Grade 9 Pre-Technical Studies

CBC NOTES | Terms 1, 2 and 3 - notes for 13 topics

IN EVERY TOPIC

- What you will learn, the key words and key terms explained.
- Clear notes under headings and subheadings, with labelled pictures and step-by-step procedures.
- Comparison tables, and advantages and disadvantages where methods are compared.
- Key points to remember, then multiple-choice and structured questions.
- All the answers and a glossary at the back.

TOPICS IN THESE NOTES

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A TASTE OF THE FIRST TOPIC

Safety on Raised Platforms

Painters, electricians, builders and fruit pickers all work above the ground. Falls from height are one of the most common causes of serious injury at work. In this topic we identify the types of raised platforms, the risks of working on them and the safety rules that keep us and the people below us safe.

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Strand 1.0 Foundations of Pre-Technical Studies | Term 1

1.1 Safety on Raised Platforms

WHAT YOU WILL LEARN

By the end of this topic you should be able to:

- identify types of raised platforms used in performing tasks
- describe risks associated with working on raised platforms
- observe safety when working on raised platforms

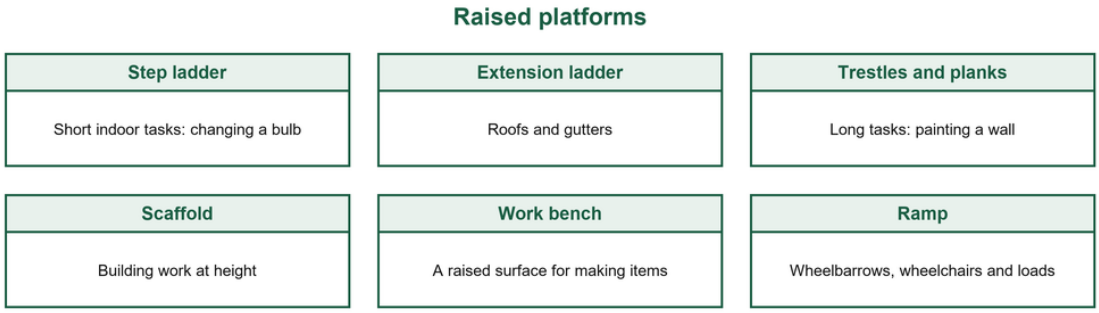
KEY WORDS

raised platform, ladder, trestle, scaffold, ramp, work bench, risk, three points of contact.

Painters, electricians, builders and fruit pickers all work above the ground. Falls from height are one of the most common causes of serious injury at work. In this topic we identify the types of raised platforms, the risks of working on them and the safety rules that keep us and the people below us safe.

1. Types of raised platforms

Raised platform
Any surface used to work above ground or floor level.



Common raised platforms and their uses

Choosing a raised platform

Platform	Best used for
Step ladder	Short indoor tasks such as changing a bulb
Extension ladder	Reaching roofs and gutters
Trestles with planks	Long tasks such as painting a wall
Scaffold or mobile tower	Building work at height
Work bench	A raised surface for making items
Ramp	Moving wheelbarrows, wheelchairs and loads

CHOOSING
Choose by the height needed, how long the task takes, the load to carry and how stable the platform is. Never use chairs, buckets or boxes as platforms.

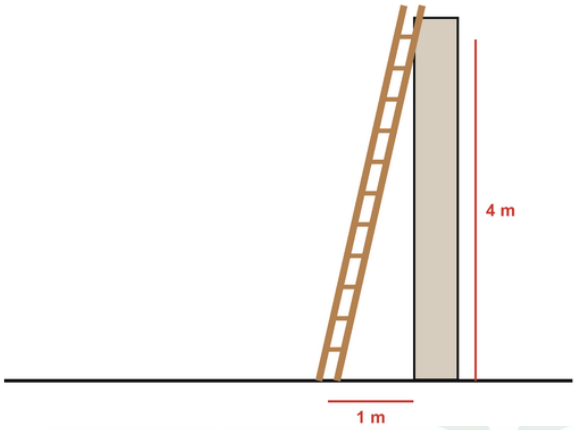
2. Risks of working on raised platforms

Risks and their causes

+ Risks	- Causes
• Falls from height	• Damaged ladders
• Platform tipping or collapsing	• Uneven or wet ground
• Slipping on rungs	• Overloading or overreaching
• Falling objects hitting people below	• Carrying loads while climbing
• Electric shock near power lines	• Bad weather; nobody holding the ladder

The injuries can be fractures, head injuries and even death.

3. Ladder safety



The 1-in-4 rule:
for every 4 m of height, the foot is 1 m from the wall.

Firm, level ground; someone holds the base.

Three points of contact; face the ladder.

Not on the top two rungs.

The 1-in-4 rule for leaning ladders

Using the 1-in-4 rule
For every 4 m of height, the foot of the ladder is 1 m from the wall.
A ladder reaching 6 m up a wall: foot distance = 6 ÷ 4 = 1.5 m.
A ladder reaching 2 m up: foot distance = 2 ÷ 4 = 0.5 m.

- Inspect it first: no broken rungs or loose parts.
- Place it on firm, level ground; have someone hold the base.
- Keep three points of contact: two feet and one hand, or two hands and one foot.
- Face the ladder going up and down; never stand on the top two rungs.
- Carry tools in a belt, not in your hands; open step ladders fully and lock the spreaders.

4. Trestles, scaffolds and ramps

Safety on other platforms

Platform	Safety rules
Trestles	Level; planks secured; not overloaded
Scaffolds	Built by trained people; guard rails and toe boards; wheels locked; never moved with people on them
Ramps	Gentle slope; non-slip surface; side rails

Wear protective gear: helmets, non-slip shoes and a safety harness at great heights. Use signs and cones to keep

people from walking under work at height.

5. Practising and valuing safety

Role-play: using a step ladder safely

1. Inspect the ladder and open it fully.
2. A partner holds the base.
3. Climb facing the ladder with three points of contact.
4. Pass tools up safely; come down facing the ladder.

When observing workers in the locality, record the platform used, the precautions seen (helmets, harness, someone holding the ladder, signs) and any unsafe practices, without distracting them. Safety prevents injuries and deaths, protects people below, saves medical costs and builds a safety culture.

CLASS PLEDGE

"I will never use a chair as a ladder; I will hold the ladder for others."

KEY POINTS TO REMEMBER

- A raised platform is any surface used to work above ground level.
- Types: ladders, trestles, steps, scaffolds, work benches and ramps.
- Risks: falls, collapse, slipping, falling objects and electric shock.
- The 1-in-4 rule: the ladder foot is 1 m out for every 4 m of height.
- Keep three points of contact and never stand on the top two rungs.

CHECK YOURSELF: MULTIPLE CHOICE

Choose the correct answer: A, B, C or D. The answers are at the back.

1. A ladder reaches 8 m up a wall. How far from the wall should its foot be?
A. 1 m B. 2 m
C. 4 m D. 8 m

2. Which is the safest platform for painting a long wall?
A. Trestles with planks B. A plastic chair
C. A bucket D. A stack of boxes

3. "Three points of contact" on a ladder means
A. three people hold it B. three rungs at once
C. it touches the wall in three places D. two feet and one hand, or two hands and one foot

4. Why are toe boards fitted on scaffolds?
A. To decorate them B. To make them taller
C. To stop objects falling on people below D. To hold paint

5. Which is an unsafe practice on a ladder?
A. Facing the ladder B. Standing on the top rung
C. Using a tool belt D. Having someone hold it

ANSWER THESE

1. Name four types of raised platforms and give a use for each. (4 marks)

2. State four risks of working on raised platforms. (4 marks)

3. A ladder must reach 5 m up a wall. Using the 1-in-4 rule, how far from the wall should its foot be? (2 marks)

4. Give four safety rules for using a ladder. (4 marks)

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1.2 Handling Hazardous Substances

WHAT YOU WILL LEARN

By the end of this topic you should be able to:

- identify hazardous substances found in the environment
- classify hazardous substances found in the locality
- describe safe ways of handling hazardous substances in the environment
- handle hazardous substances safely in the environment

KEY WORDS

hazardous substance, poisonous, flammable, corrosive, hazard symbol, label, PPE.

Bleach, paraffin, pesticides and battery acid are useful, but they can poison, burn or catch fire. They are hazardous substances. In this topic we identify and classify hazardous substances in our locality, read their symbols and labels, and learn to handle, store, dispose of and give first aid for them safely.

1. What hazardous substances are

> **Hazardous substance**
> A substance that can harm people, animals or the environment.

Examples: bleach, paraffin, petrol, pesticides, rat poison, battery acid, cooking gas, paint thinners, drain cleaners and some medicines. They are found at home, in laboratories and workshops, on farms, in garages and in shops.

Classes of hazardous substances

Class	Danger	Examples
Poisonous (toxic)	Harmful if swallowed, breathed in or absorbed through the skin	Pesticides, rat poison, some cleaners
Flammable	Catches fire easily	Petrol, paraffin, methylated spirit, cooking gas, paint thinner
Corrosive	Destroys skin, eyes and materials	Battery acid, strong bleach, caustic soda, drain cleaner

> **NOTE**
> Some substances belong to more than one class; petrol, for example, is flammable and harmful to breathe.

2. Hazard symbols and labels



Hazard symbols

- Skull and crossbones: toxic.

- Flame: flammable.
- Liquid eating a hand and a surface: corrosive.
- Exclamation mark: harmful or irritant.
- Dead tree and fish: harmful to the environment.

A label gives the product name, hazard symbols, warnings, instructions for use, first aid, storage, expiry date and manufacturer.

3. Safe handling and storage

Rules

+ Handling

- Read the label first
- Wear gloves, goggles and an apron
- Work in a well-ventilated place
- Use only the amount needed; never mix substances
- Keep away from flames; wash hands after use

- Storage

- Keep in the original labelled container
- Close the lid tightly
- Lock away from children and food
- Keep flammables away from heat
- Never pour into soda bottles or food containers

Practising safe handling (with water as a stand-in)

1. Read the label aloud and put on PPE.
2. Open carefully, away from your face; pour slowly using a funnel.
3. Close tightly and store in the correct place.
4. Remove gloves without touching the outside; wash your hands.

4. First aid

First aid for hazardous substances

On the skin	In the eyes	Swallowed	Breathed in
Remove soaked clothing; rinse with clean running water for at least 15 minutes	Hold eyelids open; rinse with clean running water for at least 15 minutes	Do not cause vomiting; go to a health facility with the container	Move to fresh air; seek medical help

First aid for exposure to hazardous substances

ALWAYS
Call an adult, seek medical help and take the container or label with you.