

JOB ROLE –PLUMBER (GENERAL)

Sector – Plumbing
(Qualification Pack Code: PSC/Q0104)



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Shyamla Hills, Bhopal – 462013, Madhya Pradesh, India

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UNIT 03: BASIC BUILDING CONSTRUCTION

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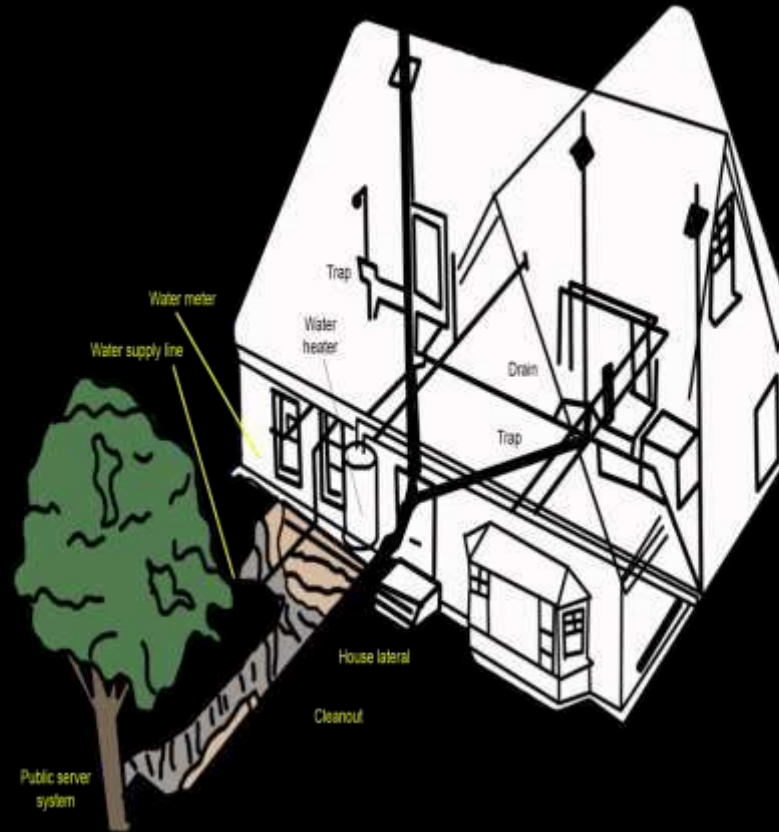
Session Objectives

The student will be able to:

- Describe plumbing in a building,
- Understand the role of basic elements in building,
- Describe the sanitary system in building,
- Demonstrate the cutting or opening structures,
- Define the term nailing and core cutting,
- Demonstrate the use of basic masonry tools,
- Prepare the building material or cement mortar,
- Define the term mortar filling.

Introduction

- As you know, plumbing fittings and fixtures are installed at various places in the building structure. These include the bathroom, kitchen, washroom, roof, etc., for this a plumber has to install these at the appropriate locations



Plumbing in a building

- As you know that there are various element in a building.
- These elements are foundation, structure, floors and ceiling, exterior walls, windows, roof, internal wall, etc.



Essential elements of a modern building point wise illustrate:

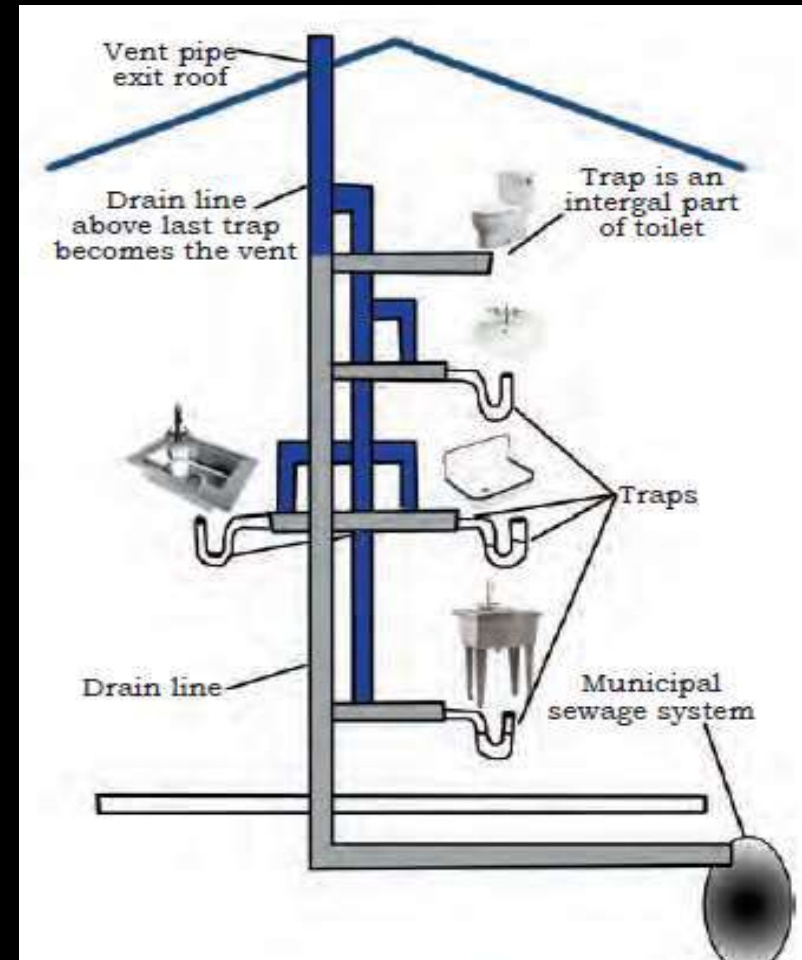
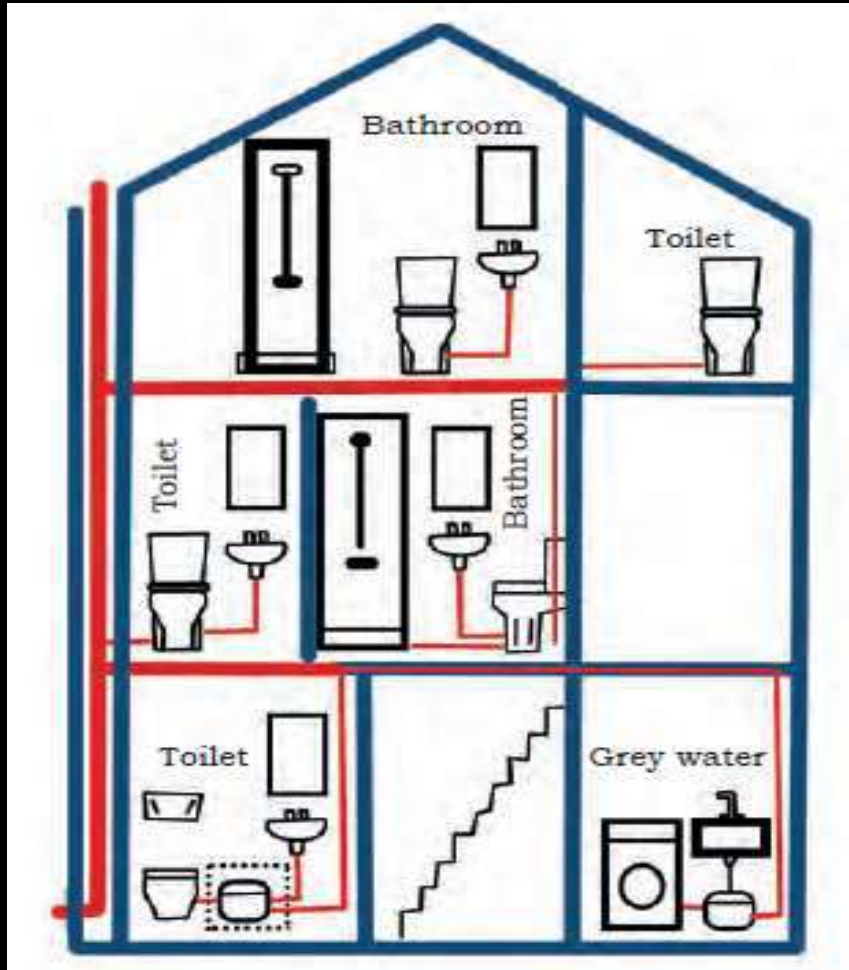
- 1. Foundations:** This is a structure (made, mainly of cement, iron and coarse sand) that transfer loads to the earth. The primary design concerns are settlement and tearing capacity.
- 2. Structure:** This comprises pillars, beams and tie-beams made of reinforced concrete or iron.
- 3. Floor and ceiling:** Hollow tile are placed between two tie-beams, later it is covered by a layer of concrete, floors are finished with floor tiles or floorboard.
- 4. Exteriors walls:** These are usually made by two brick walls and an insulator layer.

5. **Windows:** These provide a visual link between internal space and the outside world. They are very important for the mental health of the people in the house

6. **Roof:** Its functions are to protect a building from the weather and to retain the heat generated inside.

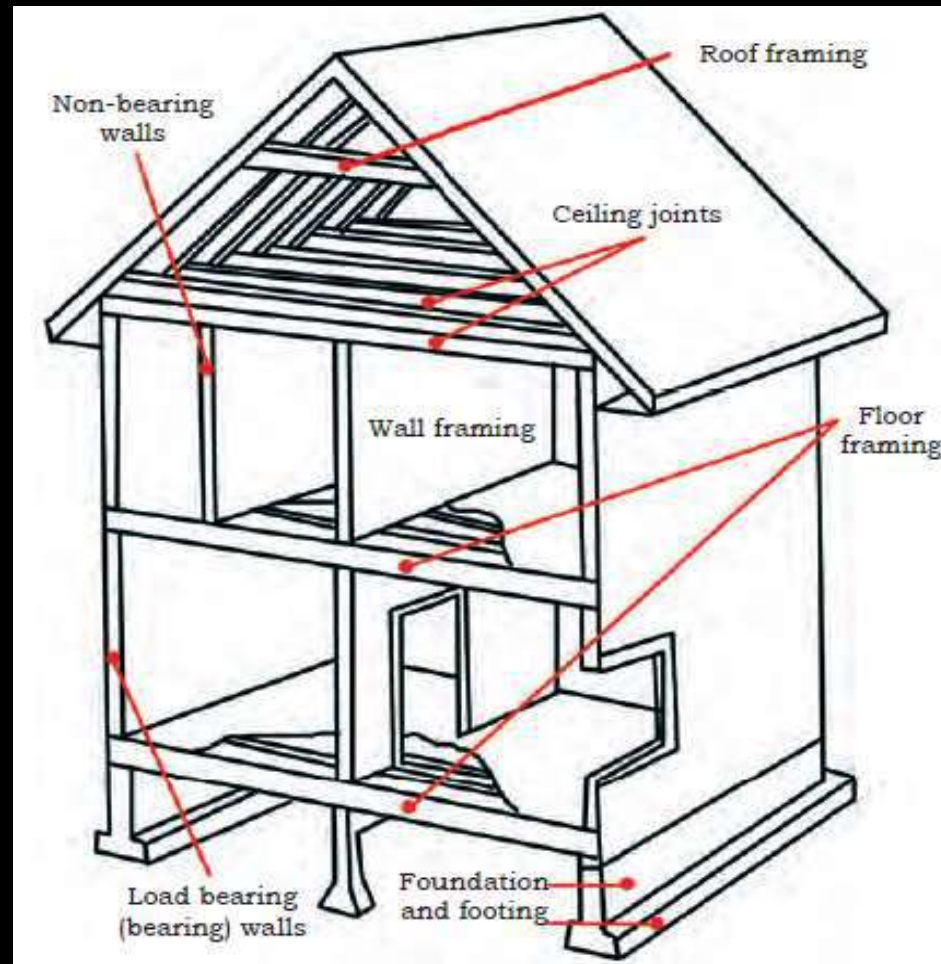
7. **Internal walls:** The primary function of internal wall is to divide the overall space within the house into smaller spaces. They are made of brick, wood or plaster.

Sectional view of a building with a sanitary system



Basic elements of a building

1. Foundation and footing
2. Load bearing walls
3. Floor framing
4. Wall framing
5. Non-bearing walls
6. Ceiling joints
7. Roof framing



Cutting or opening in structures

Drilling

A drill is a very powerful and potentially dangerous tool. A drill can easily make holes in the walls.

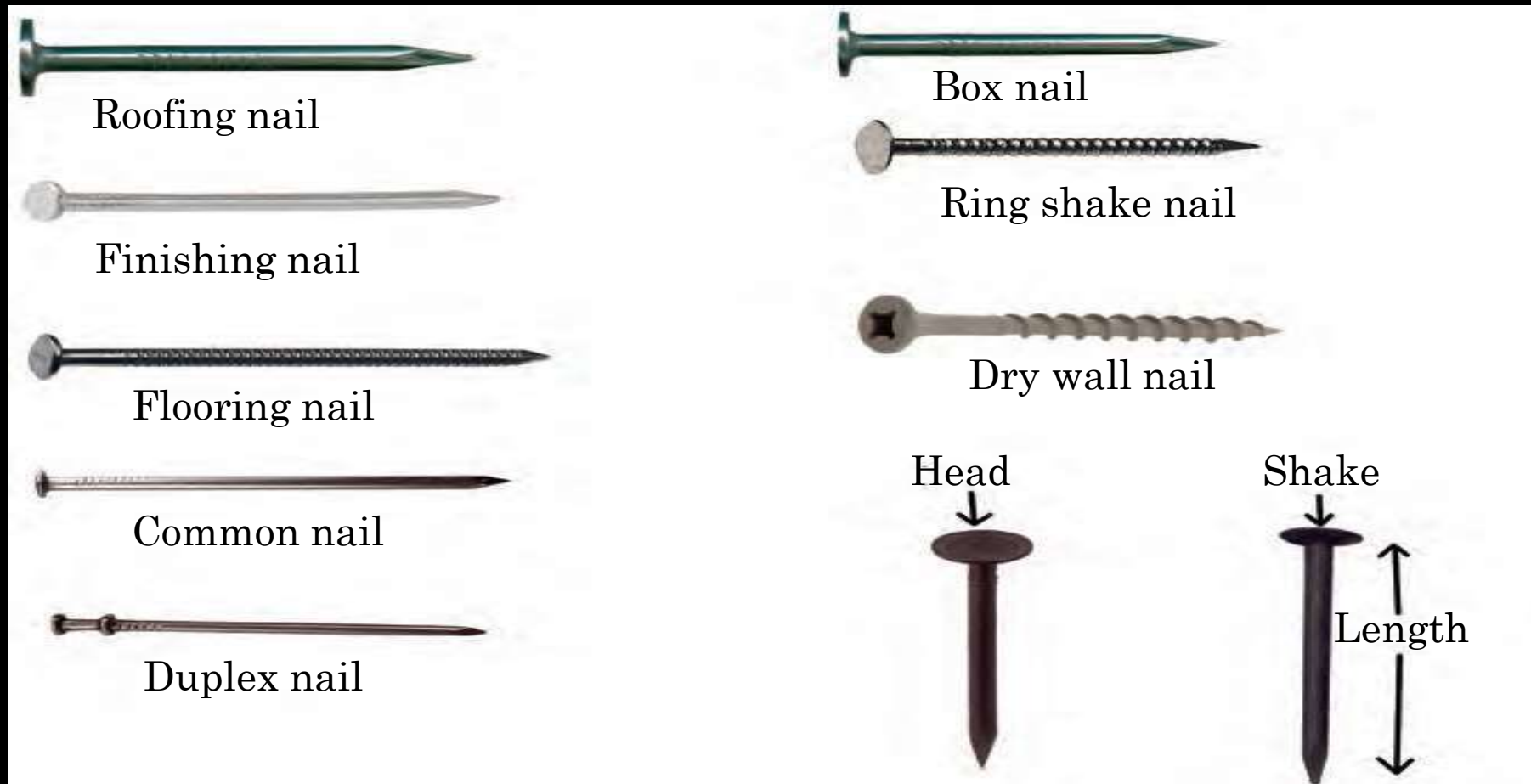


Precautions to be taken while using a drill

1. Always check for any electricity cable running through the wall before starting to drill because it can be fatal.
2. Never wear loose clothes or dangling jewellery.
3. The drill bit becomes hot with use, so keep your hands off it.
4. Make sure you use the correct size of the drill bit for the type of wall you are drilling into.
5. If you are drilling into tiles, use a special tile drill bit
6. If you are drilling into a plaster board, tap the wall to find where it is not hollow.
7. Always use a an extension cord made for this purpose, longer wire is needed for the drill and never pick up the drill by its flex.

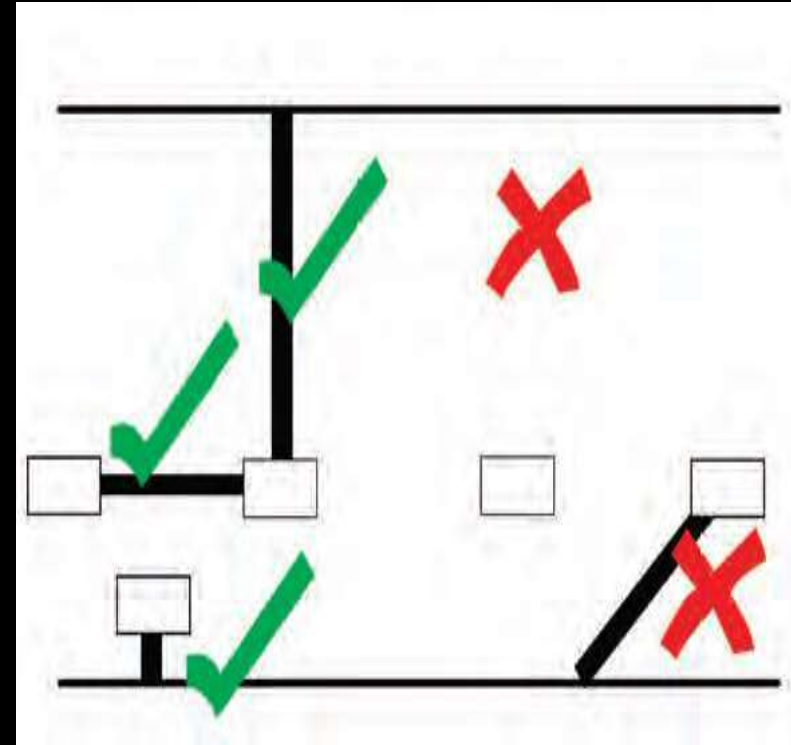
Nailing

Nailing is done to fasten the surface or to something else with a nail and a hammer. The different types of nails are used as shown :



Core cutting

- Chase or core is to bury (or, in builders' terms, chase) running cables or pipes up (or along) a masonry wall.
- When a space is created in a wall for keeping the plumbing pipes. It is called chase. Chase cut-outs should always be vertical or horizontal between start and finish on the wall.



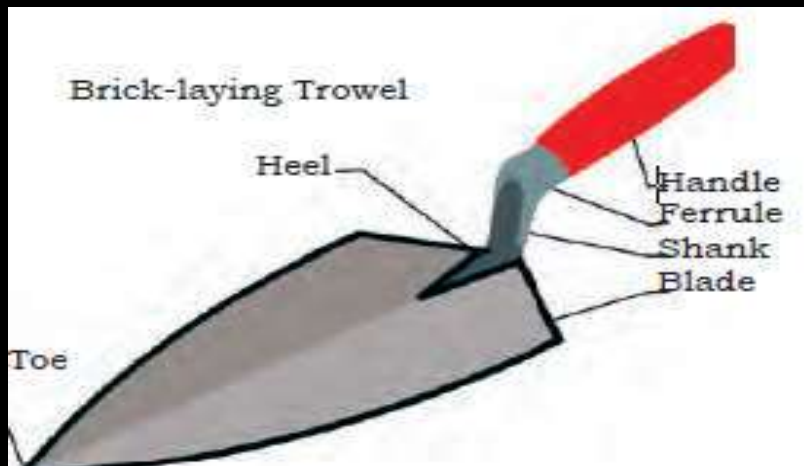
Following precaution should be taken during core cutting are as:

1. Never cut a chase at an angle between these two, nor step the channel.
2. While making vertical chase, care should be taken that the chase depth should not be more than one-third of the wall thickness.
3. Similarly, for horizontal chase, the width of the depth of cut should be more than the sixth of wall thickness.
4. Chases on opposite sides of a wall should not be in line, that is, 'back to back'.
5. It should be noted, that if chasing in a cable, any new wiring circuit falls under Part P of the Building Regulations.

Basic Masonry Tools

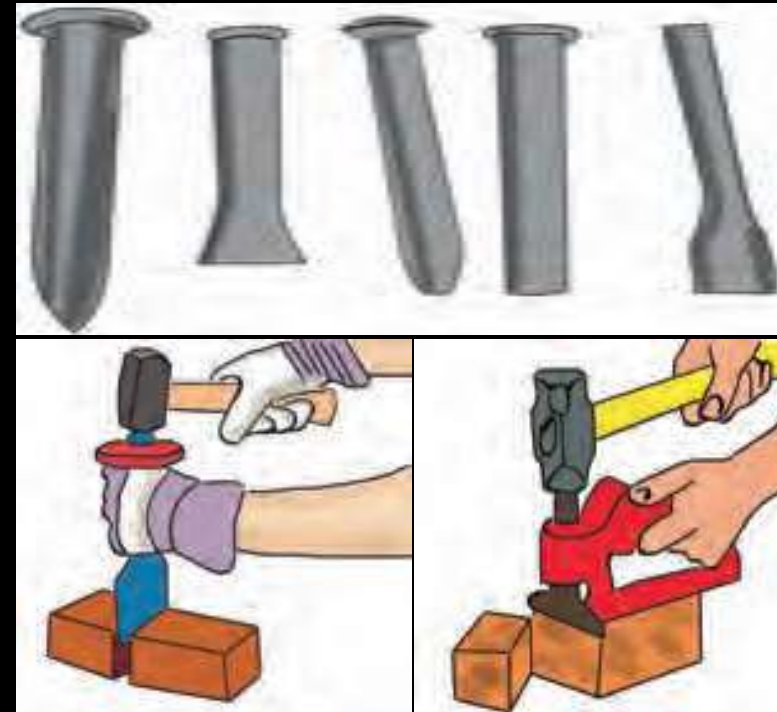
(a) Trowel

- It is used to pick up mortar from a board and to place and spread the mortar into a brick or set of bricks. Its maximum size can reach up to 11 inches in length and 8 inches in width.



(b) Chisel

- It is used to cut bricks into specific sizes. Chisel width ranges from 2 ½ to 4 ½ inches.



(c) Hammer

- A masonry hammer has a square face on one end for breaking; it has a sharp edge on the other for cutting. They are used to split hard bricks.



Measuring Tape



Marker



Plum bob



Wall finisher



Preparation of building material or cement mortar:

- Mortar is a workable paste used to bind construction blocks and fill the gaps between them. Mortar may be used to bind masonry blocks of stone, brick, cinder blocks, etc. It should be as watertight as possible.
1. Determining the type of cement will work best for the project.
 2. Take fine sand and coarse sand. Take one part cement, two parts sand and three parts coarse sand into the wheelbarrow.
 3. Mix the ingredients thoroughly with a spade to ensure they are well blended. Pour a small amount of water and make a paste.

Mortar Filling

- Filling mortars can be used for a variety of projects and repairs.
- Mortar is a necessary filling component to join some home-building components together, such as bricks.
- Most mortars, a mixture of concrete, lime and sand, are easy to mix and use, in small and large batches.
- Good mortar is necessary for good workmanship and good masonry service because it must bond the masonry units into a strong well-knit structure.

Summary

- In this unit, we have learnt about plumbing in building, basic elements of a building, cutting or opening structures, nailing, core cutting, masonry tools and preparation of building material or cement mortar, mortar filling.

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