Metric Conversions

1) 4.09 meters to centimeters _____
2) 455,500 centimeters to meters _____
3) 7.49 meters to millimeters _____
4) 3,198,400 millimeters to meters _____
5) 38.77 kilometers to meters _____
6) 4,731 meters to kilometers _____
7) 13.33 centimeters to millimeters _____
8) 3,509 millimeters to centimeters _____
9) 5.39 kilometers to centimeters _____
10) 76,080 centimeters to kilometers _____
11) 4.52 kilometers to millimeters _____
12) 88,680 millimeters to kilometers _____
13) 64.68 liters to milliliters _____
14) 227,500 milliliters to liters _____
15) 17.59 grams to milligrams _____
16) 2,416 milligrams to grams _____
17) 5.91 kilograms to grams _____
18) 98,700 grams to kilograms _____
19) 57.59 kilograms to milligrams _____
20) 63,200 milligrams to kilograms _____

Counting Significant Figures

1) 3701 = _____
2) 7.90×10^{9} = _____
3) 2.200×10^{-1} = _____
4) 52.44 = _____
5) 8.600×10^{-2} = _____
6) 0.000900 = _____
7) 66 = _____
8) 1040 = _____
9) 6.400×10^{7} = _____
10) 0.0430 = _____

Adding and Subtracting (Significant Figures)

1) 7.6 - 5.4451 = _____
2) 72.623 - 49.1746 = _____
3) 7.6614 + 3.79 = _____
4) 11.8 - 5.66 = _____

Multiplying and Dividing (Significant Figures)

1) 17 x 0.7 = _____

2) 1000 ÷ 25.980 = _____

3) 307 ÷ 3.248 = _____

4) 80 x 1.1 = _____

5) 4.955 x 2 = _____

6) 0.008 x 7.924 = _____

Density

1. What is the density of a rock with a volume of 15 cm^3 and a mass of 45 g?
2. You decide that you want to carry a boulder home from the beach. The boulder has a volume of 27,000 cm^3. It is made of granite, which has a typical density of 2.8 g/cm^3. How much mass does this boulder have? Express the answer in scientific notation.
3. Basalt rocks are sometimes used along coasts to prevent erosion. If a rock must have a mass of 2.0×10^6 g in order to not be shifted by waves, what volume must it be? Basalt has a density of 3.20 g/cm^3.
4. A golden-colored cube is handed to you. The person wants you to buy it for $100, saying that it is a nugget of pure gold. You pull out an old textbook, look up gold in the mineral table, and read that its density is 19.3 g/cm^3. You measure the cube and find that it is 2 cm on each side and has a mass of 40.0 g. What is the density of the cube? Is it made of gold? Should you buy it?

Accuracy and Precision

For an important chemistry lab, you must measure an object, using the method of water displacement, in order to calculate its density. You conduct three measurement trials and collect the data as indicated below.

	Mass of Object	Initial Volume in Graduated Cylinder	Final Volume in Graduated Cylinder	Volume of Object	Density of Object
Trial 1	35.0 g	25.00 mL	28.15 mL		
Trial 2	62.5 g	85.00 mL	91.00 mL		
Trial 3	22.7 g	47.95 mL	49.85 mL		
Average	**********	**********	**********	**********	

1. Calculate the volume of the object for each trial and fill it in the data table.
2. Calculate the density for each trial and fill it in the data table.
3. Average the density results for all three trials and fill it in the data table.
4. The accepted density for the object is 11.3 g/cm^3. Are your density calculations precise?
5. Is your average density accurate?
6. Calculate your percent error using your average density as the experimental value.