

# Acid base titration lab answer key

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Acid-Base Titration: A Comprehensive Guide\*\*

### What is Acid-Base Titration?

Acid-base titration is a laboratory technique used to determine the unknown concentration of an acid or base solution by reacting it with a solution of known concentration.

### Result of Acid-Base Titration Experiment

The result of an acid-base titration is the equivalent point, which is the point at which the moles of acid added are equal to the moles of base initially present.

### Acid-Base Titration PDF

For detailed information, refer to the following PDF: [Acid-Base Titration](link to PDF)

### Lab Variables in Acid-Base Titration

- Concentration of the known solution
- Volume of the known solution
- Concentration of the unknown solution
- Volume of the unknown solution
- Indicator used

### pH Curve for Acid-Base Titration

The pH curve shows the change in pH of the solution during titration. The curve has an initial pH that depends on the strength of the acid or base being titrated, and it

reaches the equivalence point once the reaction is complete.

#### **4 Acid-Base Titrations**

- Strong acid - strong base
- Strong acid - weak base
- Weak acid - strong base
- Weak acid - weak base

#### **Conclusion of the Titration**

The conclusion of the titration states the unknown concentration of the acid or base solution and the equivalent point.

#### **Aim of Acid-Base Titration**

The aim of acid-base titration is to accurately determine the unknown concentration of an acid or base solution.

#### **End Point in a Titration Experiment**

The end point is the point at which the indicator used changes color, indicating the approximate equivalence point.

#### **Theory Behind Acid-Base Titration**

The theory behind acid-base titration involves the neutralization reaction between an acid and a base, which results in the formation of salt and water.

#### **What Happens During Acid-Base Titration**

During acid-base titration, the analyte (unknown solution) is added to the titrant (known solution) dropwise until the equivalence point is reached. The pH of the solution changes as the reaction progresses.

#### **Why is it Called Acid-Base Titration?**

It is called acid-base titration because it involves the reaction between an acid and a base, and the equivalence point is determined by measuring the volume of the titrant

added.

### **Purpose of the Acid-Base Titration Lab**

The purpose of the acid-base titration lab is to demonstrate the principles of acid-base reactions and to provide practice in determining unknown concentrations of acids or bases.

### **Factors Affecting Acid-Base Titration**

- Temperature
- Concentration of solutions
- Type of indicator used
- Buret accuracy

### **Hypothesis of Acid-Base Titration Lab**

The hypothesis of the acid-base titration lab is that the reaction between an acid and a base will result in the neutralization of the solution, reaching an equivalence point.

### **Best pH for Titration**

The best pH for titration is close to the equivalence point, where the change in pH is most rapid.

### **Choosing an Indicator for Acid-Base Titration**

An indicator is chosen based on its color change range, which should be near the equivalence point of the titration.

### **pH Range of Acid-Base Titration**

The pH range depends on the strengths of the acid and base being titrated. It typically ranges from 0 to 14.

### **Use of CO<sub>2</sub>-Free Water in Titration**

CO<sub>2</sub>-free water is used to prevent the formation of carbonic acid, which can interfere with the acidity of the solution.

## Stopping Titration with Phenolphthalein

Phenolphthalein is used as an indicator in acid-base titrations and turns colorless at the equivalence point.

## Calculating Acid-Base Titration

Acid-base titration is calculated using the formula:

$$M1 * V1 = M2 * V2$$

where M1 and V1 represent the concentration and volume of the known solution, and M2 and V2 represent the concentration and volume of the unknown solution.

## Acid-Base Definition (Short Answer)

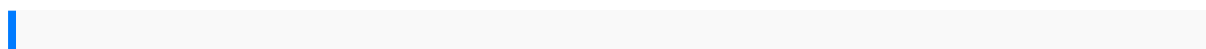
An acid is a substance that donates protons (H<sup>+</sup>), while a base is a substance that accepts protons.

## Acid-Base Reaction in Simple Terms

An acid-base reaction is a neutralization reaction that results in the formation of salt and water.

## Acid-Base Indicator (Short Answer)

An acid-base indicator is a substance that changes color depending on the pH of the solution.



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