



Taking the “Dense” out of Density

Video Note Taking Guide

Presenter: Shannon C’de Baca



Pencil Hydrometers



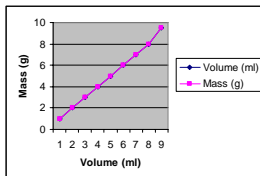
■ Density of solids

- 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



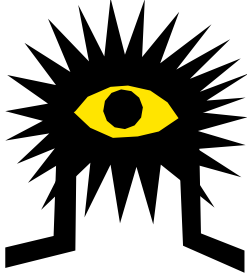
- **Properties of objects and materials**
 - Objects have observable properties.
 - Objects can exist in different states.
 - Characteristic properties of materials help identify them (5-8).
- **Position and motion of objects**
 - The position of an object can be described by its location relative to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