

Calculating Densities

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| Grade: 7 th -8 th | | Subject: Science |
| Materials: scale, measuring beakers, water, vinegar, dish soap, pop, honey, calculators | | Technology Needed: PowerPoint, computer, projector |
| Instructional Strategies: *Direct instruction *Peer teaching/collaboration/ *Guided practice cooperative learning *Learning Centers *Visuals/Graphic organizers *Lecture *Modeling *Technology integration | | Guided Practices and Concrete Application: *Large group activity *Hands-on *Pairing/collaboration *Technology integration Explain: Students will work together in a large group while I give them guided instructions. |
| Standard(s) Standard 2: Students use the process of science inquiry. | | Differentiation Below Proficiency: If a student identifies as below proficiency I would put them into groups or with a partner to aid them. Above Proficiency: If a student identifies as above proficiency I would have them look further into the topic by researching on the computer how to find the density of a solid or a gas. Approaching/Emerging Proficiency: If students are emerging proficiency they should be able to complete and understand the homework. Modalities/Learning Preferences: I encourage students to move around the classroom, interact with students, and ask questions. |
| Objective(s) 6.2.4. Use appropriate tools and techniques to gather and analyze data. Bloom's Taxonomy Cognitive Level: Analysis, Application | | |
| Classroom Management- (grouping(s), movement/transitions, etc.) During the lecture students will be arranged in tables with 3 to 4 students. It's the students' responsibility to take notes during the lecture and participate in group activities. I will create a positive environment by engaging the students in an activity. I will provide instruction during the activity, so students receive ultimate learning. During transitions I expect students to go from one task to the next. | | |
| Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.) | | As I lecture for a few short minutes I expect students to be attentive and participate in discussion. During the large group activity, I encourage students to maintain an inside voice and be respectful while everyone participates. I expect all students to complete the calculations as a class. |
| Minutes | Procedures | |
| 30 | Set-up/Prep: Create CH 4 PowerPoint/group activity/worksheet. Set up PowerPoint before class. | |
| 6 | Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.) Good morning, today we are going to retouch on the concept of density and investigate it further by calculating the density of different household objects. Can someone tell me what density means? What components do we need to find density? What do we use density for in the real world? Here is a quick video that describes the effects of density. https://youtu.be/MzsORE0ae10 | |
| 25 | Explain: (concepts, procedures, vocabulary, etc.) I will use the PowerPoint as a guide to present the information on density. I will start by explaining the concept behind density then describe how to calculate it. I will describe what is needed to calculate density and what units are needed. I will relate different densities to real world examples like water and honey. After the content is present I will involve the students in a hands-on activity that requires them to find the density of household items likes soap, water, and oil. I will guide them in the process of measuring the mass and volume of each item. As a class we will compute the density using the formula. | |
| 20 | Explore: (independent, concrete practice/application with relevant learning task -connections from content to real-life experiences, reflective questions- probing or clarifying questions) After we calculate the densities of household products, I will provide more problems that the students will compute with guided help. I used problems that are more challenging and require rearrangement of the equation. I will help the students get started and make sure they are using the correct units. | |
| 10 | Review (wrap up and transition to next activity): I will wrap up by explaining to students how a substance with a higher density sinks and a lower density rises. If I feel they are not understanding the concept I will provide them with a small homework worksheet that is due the following day. I will have the students clean up all their materials and get ready for the next class. | |
| Formative Assessment: (linked to objectives) Progress monitoring throughout lesson- clarifying questions, check-in strategies, etc. Why do we need to compare the amount of mass to the amount of volume to find the density? What are the correct units to use for volume. | | Summative Assessment (linked back to objectives) End of lesson: Every form of matter has a density and they can all be found by measuring the mass and dividing it by the volume. Fluids of different densities tend to not mix. Also, unknown volumes and masses can be found by using known information. |

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Consideration for Back-up Plan:

If the students are not understanding the content I will break down each component and provide more examples to help them. I can also provide more homework.

If applicable- overall unit, chapter, concept, etc.:

Unit 1, Chapter 4, Lesson 1, Calculating Densities

Reflection (What went well? What did the students learn? How do you know? What changes would you make?):

Delivering the content went well. The students were able to learn what components they need for calculating density. They were able to answer the questions and compute the example problems I provided. I need to work on my teacher voice and becoming more comfortable teaching to students. I could also slow down and explain more.