

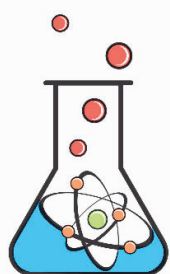
Grade 11

ChemStart

Unleashing the Scientist in you



Learner Manual



NKAZIMULO
APPLIED SCIENCES

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FIRST THINGS FIRST: SAFETY

This section of the manual is the most important of all. Please take care to follow the rules carefully.

GENERAL RULES

1. Conduct yourself in a responsible manner always with the kit.
2. Follow all written and verbal instructions carefully. If you do not understand a direction or part of a procedure, rather wait to ask your teacher at school or send us a message on info@nkazisciences.co.za.
3. Never work alone, always have someone older than you around.
4. Perform only those experiments in the kit. Unauthorized experiments are not allowed.
5. Do not eat food, drink beverages, or chew gum while conducting experiments.
6. Horseplay, practical jokes and pranks are dangerous and prohibited.
7. Be prepared for your work. Read all procedures thoroughly before starting with any experiment.
8. Always work in a well-ventilated area.
9. Observe good housekeeping practices. Work areas should be kept clean and tidy at all times.
10. Dispose of all chemical waste properly as indicated in the manual.
11. Keep hands away from face, eyes, mouth, and body while using chemicals or lab equipment. Wash your hands with soap and water after performing all experiments.
12. Experiments must be personally monitored at all times. Do not wander around the room.

CLOTHING

1. Protective gear has to be comfortable.
2. Any time chemicals, heat, or glassware are used, wear safety glasses. **NO EXCEPTIONS TO THIS RULE!**
3. Contact lenses may not be worn in the laboratory.
4. Dress properly during an experiment. Long hair, dangling jewellery, and loose or baggy clothing are a hazard. Shoes must completely cover the foot. No sandals to be worn when conducting experiments.

ACCIDENTS AND INJURIES

1. If there is a spillage, wash with water.
2. If a chemical should splash in your eye(s) or on your skin, immediately flush with running water for at least 20 minutes.

HANDLING CHEMICALS

1. All chemicals in the kit are to be considered dangerous. Avoid handling chemicals with fingers. When making an observation, keep at least 1 meter away from the reaction. Do not taste, or smell any chemicals.
2. Check the label on all chemical bottles twice before removing any of the contents. Take only as much chemical as you need.
3. Never return unused chemicals to their original container.
4. Never remove chemicals or other materials from the kit.

HANDLING GLASSWARE AND EQUIPMENT

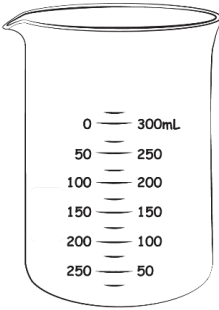


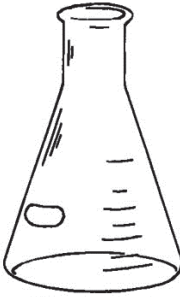


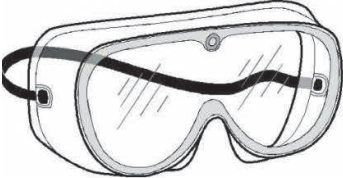


1. Never handle broken glass with your bare hands. Use a brush and dustpan to clean up broken glass.



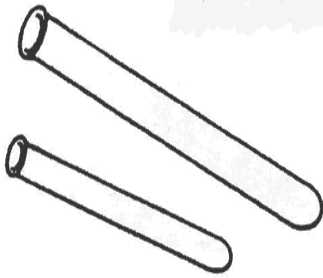

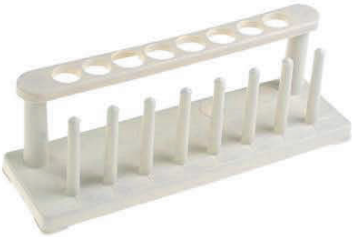

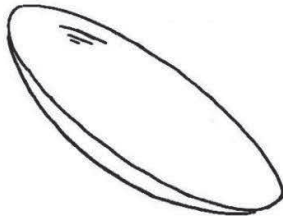
2. Do not immerse hot glassware in cold water. The glassware may shatter.

HEATING SUBSTANCES

1. Do not operate a hot plate by yourself. Take care that hair, clothing, and hands are a safe distance from the hot plate at all times. Use of hot plate is only allowed in the presence of an adult.
2. Never look directly into a container that is being heated.

LABORATORY APPARATUS

<p>Beaker</p> 	<p>Alcohol burner and stand</p> 	<p>Capillary tubes</p> 
<p>Conical flask/Erlenmeyer flask</p> 	<p>Measuring cylinder</p> 	<p>Pasteur pipette</p> 
<p>Safety glasses</p> 	<p>Serological pipette</p> 	<p>Spatula</p> 

<p>Syringe</p> 	<p>Stirring rod</p> 	<p>Test tube</p> 
<p>Test tube holder</p> 	<p>Test tube rack</p> 	<p>Thermometer</p> 
<p>Watch glass</p> 		

CONTENTS

Chemicals		Labware	
Aluminium, copper, steel, & brass rod		Aluminium foil	5 sheets
Acetic acid	50ml	Balloon	2
Acetone	50ml	Beaker glass 100ml	1
Ammonium chloride	10g	Beaker plastic-100ml	3
Ammonium dichromate	10g	Burner and stand	1
Barium hydroxide	10g	Candle	2
Benzoic acid	10g	Capillary tubes	5
Chloroform	20ml	Conical flask with stopper-100ml	1
Citric acid solution 6%	20ml	Glass rod	1
Methylated spirit	50ml	Gloves	2
Copper sulphate	10g	Graph paper	5
Cyclohexane	10ml	Head ache powder	3 sachets
Ethanol	50ml	Iron nails + sand paper	2
Glycerine	25ml	Rectangular prism	1
Iodine crystals	2g	Laser pen	1
Lead nitrate	10g	Litmus paper	2
Litmus paper (blue and red)	1	Marble ball	1
Magnesium ribbon	2 strips	Measuring cylinder 50ml	1
Sodium hydroxide solution 1.M	50ml	Pasteur pipette	2
Phenolphthalein	20ml	Plasticine & beads	2
Potassium iodide	5g	Polystyrene cup with lid	2
Potassium permanganate	10g	Protractor 360 degrees sheet	1
Sodium bicarbonate	10g	Safety glasses	1
Sodium chloride	10g	Spatula	1
Sodium acetate	25g	Steel wool	1
Sulphur	10g	String	1
		Syringe 50ml with stopper	1
		Test tube holder	1
		Test tube rack	1
		Test tube-large	1
		Test tubes	4
		Thermometer	1
		Toothpicks (pack)	1
		Tweezers	1
		Watch glass	2