



Taking the “Dense” out of Density

Video Note Taking Guide

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Pencil Hydrometers



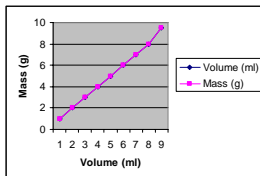
■ Density of solids

- Density is a factor of volume and mass.
- 43 people in a VW Bug is more dense than the same car with only 12.
- Density depends on how much matter is packed into how much space.

■ Making Pencil Hydrometers

- Good science involves accurate measurements and scale.
- Teach kids to measure carefully and accurately.
- These little things measure the density of liquids.

Math connections



- Density of water
- If something sinks?
- If something floats?
- If something suspends?
 - $D = m/v$

Lower Elementary



- Floaters and sinkers
- Which floats higher?
- Which floats lower?
- Similarities and differences
- Floating and sinking
- Dancing raisins
- Chart paper is my best friend

Considerations



- **Variables in Science**
 - Kind of liquid
 - Temperature
 - Atmospheric pressure
- **Change one variable at a time**
 - Kind of liquid
 - Hot vs. cold water
- **Does quantity of liquid matter?**
 - Intrinsic vs. extrinsic characteristics
 - Testing for relationships
 - Searching for patterns

Density of Fruit



- Density is mass divided by volume.
- Density can be used to identify a substance.
- Density can be used to sort substances.

Fruit density



	Apples	Oranges	Bananas	Other
Float or sink	float	float	sink	
Other observations	All kinds float	Sinks if you remove the skin		

Density of solids



- Forensics
- Metal applications
- Cars and gas mileage

Density of Liquids



- Manufacturing
- Wine and grape juice
- Sugar in iced tea
- Fat in milk
- Blood

Density and gasses



- Hot air balloons
- Birthday balloons
- Submarines
- Bread
- Carbonated soda
- Mac and cheese

Unpacking The Standards



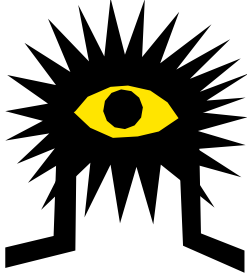
- **Properties of objects and materials**
 - Objects have observable properties.
 - Objects can exist in different states.
 - Characteristic properties of materials help identify them (5-8).
- **Position and motion of objects**
 - The position of an object can be described by its location relative to another object.

Making the content sticky



- How is floating related to density ?
- What is heavier than water?
- What differences are there between bananas and apples?
- How could you test your theory?
 - What variables will you control?
- Make a model.
- Connect the parts.
- Example...example...example!
- Assess them while the content is hot.

Proof is in the Pudding



- **Examining student work**
 - Why a 4 point scale?
 - Above the bar
 - Below the bar
- **Explaining 3 deep**
- **Models and analogies/metaphors**
- **Giving feedback**
 - Preserving your sanity
 - Student peer assessment
 - Parents as assessors

The Path to Success for All



- **Identify the content clearly**
- **Find a great activity that illustrates the content**
- **Explore with the kids (lots of questions)**
- **Tighten up connections in examples**
- **Ask more questions**
- **Do not go too far...keep it tied to content level**
- **Let kids wrap it up**
