

# NEATH PORT TALBOT COLLEGE COLEG CASTELL NEDD PORT TALBOT

## School of Maths & Science Science Practical

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### Estimation of the Accuracy of Delivery of Volumetric Apparatus

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#### ◆ Aim

At the end of the experiment you should be able to:

1. At the end of the experiment you should be able to use a pipette and burette to deliver specific volumes of liquid.
2. Use a balance to accurately weigh volumes of liquid.
3. Compare the volumes of liquid delivered by a burette and pipette and comment on the possible errors involved.
4. State the hazards inherent in the use of a technique.

#### ◆ Introduction

The first part of this experiment will involve a demonstration of the correct use of a balance, pipette, and a burette. You will then be allowed to use the equipment—remember the points made in the introduction. When you are confident in the technique, you can check on the accuracy of the volumes delivered.

#### ◆ Safety

##### Control Measures

- The **wearing of safety glasses and a laboratory coat** at all times will be sufficient to take account of most hazards and significant risks. You are reminded of the need of good laboratory practise in order to maintain a safe working environment.



◆ **Procedure**

1. Transfer 25.00 cm<sup>3</sup> volumes of de-ionised water to a dry, weighed container using a pipette. Record the mass of the vial accurately in the space provided below. Repeat the procedure three times.
2. Repeat the procedure using a burette instead of a pipette. Record the masses in the following table

◆ **Results**

<b>Pipette</b>	<b>1</b>	<b>2</b>	<b>3</b>
Final mass of vial and water (g)			
Initial mass of empty dry vial (g)			
Difference (g)			

<b>Burette</b>	<b>1</b>	<b>2</b>	<b>3</b>
Final mass of vial and water (g)			
Initial mass of empty dry vial (g)			
Difference (g)			



◆ **Your notes:**

Use this space to write down notes on how to use the apparatus and the method for 'Weighing by Differences'

## Preliminary Questions

### ◆ Required Reading

How to use a Burette and Pipette

Practical: Estimation Of The Accuracy Of Delivery Of Volumetric Apparatus

### ◆ Questions

1. What two things should you check before using a pipette?

2. Calculate the results of the following data:

<b>Pipette</b>	<b>1</b>	<b>2</b>	<b>3</b>
Final mass of vial and water (g)	27.37	27.51	27.44
Initial mass of empty dry vial (g)	2.35	2.55	2.43
Difference (g)			

<b>Burette</b>	<b>1</b>	<b>2</b>	<b>3</b>
Final mass of vial and water (g)	27.87	27.97	27.77
Initial mass of empty dry vial (g)	2.45	2.55	2.35
Difference (g)			

3. Considering that the mass should be 25.00 g for each result, cross out the statements that do not apply

**The results from the burette:**

are precise and accurate  
are precise but not accurate  
are accurate but not precise

**The results from the pipette:**

are precise and accurate  
are precise but not accurate  
are accurate but not precise

4. Which piece of apparatus is better for measuring 25.00 cm<sup>3</sup> of solution?