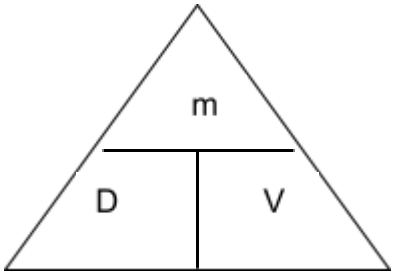
SNC 1DO
Unit: Chemistry **Name:** _____
Density Calculations Worksheet **Date:** _____

Density = $\frac{\text{mass}}{\text{volume}}$

UNITS OF DENSITY
g/cm^3 or g/mL



1. Find the unknown quantity.

a. D = 3 g/mL V = 100 mL m = ?	b. D = ? V = 950 mL m = 95 g	c. D = 0.5 g/cm^3 V = ? m = 20 g

2. Find the unknown quantity (CONVERT FIRST to g or mL).

a. D = 24 g/mL V = 1.2 L = _____ mL m = ?	b. D = ? V = 100 mL m = 1.5 kg = _____ g	c. D = ? V = 0.52 L = _____ mL m = 500 mg = _____ g

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WORD PROBLEMS – Use the GUESS Method to solve these problems

1. A block of aluminum occupies a volume of 15.0 mL and has a mass of 40.5 g. What is its density?

2. Mercury metal is poured into a graduated cylinder that holds exactly 22.5 mL. The mercury is used to fill the cylinder has a mass of 306.0 g. From this information, calculate the density of mercury.

3. What is the mass of the ethanol that exactly fills a 200.0-mL container, given that the density of ethanol is 0.789 g/mL?

4. A rectangular block of copper metal has a mass of 1896 g. The dimensions of the block are 8.4 cm by 5.5 cm by 4.6 cm. From this data, what is the density of copper? (Hint: Find the volume of the block first.)

5. What volume of silver metal will have a mass of exactly 2.5 kg, given that the density of silver is 10.5 g/cm^3? (Hint: Note the units of mass given and the units of density.)

6. Find the mass of 250.0 mL of benzene. The density of benzene is 0.8765 g/mL.

7. A block of lead has dimensions of 4.50 cm by 5.20 cm by 6.00 cm. The block has a mass of 1587 g. From this information, calculate the density of lead.

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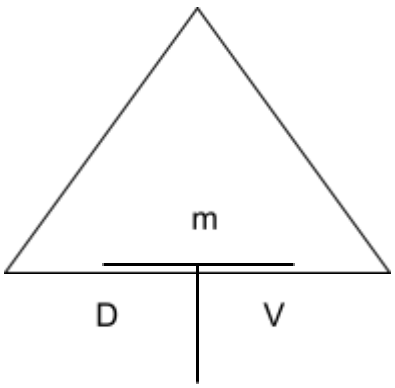
8. 28.5 g of iron shot is added to a graduated cylinder containing 45.50 mL of water. The water level rises to the 49.10-mL mark. From this information, calculate the density of iron.

Density = $\frac{\text{mass}}{\text{volume}}$

UNITS OF DENSITY
g/cm^3 or g/mL



3. Find the unknown quantity.

a. D = 3 g/mL V = 100 mL m = ? 300 g	b. D = ? V = 950 mL m = 95 g 0.10 g/mL	c. D = 0.5 g/cm^3 V = ? m = 20 g 40 cm^3

4. Find the unknown quantity (CONVERT FIRST to g or mL).

a. D = 24 g/mL V = 1.2 L = ___1200___ mL M = ? 28800 g = 28.8 kg	b. D = ? V = 100 mL M = 1.5 kg = ___1500___ g 15 g/mL	c. D = ? V = 0.52 L = ___520__ mL M = 500 mg = ____0.5___ g 0.00096 g/mL

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WORD PROBLEMS

9. A block of aluminum occupies a volume of 15.0 mL and has a mass of 40.5 g. What is its density?

   2.70 g/mL

10. Mercury metal is poured into a graduated cylinder that holds exactly 22.5 mL. The mercury is used to fill the cylinder has a mass of 306.0 g. From this information, calculate the density of mercury.

    13.6 g/mL

11. What is the mass of the ethanol that exactly fills a 200.0-mL container, given that the density of ethanol is 0.789 g/mL?

    157.8 g =158 g (sig figs)

12. A rectangular block of copper metal has a mass of 1896 g. The dimensions of the block are 8.4 cm by 5.5 cm by 4.6 cm. From this data, what is the density of copper? (Hint: Find the volume of the block first.)

    212.52 cm^3

    8.922 g/cm^3

13. What volume of silver metal will have a mass of exactly 2.5 kg, given that the density of silver is 10.5 g/cm^3? (Hint: Note the units of mass given and the units of density.)

    2500 g

    238.1 cm^3 = 238 cm^3 (sig figs)

14. Find the mass of 250.0 mL of benzene. The density of benzene is 0.8765 g/mL.

    219.1 g

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15. A block of lead has dimensions of 4.50 cm by 5.20 cm by 6.00 cm. The block has a mass of 1587 g. From this information, calculate the density of lead.

    140.40 cm^3

    11.30 g/cm^3

16. 28.5 g of iron shot is added to a graduated cylinder containing 45.50 mL of water. The water level rises to the 49.10-mL mark. From this information, calculate the density of iron.

    3.60 mL

    7.92 g/mL