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| Week  ***Stoichiometry Unit Plan*** | Lesson | Key Ideas/ learning objectives | Description of Lesson |
| 4 | 1 | The mole ratio is the ratio of reactant to products in a balanced equation.  Use appropriate equations to calculate quantities of substance involved in chemical reactions | Give students a pre-test to assess where they are at in their understanding of chemistry calculations and the skills they need for this unit: mole calculations from mass and concentration, balancing equations, understanding of key terminology and molar ratios.  Introduce the concept of molar ratios using a cake analogy that will be present throughout the unit.  Model a mass-mass stoichiometry problem solving process using some worked examples.  Students practice their stoichiometry skills by completing some text book questions. |
|  | 2 | The process used in mass-mass stoichiometry can be used for solutions by using the n=CV instead of m=nM | Students to attempt a molar ratio and mass-mass calculation challenge without their notes and are given 5 mins to complete it. Students then use their notes to correct their own attempt and identify where they succeeded and any errors they made.  In pairs students are given the challenge of coming up with a way of solving a solution stoichiometry question based on what they did in the previous lesson. They need to come up with a list of steps to solve the problem and then show how they applied them to the problem they were given. They will then teach the rest of the class using their example. Students will then have time to practice using their problem solving process with a worksheet. |
|  | 3 | The amount of product produced is dependent on the available reactant being used up. | Students will attempt another calculation challenge with one question on m-m stoic and one on solution stoic without notes, then use their notes to correct and identify errors in their calculation.  Use the cake analogy again to demonstrate the effect of limiting and excess reagents. Create board notes that link the analogy to a chemical equation.  Together with students go through a worked example, then give them some time to practice using their new problem solving technique on some text book questions.  Introduce the video assignment by going through the instructions and the assessment rubric.  Students begin storyboarding their video assignment |
| 5 | 1 | Revision / Catch up | Tutorial style lesson where students can bring questions and concepts they are having difficulty with and revise them. |
|  | 2 | The mole ratio is the ratio of reactant to products in a balanced equation.  Use appropriate equations to calculate quantities of substance involved in chemical reactions  The amount of product produced is dependent on the available reactant being used up. | Students complete a calculation challenge without notes then correct and reflect on their work using some guided questions and their notes and books identifying where they have improved and what they still need to work on.  Students create a video that explains mass-mass or solution stoichiometry and the concept of limiting and excess reagents. Using pair cards students get into pairs and are given a set of guidelines and a selection of resources to complete their video. |
|  | 3 | The mole ratio is the ratio of reactant to products in a balanced equation.  Use appropriate equations to calculate quantities of substance involved in chemical reactions  The amount of product produced is dependent on the available reactant being used up. | Students to create their video from their story boards and the resources they have chosen. If they don’t finish in class they will have one week to complete it at home. |
| 6 | 1 | The concentration of a solution of unknown concentration can be found by reacting it with a solution of known concentration, this is called volumetric analysis. | Introduce the concept and process of volumetric analysis and what it is used for. Introduce the new terminology and the new glassware verbally and with a demonstration. Students will perform the ‘Volumetric analysis of vinegar’ They will be required to set and use the appropriate equipment and use their results to determine which brand of vinegar is best value for money. They should have a full set of results by the end of the lesson. |
|  | 2 | The concentration of a solution of unknown concentration can be found by reacting it with a solution of known concentration, this is called volumetric analysis. | Students will have the entire lesson to complete their prac report for the volumetric analysis. It won’t be completed under test conditions as many students need to share their results with their group member and discussion of the results often help the students to gain understanding. The students will be allowed a copy of the guide to writing prac reports sheet. If not completed in the single lesson student can finish it for homework by the next lesson. |
|  | 3 | The mole ratio is the ratio of reactant to products in a balanced equation. Use appropriate equations to calculate quantities of substance involved in chemical reactions. The amount of product produced is dependent on the available reactant being used up. The concentration of a solution of unknown concentration can be found by reacting it with a solution of known concentration, this is called volumetric analysis. | The lesson will be broken into 2 halves with the first half being used to view the students’ video assignments in which they will be both peer and self-assessed as well as being assessed by the teacher. The second half of the lesson will be devoted to a revision game that covers all the topics done this term. The last few minutes will go over the holiday homework booklet that the students will need to complete for next term. |