570	
South Korea	48,456,369	99,538	

- 3- New York City has an area of 303 square miles. In 2011, New York City had a population of 8,244,910. What was the population density of New York City in 2011?

- 4- The state of Connecticut has an area of 4,845 square miles. In 2011, Connecticut had a population of 3,580,709. What was the population density of Connecticut in 2011?

- 5- Paris, France, has 2,193,031 people living on 105.4 square kilometers of land. The city of San Francisco, California, has 812,826 people living on 121.47 square kilometers of land. How many fewer people live on a square kilometer of land in San Francisco than in Paris?

- 6- Japan has 127,960,000 people living on 377,944 square kilometers of land. Belgium has 11,007,020 people living on 30,528 square kilometers of land. How many fewer people live on a square kilometer of land in Japan than in Belgium?

- 7- A florist recommends that you should grow 4 Flower A plants per square foot, and 9 Flower B plants per square foot. If you want to grow 50 plants each of Flower A and Flower B, how many more square feet of garden space do you need for the Flower A plants than Flower B plants?

- 8- A cylindrical shark tank with a height of 2 meters and a diameter of 9 meters holds two sharks. What is the population density of the shark tank?

- 9- A public aquarium wants to build a tank large enough for 5 sharks. Based on the population density you found in the previous problem, what will the volume of the tank need to be to hold the sharks?

10- John has a large salt water tank in the shape of a rectangular prism (2 ft by 2.5 ft by 5 ft) that he wants to have living rock creatures cover the bottom. He has been told that a certain type he would really like to have has a population density of about 0.25 per cubic foot. How many of these could he have in his tank?

14- Kami just purchased an aquarium at a yard sale. It measures 25 cm x 35 cm x 70 cm. She wants to purchase several somewhat exotic fish that she's told that in order to thrive should only have one per liter. How many of these fish could she have in the tank? (Recall cubic centimeters is the same as a milliliter).

11- A park wants to build a small butterfly garden. It will be shaped like a cube with sides of 12 feet. They want people to see a butterfly at least every 8 cubic feet. What is the smallest amount of butterflies they will need to have in the garden for this to be the case?

15- Stacked marbles due to their spherical shape do not fill all the space within a container. Charlie wants to get a container that will hold all his marbles. His smaller container that measures 4 cm by 10 cm by 13 cm holds about 90 marbles. He has 250 marbles. What volume would his new container have to hold to keep all his marbles in it?

12- Gena loves hummingbirds and has decided to build a small atrium in her mansion's backyard. She has selected a cylindrical design which will make the enclosure 9 ft in diameter & 10 ft in height. She is told that if she exceeds a population density of 1 hummingbird per 5 cubic feet, they will not thrive. What is the maximum number of hummingbirds she could have in her atrium so they will thrive?

13- Tyson is trying to guess how many jelly beans are in a jar (cylindrical). He decides to approach it mathematically. He estimates that the jar is about 10 inches tall with a diameter of 4 inches and that a cubic inch would contain around 10 jelly beans. Based on his estimation, what do you think Tyson will guess as the number of jelly beans in the jar?