

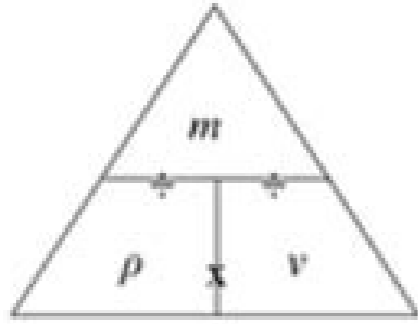
Density equation practice worksheet answers

1

Name: _____ Date: _____

Calculating Density Practice Problem

Use the following diagram to help you answer the questions below.



Where m = mass ρ = density v = volume

Hint: Using the diagram above, put your finger over the one you want to find out and you will see how to work out the question.

1. A student measures the mass of an 8cm^3 block of brown sugar to be 32g . What is the density of the brown sugar? (3 marks)
2. A chef fills 50cm^3 container with 250g of cooking oil. What is the density of the oil? (3 marks)
3. A piece of cork has a mass of 24g and a density of 6g/cm^3 . What is the volume of the piece of cork? (3 marks)
4. A carver begins work on a block of granite that has volume of 1000cm^3 and a density of 5g/cm^3 . What is the mass of the block of granite? (3 marks)
5. A box has a volume of 55cm^3 and a density of 5g/cm^3 . What is the mass of the box? (3 marks)
6. A wooden cylinder has a density of 4g/cm^3 and a mass of 48cm^3 . What is the volume of the wooden cylinder? (3 marks)
7. A wooden block has a volume of 12cm^3 and a density of 3g/cm^3 . What is the mass of the wooden block? (3 marks)
8. An ice block measuring 5cm by 5cm by 5cm has a density of 5g/cm^3 . What is the mass of the ice block? (4 marks)

TOTAL 25 marks

CHAPTER 5 REINFORCEMENT Comparing Densities Additional Questions

Goal • Use this page to compare the densities of different substances.

What to Do

- Use the information in the table to answer the following questions.
1. You drop three things into a glass of water: a piece of styrofoam, a piece of oak, and a gold ring. Which will float? Which will sink?
 2. Which is more dense:
(a) carbon dioxide or air?
(b) oxygen or air?
(c) hydrogen or air?
 3. Sometimes people say that the air is "thinner" high up on a mountain. Is this true?
 4. Someone decides that it would be wise to get rid of machine oil by dumping it into a nearby pond. This person thinks that since it is only a small amount of machine oil, dumping it would not create pollution because the machine oil would mix with the water in the pond and "disappear." What would you say to this person?

Fluid	Density (g/mL)	Solid	Density (g/cm ³)
hydrogen	0.00009	strontium	0.005
helium	0.00018	iron	7.87
air	0.0013	oak	0.75
oxygen	0.0014	sugar	1.59
carbon dioxide	0.0019	salt	2.16
ethyl alcohol	0.79	aluminum	2.70
machine oil	0.90	iron	7.87
water	1.00	nickel	8.90
seawater	1.03	copper	8.92
glycerol	1.26	lead	11.34
mercury	13.55	gold	19.32

5.3 & 5.4 Density Worksheet and KEY

Name: _____ Date: _____

ANSWER KEY

Density Worksheet

Directions: Solve each problem below. Show your work and circle your answers.

Example: A metal has a sample of aluminum that has a mass of 27 g and a volume of 10 cm³. What is the density of aluminum?
Density = mass/volume
Density = 27 g / 10 cm³
Density = 2.7 g/cm³

1. A ball of lead has a mass of 988 g and volume of 2300 cm³. What is the density of the ball?
Density = mass/volume
Density = 988g / 2300cm³
Density = 0.43 g/cm³
2. A block of wood has a mass of 6.0 g and a volume of 3.2 cm³. What is the density of the block of wood?
Density = mass/volume
Density = 6g / 3.2 cm³
Density = 1.9 g/cm³
3. The density of a substance is 4.0 g/cm³. If a sample of the substance has a volume of 25 cm³, what is its mass? (Hint: Use the equation: mass = density × volume.)
Mass = density × volume
Mass = 4.0 g/cm³ × 25 cm³
Mass = 100 g
4. You have a lead ball with a mass of 220 g. The density of lead is 10.5 g/cm³. What is the volume of the ball? (Hint: Use the equation: volume = mass/density.)
Volume = mass/density
Volume = 220 g / 10.5 g/cm³
Volume = 20.95 cm³

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Thank you for your participation! Jump to: Rock and Mineral density | Rock and mineral specific gravity You can download the questions (Acrobat (PDF) 25kB Jul24 09) if you would like to work them on a separate sheet of paper. Problem 1: You have a rock with a volume of 15cm³ and a mass of 45 g. What is its density? Hide Density is mass divided by volume, so that the density is 45 g divided by 15cm³, which is 3.0 g/cm³. Problem 2: You have a different rock with a volume of 30cm³ and a mass of 60g. What is its density? Hide Density is mass divided by volume, so that the density is 60 g divided by 30cm³, which is 2.0 g/cm³. Problem 3: In the above two examples which rock is heavier? Which is lighter? Hide The question is asking about heavier and lighter, which refers to mass or weight. Therefore, all you care about is the mass in grams and so the 60 g rock in the second problem is heavier and the 45 g rock (in the first question) is lighter. Problem 4: In the above two examples which rock is more dense? which is less dense? Hide The question is asking about density, and that is the ratio of mass to volume. Therefore, the first rock is denser, (density = 3.0) and the second rock is less dense even though it weighs more, because its density is only 2.0. This example shows why it is important to be careful to not use the words heavier/lighter when you means more or less dense. Problem 5: You decide you want to carry a boulder home from the beach. It is 30 centimeters on each side, and so has a volume of 27,000 cm³. It is made of granite, which has a typical density of 2.8 g/cm³. How much will this boulder weigh? Hide In this case, you are asked for a mass, not the density. You will need to rearrange the density equation so that you get mass. By multiplying both sides by volume, mass will be left alone. Substituting in the values from the problem, The result is that the mass is 75,600 grams. That is over 165 pounds! Hide Problem 6: Rocks are sometimes used along coasts to prevent erosion. If a rock needs to weigh 2,000 kilograms (about 2 tons) in order not to be shifted by waves, how big (what volume) does it need to be? You are using basalt, which has a typical density of 3200 kg/m³ Hide In this problem you need a volume, so you will need to rearrange the density equation to get volume. By multiplying both sides by volume, we can get volume out of the numerator (the bottom). You can then divide both sides by density to get volume alone. By substituting in the values listed above, So the volume will be 0.625 m³ Note that the above problem shows that densities can be in units other than grams and cubic centimeters. To avoid the potential problems of different units, many geologists use specific gravity (SG), explored in problems 8 and 9, below. Hide Image from ifischer/Collections/Fossils/rocks.html Problem 7: A golden-colored cube is handed to you. The person wants you to buy it for \$100, saying that is a gold nugget. You pull out your old geology text and look up gold in the mineral table, and read that its density is 19.3 g/cm³. You measure the cube and find that it is 2 cm on each side, and weighs 40 g. What is its density? Is it gold? Should you buy it? Hide To determine the density you need the volume and the mass since . You know the mass (40 g), but the volume is not given. To find the volume, use the formula for the volume of a box volume = length x width x height. The volume of the cube is 2cm x 2cm x 2cm = 8cm³. The density then is the mass divided by the volume: Thus the cube is NOT gold, since the density (5.0 g/cm³) is not the same as gold (19.3g/cm³). You tell the seller to take a hike. You might even notice that the density of pyrite (a.k.a. fool's gold) is 5.0 g/cm³. Luckily you are no fool and know about density! Thank you for interesting in our services. We are a non-profit group that run this website to share documents. We need your help to maintenance this website. To keep our site running, we need your help to cover our server cost (about \$400/m), a small donation will help us a lot. Please help us to share our service with your friends. You're Reading a Free Preview Page 2 is not shown in this preview.

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