

The background of the slide is an abstract composition of numerous 3D rectangular blocks or cubes. These blocks are arranged in a way that creates a sense of depth and perspective, with some blocks appearing to recede into the distance while others are in the foreground. The color palette is diverse, featuring warm tones like yellows, oranges, and reds on the left side, transitioning through purples and blues in the center, and cooler tones like teals and greens on the right side. The blocks are of varying sizes and are oriented in different directions, contributing to a complex, textured visual effect.

DENSITY

Chapter 1 Section 2

Coke vs. Diet Coke

[illegible]

What is density?

◦ Density is the amount of **matter** within a specific amount of **space**.



What is density?

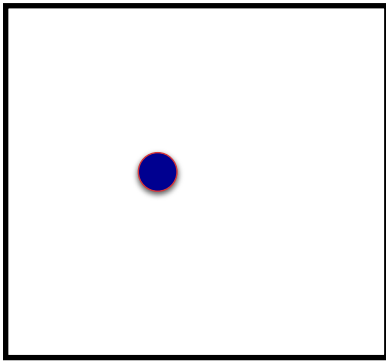
◦Density = mass per volume.

$$d = \frac{m}{v}$$

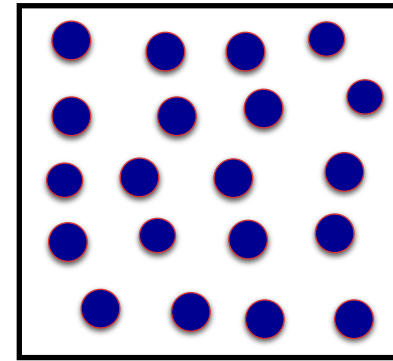
What is density?

- Although we are looking at the same volume, **tungsten** has more mass crammed into that defined space. Therefore, tungsten is **denser** than water.

Water = $1\text{g}/\text{cm}^3$



Tungsten = $20\text{g}/\text{cm}^3$



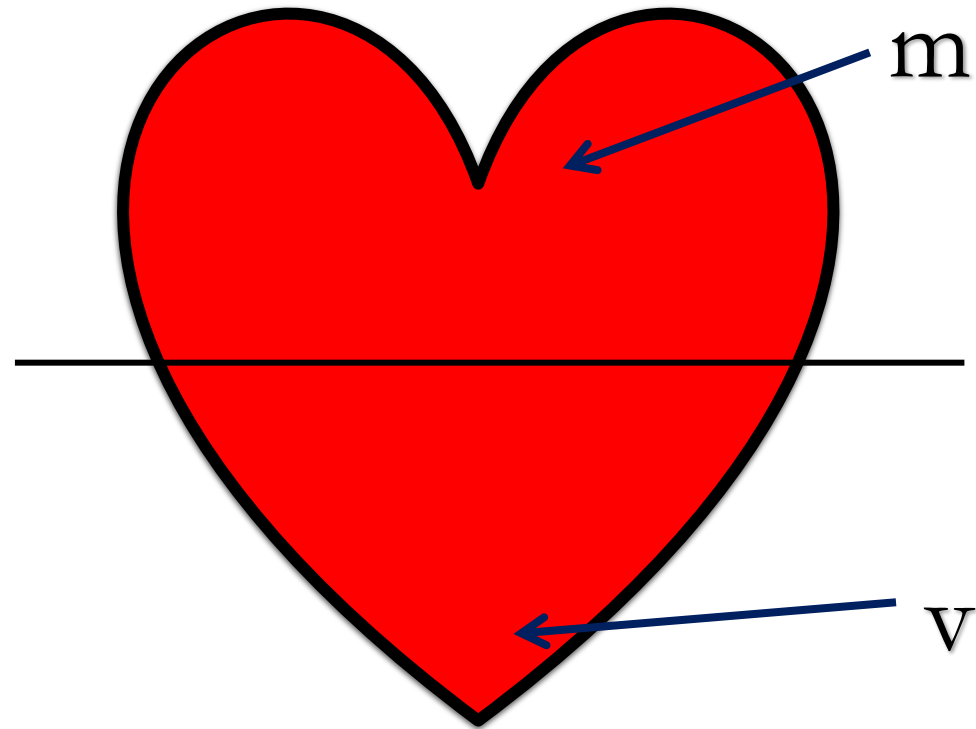
One circle = 1 gram

Density Formula:

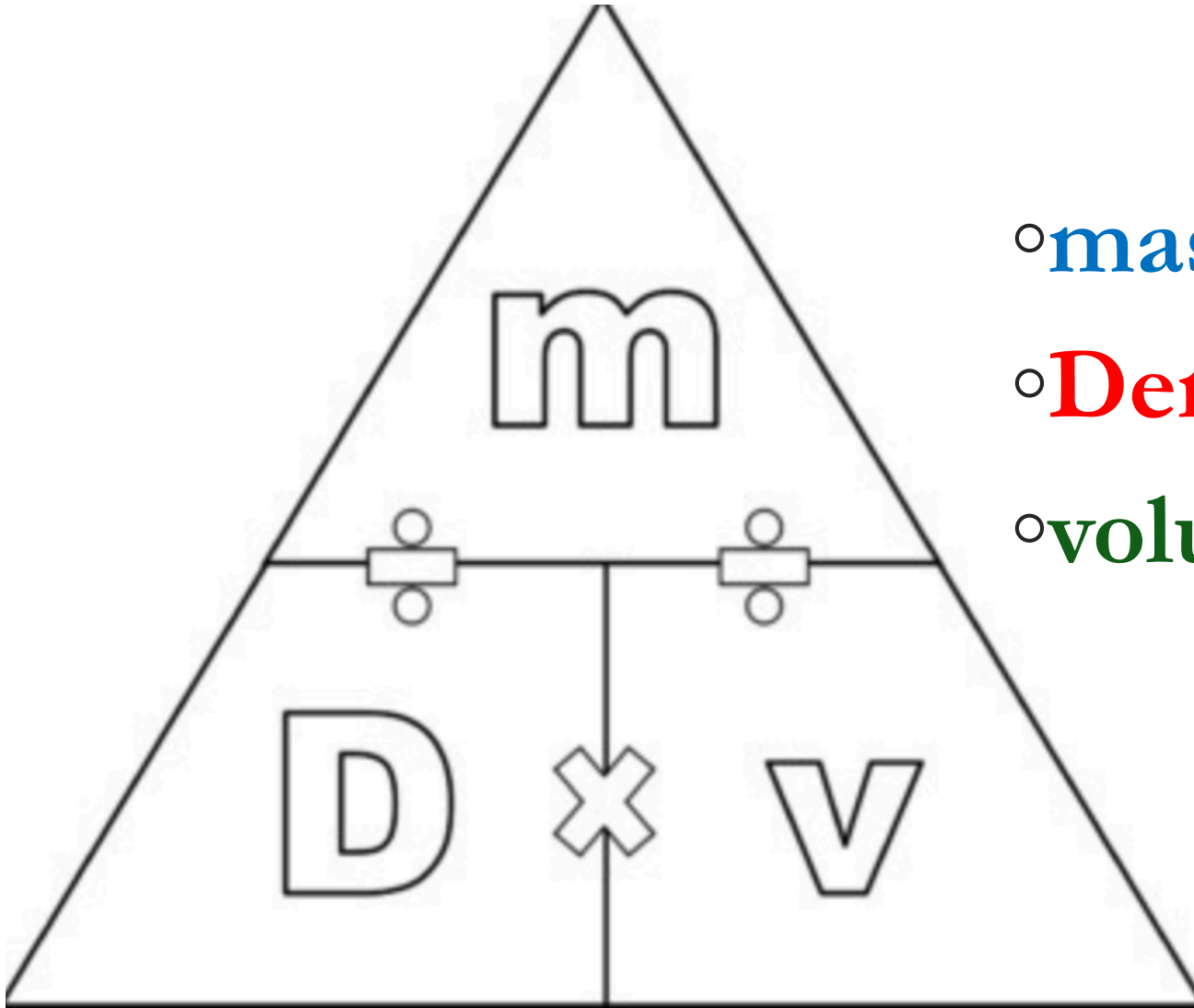
- “per” = \div
- Density = **mass** / **volume**
- ***UNITS** = g/mL or g/cm³

$$d = \frac{m}{v}$$

Density Heart:



Density Triangle:



- mass = density X volume
- Density = mass / volume
- volume = mass / Density

Density Problems

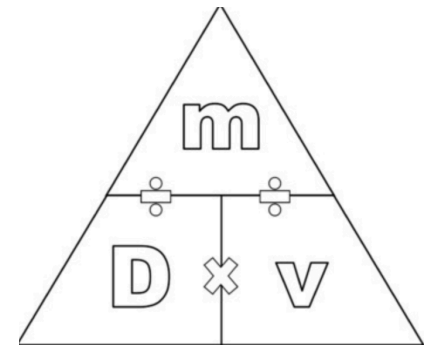
1. A platinum bar measures 5.0 cm long, 4.0 cm wide, and 1.5 cm thick. It has a mass of 700.0 grams.

a) Calculate the volume of the platinum bar.

$$5.0\text{cm} \times 4.0\text{ cm} \times 1.5\text{ cm} = 30\text{ cm}^3$$

b) Calculate the density of the platinum bar.

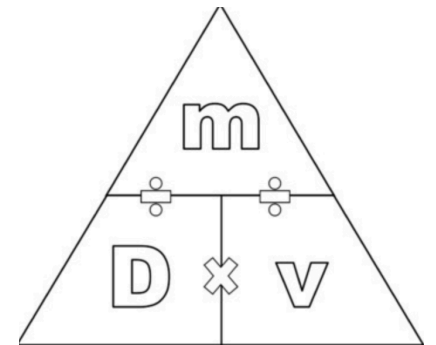
$$700\text{ g} / 30\text{ cm}^3 = 23.3\text{ g/cm}^3$$



Density Problems

2. A lead cylinder has a mass of 540 grams and a density of 2.70 g/ml. Calculate the volume of the lead cylinder bar.

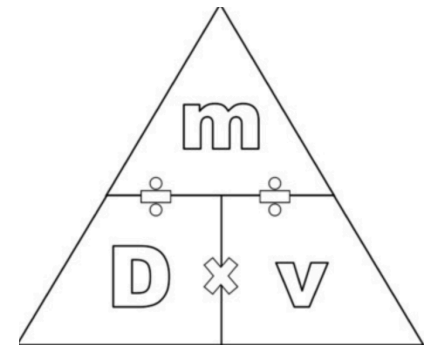
$$540 \text{ g} / 2.70 \text{ g/mL} = 200 \text{ mL}$$



Density Problems

3. A cork has a density of $.19 \text{ g/cm}^3$ and a volume of 16 cm^3 . Calculate the mass.

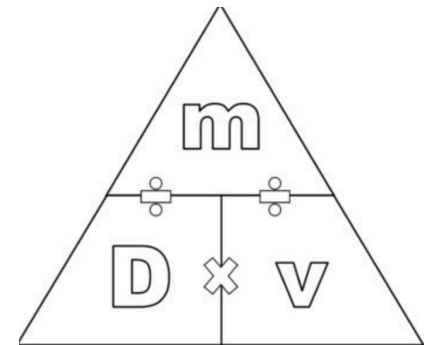
$$.19 \text{ g/cm}^3 \times 16 \text{ cm}^3 = 3.04 \text{ g}$$



Density Problems

4. A thin glass bottle holds 25 ml of liquid and has a mass of 19g.
Calculate the density.

$$19 \text{ g} / 25 \text{ mL} = .76 \text{ g/mL}$$

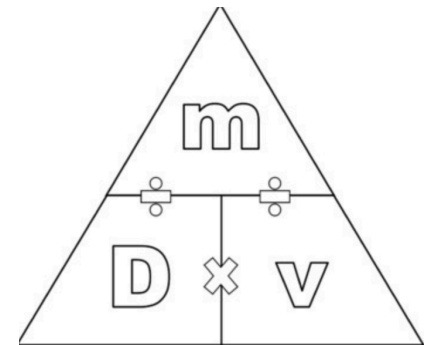


Density Problems

5. A bar of soap is 12 cm tall, 6 cm wide, and 10 cm long. It has a mass of 415 grams. What is the density of the bar of soap.

$$\text{Volume} = 12 \text{ cm} \times 6 \text{ cm} \times 10 \text{ cm} = 720 \text{ cm}^3$$

$$415 \text{ g} / 720 \text{ cm}^3 = .58 \text{ g} / \text{ cm}^3$$

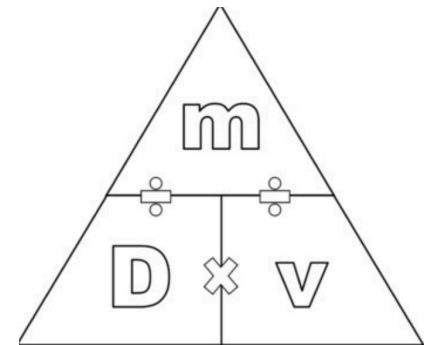


Density Problems

6. A sheet of metal is 2 cm wide, 10 cm tall, and 15 cm long. Its density is $.5\text{g}/\text{cm}^3$. What is the mass?

$$\text{Volume} = 2 \text{ cm} \times 10 \text{ cm} \times 15 \text{ cm} = 300 \text{ cm}^3$$

$$.5\text{g}/\text{cm}^3 \times 300 \text{ cm}^3 = 150 \text{ g}$$



Density Problems

7. A pencil has a density of .875 g/ml. It has a mass of 3.5 grams. What is the volume?

$$3.5 \text{ g} / .875 \text{ g/mL} = 4 \text{ mL}$$

