|  |  |  |  |
| --- | --- | --- | --- |
| **Lesson Content** | | | |
| **What Standards (national or state) relate to this lesson?**  (You should include ALL applicable standards. Rarely do teachers use just one: they’d never get through them all.) | SC.3.P.8.2. Measure and compare the mass and volume of solids and liquids  SC.3.N.1.2 Compare the observations make by different groups using the same tools and seek reason to explain the differences across groups | | |
| **Essential Understanding**  (What is the big idea or essential question that you want students to come away with? In other words, what, aside from the standard and our objective, will students understand when they finish this lesson?) | How can we measure and compare the property of mass of a solid? | | |
| **Objectives- What are you teaching?**  (Student-centered: What will students know and be able to do after this lesson? Include the ABCD’s of objectives: action, behavior, condition, and degree of mastery, i.e., "C: Given a sentence written in the past or present tense, A: the student B: will be able to re-write the sentence in future tense D: with no errors in tense or tense contradiction (i.e., I will see her yesterday.)."  Note: Degree of mastery does **not** need to be a percentage.) | I will be able to measure and compare the mass of solids using a balance and grams. | | |
| **Rationale**  Address the following questions:   * Why are you teaching this objective? * Where does this lesson fit within a larger plan? * Why are you teaching it this way? * Why is it important for students to learn this concept? | 3rd grade Science Standard  Properties of Matter  Students will be able to connect content to the hands-on experience  Builds to their understanding of Physical Science | | |
| **Evaluation Plan- How will you know students have mastered your objectives?**  Address the following:   * What formative evidence will you use to document student learning during this lesson? * What summative evidence will you collect, either during this lesson or in upcoming lessons? | Formative (during lesson): Anecdotal/observations of student work time, data they are recording, and discussions  Formative (after lesson): Concept Cartoon Exit Ticket  Formative/Summative: Quiz- Measure and Compare Mass of Volume of Solids | | |
| **What Content Knowledge is necessary for a teacher to teach this material?** | I used the following resources to prepare for this content area:  *Addressing Misconceptions: A demonstration to help students understand the law of conservation of mass*  By Katrina Dial, Diana Riddley, Keisha Williams, and Victor Sampson  *Science 101 “Q: Do balances and scales determine an object’s mass or its weight?”*  By Bill Robertson | | |
| **What background knowledge is necessary for a student to successfully meet these objectives?**   * How will you ensure students’ have this previous knowledge? * What do you know about their readiness for this content? | * Everything is matter (except energy): solids, liquids, or gases * Matter takes up space   Preceding lesson will elicit student ideas  Students have not formally encountered this content prior to 3rd grade | | |
| **What misconceptions might students have about this content?** | Mass is the same as Weight, Mass is finding how “heavy” something is  The greater the size of an object, the greater its mass  Mass is the same property as Volume  Appropriate units used to measure Mass | | |
| **Lesson Implementation** | | | |
| **Teaching Methods**  (What teaching method(s) will you use during this lesson? Examples include guided release, 5 Es, direct instruction, lecture, demonstration, partner word, etc.) | 5 Es: Explore   * Provide a common experience for students * Provide opportunities for students to test their ideas * Provide opportunities for students to compare their ideas with others | | |
| **Step-by-Step Plan**  (What exactly do you plan to do in teaching this lesson? Be thorough. Act as if you needed a substitute to carry out the lesson for you.)  Where applicable, be sure to address the following:   * What Higher Order Thinking (H.O.T.) questions will you ask? * How will materials be distributed? * Who will work together in groups and how will you determine the grouping? * How will students transition between activities? * What will you as the teacher do? * What will the students do? * What student data will be collected during each phase? * What are other adults in the room doing? How are they supporting students’ learning? * What model of co-teaching are you using? | Time  2 min  2 min  1 min  5 min  1 min  20-25 min  2 min  3 min | Who is responsible?  Teacher  Teacher  Student  Teacher  Teacher  Student  Teacher  Teacher  Student | Introduce Objective/Focus  “I will be able to measure and compare the mass of solids using a balance and grams”  -Mass is another property that we can measure  -Mass is the amount of matter or material that makes up an object  Model how to set up notebook:  Title: Mass of Solids  Today’s Date  3 column T-Chart (object, predicted mass, observed mass)  They put into notebooks  Model how to use balance and gram weights:  Place balance on flat, steady surface  Place object on one side in center of tray/platform  Place grams on the other side in center of tray/platform  Adjust the amount of grams until both sides are level with each other  Distribute bags of objects and balances to table groups  Students work in their groups and record in their notebooks  Teacher monitors and asks HOT questions to guide student understanding.  Distributes notecard/sticky notes to be used for Exit Ticket  Present “Concept Cartoon”:  Person A: This beach ball has a greater mass than that baseball because it is much larger!  Person B: The baseball has a greater mass because the beach ball is only filled with air!  Respond on notecard/sticky independently: Who do you agree with and why? (Can be carried into the next day as transition into discussion) |
| **HOT Questions** | How would you describe what is happening when you add grams to one side of the balance?  How would you compare the mass you recorded for \_\_\_\_\_\_ to the mass you recorded for \_\_\_\_\_\_?  How could you organize the data you collected?  What did you notice about the objects that have the same mass?  How is mass related to matter?  How would you adapt this activity to measure the mass of larger objects? | | |
| **Meeting your students’ needs as people and as learners** | **how does this lesson connect to the interests and cultural backgrounds of your students?**  **N/A** | | |
| **If applicable, how does this lesson connect to/reflect the local community?**  **N/A** | | |
| **How will you differentiate instruction for students who need additional challenge during this lesson (enrichment)?**  Based on data collected in the activity, have students brainstorm a list of objects that could have a given mass (i.e. 1g, 10g, 50g). They can write to explain why they believe that object would fit criteria and how they could test it. | | |
| **How will you differentiate instruction for students who need additional language support?**  Work in groups  Provide visual support for Notebook entry  Can draw objects in the column along with words | | |
| **Accommodations (If needed)**  (What students need specific accommodation? List individual students (initials), and then explain the accommodation(s) you will implement for these unique learners.) | Scaffold HOT questions with lower level questions  Monitor activity for accuracy | | |
| **Materials**  (What materials will you use? Why did you choose these materials? Include any resources you used. This can also include people!) | 5 balances (1 per group)  5 bags of objects (1 per group)  Student Science Notebooks  Pencil | | |