**Density Review**

\[ D = \frac{m}{V} \]

1.) A piece of tin has a mass of 12.5 g and a volume of 2.3 cm³. What is the density?

2.) A piece of metal has a density of 14.7 g/cm³ and a volume of 8.3 cm³. What is the mass of this piece of metal?

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**2.3 Changes of Matter**

• Why is getting a haircut an example of a physical change?
• Why is baking bread an example of a chemical change?
• How can mixtures and compounds be broken down?

• A physical change affects one or more properties of a substance without changing the identity of the substance.

• Examples of physical changes: cutting, crushing, reshaping, changing state

• Dissolving is a physical change.

• A chemical change happens when one or more substances are changed into entirely new substances that have different properties.

• Chemical changes happen everywhere. Examples: burning, rusting, digesting, decomposing

• Chemical changes form new substances.

• Chemical changes can be detected. Signs include:
  - change of color
  - change of smell
  - fizzing
  - production of heat, sound, or light

• Chemical changes cannot be reversed by physical changes.
Breaking down Mixtures and Compounds

• Mixtures can be separated by physical changes, but compounds must be broken down by chemical changes.

Mixtures can be physically separated. Examples of separating a mixture:

- dialysis
- filtration
- chromatography

Some compounds can be broken down through chemical means. Examples:

• When mercury(II) oxide is heated, it breaks down into the elements mercury and oxygen.
• When a current is passed through melted table salt, the elements sodium and chlorine are produced.
• When you open a bottle of soda, carbonic acid in the soda breaks down into carbon dioxide and water.

Let's test what we know...