

Reviewing Density and the Periodic Table

Remember that everything in the universe is made of matter. Matter has physical properties. We have studied several physical properties in this unit. We have learned that metals have greater conductivity than nonmetals. We have learned that some metals are magnetic while nonmetals are not magnetic.

We have learned about the density of liquids and solids. Density can be calculated using the formula

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

Mass is always measured in grams and volume can be measured in mL for liquids and cm^3 for solids.

Remember the density of water is 1 g/mL and if the density of a substance is less than one, it will float on water and greater than one, it will sink in water.

Let's try some calculations of density.

Item	Mass	Volume	Density
Marble	34 g	10 mL	
Paperclip	1 g	2 mL	
Cork	19 g	100mL	
Plastic cube	23g	100mL	
Eraser	26g	10mL	

Questions:

1. Which ones do you predict will float on water?

2. Which ones do you predict will sink in water?

Materials: 1 Density column made of 500mL graduated cylinder or tall jar, light Karo syrup colored red, blue Dawn dishwashing liquid, water colored green, baby oil, and a marble, cork, plastic cube, erasure, paper clip

What To Do:

1. Show the video 7 Layer Density from www.missdoctorbailer.com.
2. Observe the density column your teacher has made and color and label the layers.

0.75 g/mL	
1.00 g/mL	
1.57 g/mL	
1.92 g/mL	

3. Compare the densities of the solids and the liquids and predict where each will stop when dropped into the liquids.
4. Draw where you think each will stop
5. Watch as you teacher drops each of the solids into the liquids.
6. Draw where they stopped.

Materials: Element Cards, Periodic Table

What To Do:

1. Observe the element cards you are given.
2. Put them in order from highest melting point to lowest melting point.
3. Record the information in the table below.
4. Use your Periodic Table to determine if the elements are metals or nonmetals.

Element	Melting point	Metal/ Nonmetal
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Questions:

1. Which type of element had the higher melting points?

2. Which type of elements had the lower melting points?

3. What side of the periodic table do you find metals?

4. What side of the periodic table do you find nonmetals?

What To Do:

1. Use the Element Cards again.
2. Put them in order from highest density to lowest density.
3. Record the information below.
4. Use your Periodic Table to determine if the elements are metals or nonmetals

Element	Density	Metal/ Nonmetal
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Questions:

1. Which type of element had the higher density?

2. Which type of elements had the lower density?

3. What general statement can you make about metals about their melting points and densities?

4. What general statement can you make about nonmetals about their melting points and densities?

Name _____ period _____

EXIT TICKET

The following densities were calculated in a 6th grade science class. Place a check on the line of the substances that would float on or in water.

	Substance	Density
_____	1. Cork	0.19g/cm ³
_____	2. Dishwashing Soap	1.57g/mL
_____	3. Rubbing Alcohol	0.03g/mL
_____	4. Toothpick	0.29g/ cm ³

Metals have physical properties that are different than nonmetals. Place a check on the line of the physical properties that belong to metals.

- _____ 5. Shiny
- _____ 6. Do not conduct electricity
- _____ 7. Have high melting points
- _____ 8. Are malleable
- _____ 9. Have high densities
- _____ 10. Have low melting points

Name _____ period _____

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Copper Cu Melting point 1084°C Density 8.9 g/mL	Aluminum Al Melting point 660°C Density 2.7 g/mL
Silver Ag Melting point 962°C Density 10.5 g/mL	Gold Au Melting point 1064°C Density 19.3 g/mL
Sulfur S Melting point 115°C Density 2.0 g/mL	Oxygen O Melting point -219°C Density 1.4 g/mL
Chlorine Cl Melting point -102°C Density 3.2 g/mL	Neon Ne Melting point -249°C Density 0.9 g/mL

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