

The scenario

Subject	Analytical chemistry/Determination of the acidity of vinegar
Length	6:07
Main objectives	To show how titrations work
Detailed objectives	
Structure and description of experiments:	
1. Introduction	Description: This experiment had the objective of showing the titration of vinegar with NaOH
2. Main subject	Description: How to know the acidity of a substance with a strong base and an indicator like phenolphthalein?
Part 1	
Experiment 1 (0:43)	<p>(0:40), Tools: Vinegar, NaOH, phenolphthalein, pipettes, burettes</p> <p>Description: First, prepare 1 L of 0,001 M of NaOH and put the solution in the burette. Then, add 10 mL of vinegar to a volumetric flask and fill it with water to the mark. Take 20 mL of the vinegar solution, add 3 drops of phenolphthalein, and do the titration with NaOH. Mix while titrating with NaOH.</p> <p>Phenolphthalein is colorless in acidic solutions like vinegar, and deep pink in basic solutions like NaOH, so when the solution starts to turn pink, this is the equivalence point of the titration, and you must stop adding NaOH to the solution.</p> <p>Observe how many mL of NaOH were used to reach the equivalence point.</p> <p>Questions: What will happen to the solution if more NaOH is added? – the solution will turn completely dark pink, indicating that the solution is basic. What is happening during NaOH + Vinegar reaction? – the vinegar donates a proton to the hydroxide ion and acts as an acid. The hydroxide ion accepts a proton and acts as a base.</p> <p>Conclusions: Phenolphthalein is an indicator that begins to turn pink in the presence of a basic. The amount of NaOH used indicates the acidity of the sample.</p>
3. Summary, evaluation and notes	Application: Titration is an analytical method for determining the concentration of an unknown substance in a sample. It is a form of quantitative chemical analysis and is used in various industries including food, dairy, and water.



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	Level: secondary school
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