



**Federal TVET Agency**

# **Apply 3S**

## **NTQF Level I**

# **Learning Guide #2**

**Unit of Competence: Apply 3S**  
**Module Title: Applying 3S**  
**LG Code: ---1 M01 L02-05**  
**TTLM Code: ---1 TTLM 0715v1**

## **LO 2: Prepare for work**

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics –

### Prepare for work

- Job requirements
- OHS requirements
- Material preparation and selection for work

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- Use work instructions to determine job requirements, including method, material and equipment.
- Read and interpret job specifications following working manual.
- Use OHS requirements, including dust and fume collection, breathing apparatus, eye and ear personal protection throughout the work.
- Select and prepare materials for work which are appropriate to application.
- Identify and check safety equipment and tools for safe and effective operation.

### Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 3 to 16.
3. Read the information written in the “Information Sheets 1”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
4. Accomplish the “Self-check 1” in page 7.
5. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-check 1).
6. If you earned a satisfactory evaluation proceed to “Information Sheet 2”. However, if your rating is unsatisfactory, see your trainer for further instructions or go back to Information sheet 1.
7. Submit your accomplished Self-check. This will form part of your training portfolio.
8. Read the information written in the “Information Sheet 2”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
9. Accomplish the “Self-check 2” in page 15.
10. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-check 2).

11. Read the information written in the “Information Sheets 3”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
12. Accomplish the “Self-check 3” in page 19.
13. Ask your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-check 3).
14. If you earned a satisfactory evaluation proceed to “Operation Sheet 1” in page 21. However, if your rating is unsatisfactory, see your trainer for further instructions or go back to Information sheet 3.
15. Read the “Operation Sheet 1” and try to understand the procedures discussed.
16. Do the “LAP test” in page 22 (if you are ready). Request your trainer to evaluate your performance and outputs. Your trainer will give you feedback and the evaluation will be either satisfactory or unsatisfactory. If unsatisfactory, your trainer shall advice you on additional work. But if satisfactory you can proceed to Learning outcome #3.

## 1. Job Requirements

A Job can be defined as:

- A piece of work, especially a specific task done as part of the routine of one's occupation or for an agreed price.
- A post of employment; full-time or part-time position
- Anything a person is expected or obliged to do; duty; responsibility
- An affair, matter, occurrence, or state of affairs.
- The material, project, assignment, etc., being worked upon.
- The process or requirements, details, etc., of working.
- The execution or performance of a task.

The requirements for a job vary according to the nature of the job itself. However, a certain work ethic must be cultivated to succeed in any job and this is fundamental to an individual's sense of himself as a worker, as part of production relations and a fundamental economic being. The basic requirements for a job remain the same no matter what the job is, where it is located or what professional and educational qualifications are required for it. These are as follows:

**Discipline:** Nothing is possible without discipline. Any job requires a fundamental core of discipline from the worker or the employee and this is a quality which is independent of age, post, stature, job and so on. Discipline is absolutely indispensable and provides the impetus for work that can be strenuous, repetitive, boring and even unsatisfactory at times.

**Enthusiasm:** Enthusiasm for work is also a pre-requisite for any job. An innate love for the job, which in modern parlance is known as job satisfaction, is a core requirement for any job. The drive to succeed, to innovate, to do well and to make one's profession into one's livelihood is a critical drive which needs to be present in the employee or cultivated as soon as possible. No job, however perfectly carried out, can evoke the feeling of satisfaction of a job well done without the instinct for success.

**Qualifications:** This is a more material, tactile need for a job which can be conveyed through degrees and certificates. However education is not limited to what is taught in colleges or vocational training courses. It is the burning desire to learn more, to reach the depths of knowledge about a particular field of interest, to complete the job and learn from it that marks the true enthusiast and the truly learned.

**Soft Skills:** Soft skills include those skills which ensure that a job is executed well, and the employee can carry himself in the proper manner too. For example, good and smooth communication, computer skills, proficiency in language if needed, presentable appearance, the ability to manage crises are all soft skills which are fundamentally important in any job and which must be cultivated consciously.

Thus, the requirements of a job, though specific to it, cover also a general spectrum. These make for better employees and better individuals.

## 2. Work Instruction

## Information about the work

- Describe what workers need to be able to do on the job
  - Work functions
  - Key activities of each work function
  - Performance indicators
- Describe what task to be done or work roles in a certain occupation

Work instruction is a description of the specific tasks and activities within an organization. A work instruction in a business will generally outline all of the different jobs needed for the operation of the firm in great detail and is a key element to running a business smoothly.

In other words it is a document containing detailed instructions that specify exactly what steps to follow to carry out an activity. It contains much more detail than a Procedure and is only created if very detailed instructions are needed. For example, describing precisely how a Request for Change record is created in the Change Management software support tool.

### 3. Procedures vs. Work Instructions

Many people confuse “procedures” with “work instructions”. In fact, most people write work instructions and call them procedures. Knowing the differences of procedures vs work instructions can help you understand the documentation process much better and, therefore, procedure documentation.

Procedures describe a process, while a work instruction describes how to perform the conversion itself. Process descriptions include details about the inputs, what conversion takes place (of inputs into outputs), the outputs, and the feedback necessary to ensure consistent results. The PDCA process approach (Plan, Do, Check, Act) is used to capture the relevant information.

Questions that need to be answered in a procedure include:

- Where do the inputs come from (suppliers)?
- Where do the outputs go (customers)?
- Who performs what action when (responsibilities)?
- How do you know when you have done it right (effectiveness criteria)?
- What feedback should be captured (metrics)?
- How do we communicate results (charts, graphs and reports)?
- What laws (regulations) or standards apply (e.g., ISO 9001, 8th EU Directive, IFRS, Sarbanes-Oxley)?

### 4. Job Specification

A statement of employee/workers characteristics and qualifications required for satisfactory performance of defined duties and tasks comprising a specific job or function.

#### *Specification Sample*

Learning Guide for Apply 3S Level I Version: 1    Revision: 0	Date: September, 2019 Author: EKI/MoE – TVET Outcome Based Training Core Process	Page 5 of 23
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<b>Technical parameters</b>	<b>Gigabyte 3D Rocket II (GH-PCU23-VE)</b>
<b>Heatsink and fan dimensions (L x W x H)</b>	112mm x 112mm x 160mm 92mm x 92mm x 25mm
<b>Heatsink material</b>	aluminum plates on a copper base and four copper heatpipes 6mm in diameter
<b>Fan rotation speed</b>	~1500-3000rpm
<b>Airflow</b>	no data
<b>Noise level</b>	16.0 ~ 33.5 dBA
<b>Nominal voltage</b>	~12V
<b>Fan MTBF</b>	50,000h
<b>Maximum power consumption</b>	~4.6W
<b>Fan bearings</b>	2 frictionless bearings
<b>Full weight</b>	640g
<b>Supported CPU sockets</b>	Socket 478, LGA 775, Socket AM2/754/939/940
<b>Additional</b>	Additional fan in the lower part of the cooler Gigabyte thermal grease Replaceable fluorescent rings
<b>Price, USD</b>	\$60

<b>LG#2 Self-Check 1</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is the meaning of job? (2 points)
2. List the requirements of job. (5 points)
3. What is the meaning of work? (2 points)
4. Describe work instruction in your own words. (5 points)
5. Explain the difference between procedure and work instruction? (5 points)
6. Define job specification? (3 points)
7. Prepare specification samples. (10 points)

**Note: Satisfactory rating - 16 points                      Unsatisfactory - below 16 points**  
You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = \_\_\_\_\_

Rating: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Short Answer Questions**

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6. \_\_\_\_\_



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7. 

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<b>Information Sheet 2</b>	<b>OHS Requirements</b>
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## 1. OHS Requirements

OHS requirements are legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of firefighting equipment, enterprise first aid, hazard control and hazardous materials and substances.

Personal protective equipment include those prescribed under legislation/regulations/codes of practice and workplace policies and practices. Safe operating procedures include the conduct of operational risk assessment and treatments associated with workplace organization. Emergency procedures include emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.

Occupational safety and health (OSH) also commonly referred to as occupational health and safety (OHS) or workplace health and safety (WHS) is an area concerned with the safety, health and welfare of people engaged in work or employment. The goals of occupational safety and health programs include fostering a safe and healthy work environment. OSH may also protect co-workers, family members, employers, customers, and many others who might be affected by the workplace environment. In the United States the term occupational health and safety is referred to as occupational health and occupational and non-occupational safety and includes safety for activities outside work.

Occupational safety and health can be important for moral, legal, and financial reasons. In common-law jurisdictions, employers have a common law duty (reflecting an underlying moral obligation) to take reasonable care for the safety of their employees. Statute law may build upon this to impose additional general duties, introduce specific duties and create government bodies with powers to regulate workplace safety issues: details of this will vary from jurisdiction to jurisdiction. Good OSH practices can also reduce employee injury and illness related costs, including medical care, sick leave and disability benefit costs.

As defined by the World Health Organization (WHO) "occupational health deals with all aspects of health and safety in the workplace and has a strong focus on primary prevention of hazards." Health has been defined as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. Occupational health is a multidisciplinary field of healthcare concerned with enabling an individual to undertake their occupation, in the way that causes least harm to their health. It contrasts, for example, with the promotion of health and safety at work, which is concerned with preventing harm from any incidental hazards, arising in the workplace.

Since 1950, the International Labour Organization (ILO) and the World Health Organization (WHO) have shared a common definition of occupational health. It was adopted by the Joint ILO/WHO Committee on Occupational Health at its first session in 1950 and revised at its twelfth session in 1995. The definition reads: "The main focus in occupational health is on three different objectives: (i) the maintenance and promotion of workers' health and working capacity; (ii) the improvement of working

environment and work to become conducive to safety and health and (iii) development of work organizations and working cultures in a direction which supports health and safety at work and in doing so also promotes a positive social climate and smooth operation and may enhance productivity of the undertakings. The concept of working culture is intended in this context to mean a reflection of the essential value systems adopted by the undertaking concerned. Such a culture is reflected in practice in the managerial systems, personnel policy, principles for participation, training policies and quality management of the undertaking."

Joint ILO/WHO Committee on Occupational Health: those in the field of occupational health come from a wide range of disciplines and professions including medicine, psychology, epidemiology, physiotherapy and rehabilitation, occupational, occupational medicine, human factors and ergonomics, and many others. Professionals advise on a broad range of occupational health matters. These include how to avoid particular pre-existing conditions causing a problem in the occupation, correct posture for the work, frequency of rest breaks, preventative action that can be undertaken, and so forth.

"Occupational health should aim at: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological capabilities; and, to summarize, the adaptation of work to man and of each man to his job.

## 2. History



Harry McShane, age 16, 1908. Pulled into machinery in a factory in Cincinnati and had his arm ripped off at the shoulder and his leg broken without any compensation. The research and regulation of occupational safety and health are a relatively recent phenomenon. As labor movements arose in response to worker concerns in the wake of the industrial revolution, worker's health entered consideration as a labor-related issue.

In 1833, HM Factory Inspectorate was formed in the United Kingdom with a remit to inspect factories and ensure the prevention of injury to child textile workers. In 1840 a Royal Commission published its findings on the state of conditions for the workers

of the mining industry that documented the appallingly dangerous environment that they had to work in and the high frequency of accidents. The commission sparked public outrage which resulted in the Mines Act of 1842. The act set up an inspectorate for mines and collieries which resulted in many prosecutions and safety improvements, and by 1850, inspectors were able to enter and inspect premises at their discretion.

Otto von Bismarck inaugurated the first social insurance legislation in 1883 and the first worker's compensation law in 1884 – the first of their kind in the Western world. Similar acts followed in other countries, partly in response to labor unrest.

### 3. Workplace hazards

Although work provides many economic and other benefits, a wide array of workplace hazards also present risks to the health and safety of people at work. These include "chemicals, biological agents, physical factors, adverse ergonomic conditions, allergens, a complex network of safety risks," and a broad range of psychosocial risk factors.

#### Physical and mechanical hazards



At-risk workers without appropriate safety equipment

Physical hazards are a common source of injuries in many industries. They are perhaps unavoidable in certain industries, such as construction and mining, but over time people have developed safety methods and procedures to manage the risks of physical danger in the workplace. Employment of children may pose special problems. Falls are a common cause of occupational injuries and fatalities, especially in construction, extraction, transportation, healthcare, and building cleaning and maintenance.

An engineering workshop specializing in the fabrication and welding of components has to follow the Personal Protective Equipment (PPE) at work regulations 1992. It is an employer's/workers' duty to provide 'all equipment (including clothing affording protection against the weather) which is intended to be worn or held by a person at work which protects him against one or more risks to his health and safety'. In a fabrication and welding workshop an employer would be required to provide face and eye protection, safety footwear, overalls and other necessary PPE.

Machines are commonplace in many industries, including manufacturing, mining, construction and agriculture, and can be dangerous to workers. Many machines involve moving parts, sharp edges, hot surfaces and other hazards with the potential to crush, burn, cut, shear, stab or otherwise strike or wound workers if used unsafely. Various safety measures exist to minimize these hazards, including lockout-tag

out procedures for machine maintenance and roll over protection systems for vehicles.

According to the United States Bureau of Labor Statistics, machine-related injuries were responsible for 64,170 cases that required days away from work in 2008. More than a quarter of these cases required more than 31 days spent away from work. That same year, machines were the primary or secondary source of over 600 work-related fatalities. Machines are also often involved indirectly in worker deaths and injuries, such as in cases in which a worker slips and falls, possibly upon a sharp or pointed object.

The transportation sector bears many risks for the health of commercial drivers, too, for example from vibration, long periods of sitting, work stress and exhaustion. These problems occur in Europe but in other parts of the world the situation is even worse. More drivers die in accidents due to security defects in vehicles. Long waiting times at borders cause that drivers are away from home and family much longer and even increase the risk of HIV infections.

Confined spaces also present a work hazard. The National Institute of Occupational Safety and Health defines "confined space" as having limited openings for entry and exit and unfavorable natural ventilation, and which is not intended for continuous employee occupancy. Spaces of this kind can include storage tanks, ship compartments, sewers, and pipelines. Confined spaces can pose a hazard not just to workers, but also to people who try to rescue them.

Noise also presents a fairly common workplace hazard: occupational hearing loss is the most common work-related injury in the United States, with 22 million workers exposed to hazardous noise levels at work and an estimated \$242 million spent annually on worker's compensation for hearing loss disability. Noise is not the only source of occupational hearing loss; exposure to chemicals such as aromatic solvents and metals including lead, arsenic, and mercury can also cause hearing loss.

Temperature extremes can also pose a danger to workers. Heat stress can cause heat stroke, exhaustion, cramps, and rashes. Heat can also fog up safety glasses or cause sweaty palms or dizziness, all of which increase the risk of other injuries. Workers near hot surfaces or steam also are at risk for burns. Dehydration may also result from overexposure to heat. Cold stress also poses a danger to many workers. Over-exposure to cold conditions or extreme cold can lead to hypothermia, frostbite, trench foot, or chilblains.

Electricity poses a danger to many workers. Electrical injuries can be divided into four types: fatal electrocution, electric shock, burns, and falls caused by contact with electric energy.

Vibrating machinery, lighting, and air pressure (high or low) can also cause work-related illness and injury. Asphyxiation is another potential work hazard in certain situations. Musculoskeletal are avoided by the employment of good ergonomic design and the reduction of repeated strenuous movements or lifts. Ionizing (alpha, beta, gamma, X, neutron), and non-ionizing radiation (microwave, intense IR, RF, UV, laser at visible and non-visible wavelengths), can also be a potent hazard

In Victoria, workplace health and safety is governed by a system of laws, regulations and compliance codes which set out the responsibilities of employers and workers to ensure that safety is maintained at work.

### **The Act**

The *Occupational Health and Safety Act 2004* (the Act) is the cornerstone of legislative and administrative measures to improve occupational health and safety in Victoria.

The Act sets out the key principles, duties and rights in relation to occupational health and safety. The general nature of the duties imposed by the Act means that they cover a very wide variety of circumstances, do not readily date and provide considerable flexibility for a duty holder to determine what needs to be done to comply.

### **The Regulations**

The *Occupational Health and Safety Regulations 2007* are made under the Act. They specify the ways duties imposed by the Act must be performed, or prescribe procedural or administrative matters to support the Act, such as requiring licenses for specific activities, keeping records, or notifying certain matters.

### **Guidance**

Effective OHS regulation requires that Work Safe provides clear, accessible advice and guidance about what constitutes compliance with the Act and Regulations. This can be achieved through Compliance Codes, Work Safe Positions and non-statutory guidance ("the OHS compliance framework"). For a detailed explanation of the OHS compliance framework, see the Victorian Occupational Health and Safety Compliance Framework Handbook.

### **Policy**

Not every term in the legislation is defined or explained in detail. Also, sometimes new circumstances arise (like increases in non-standard forms of employment, such as casual, labour hire and contract work, or completely new industries with new technologies which produce new hazards and risks) which could potentially impact on the reach of the law, or its effective administration by Work Safe. Therefore, from time to time Work Safe must make decisions about how it will interpret something that is referred to in legislation, or act on a particular issue, to ensure clarity. In these circumstances, Work Safe will develop a policy. A policy is a statement of what Work Safe understands something to mean, or what Work Safe will do in certain circumstances.

<b>LG#2 Self-Check 2</b>	<b>Written Test</b>
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**Instructions:** Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers. Write your answers in the sheet provided in the next page.

1. What is OHS represents for (2 point)
2. What is OSH represents for? (1 point)
3. What is WHS represents for? (1 point)
4. What are the goals of OHS? (2 points)
5. List some examples of OHS requirements in your work areas. (10 points)
6. List at least four workplace hazards? (4 points)

**Note: Satisfactory rating - 12 points                      Unsatisfactory – below 12 points**  
You can ask your trainer for the copy of the correct answers.

# Answer Sheet

Score = \_\_\_\_\_

Rating: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Short Answer Questions

1. \_\_\_\_\_

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2. \_\_\_\_\_

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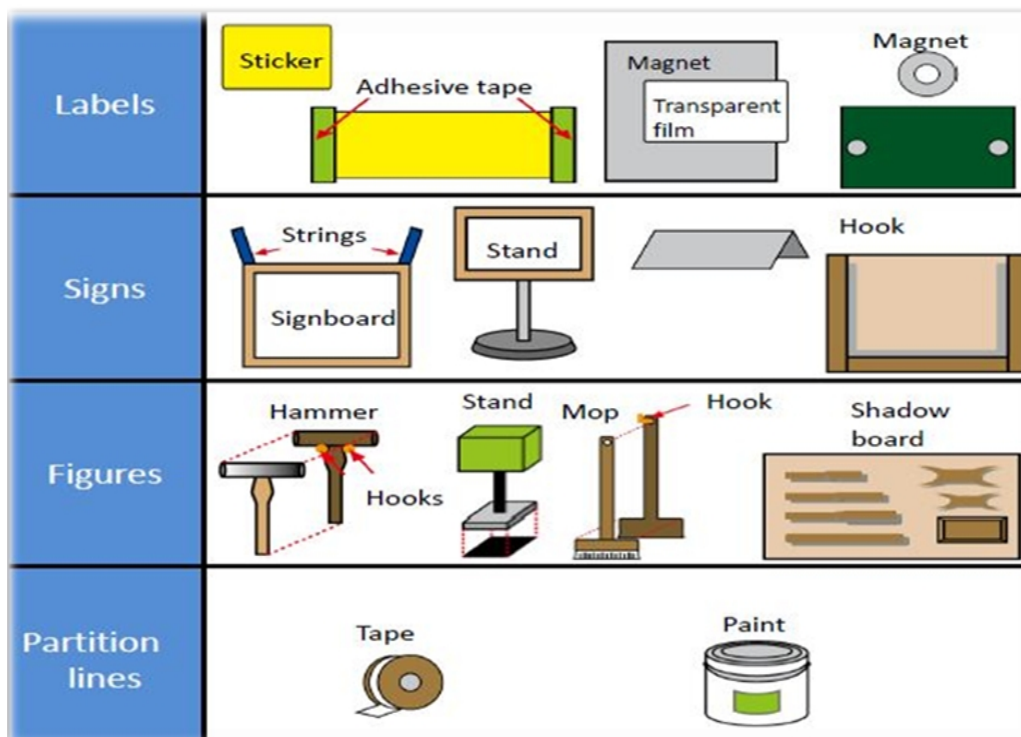
**Tools and materials used to implement Sort activity**

Tools and materials are required to implement sort, set in order and shine activities in work stations. The following are some tools and materials used to implement the first pillar of 5S-Sort.

- red tags
- hook
- shelves
- sponge
- pencil
- formats (for recording necessary and unnecessary items, plans etc...)
- sticker
- nails
- chip wood
- broom
- shadow board/ tools board

**Tools and materials used to implement set in order**

The following are some tools and materials used to implement the second pillar of 5S-Set in order.



**Tools and materials used to implement shine**

The following are some tools and materials used to implement the third pillar of 5S-Shine.

- Sponge
- Broom
- Brush
- oil
- detergent s
- spade

- vacuum cleaner
- garbage containers
- screws etc...

bolts  
floor scrubber cleaning Pads



**Instructions:** Perform the following tasks. Write your answers in the answer sheet provided:

1. List at least five me tools and materials used to implement Sort. (5 points)
2. List at least six tools and materials used to implement Set in order. (6 points)
3. List at least seven tools and materials used to implement Shine. (7 points)

**Note: Satisfactory rating - 10 points                      Unsatisfactory - below 10 points**

You can ask you teacher for the copy of the correct answers.

## Answer Sheet

Score = \_\_\_\_\_

Rating: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### Short Answer Questions

1. \_\_\_\_\_  
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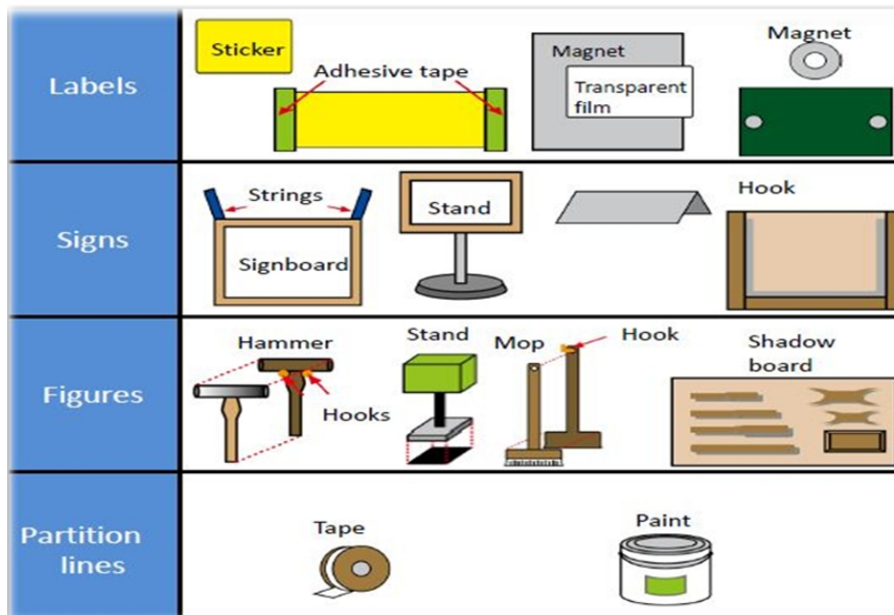
3. \_\_\_\_\_  
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**1. Discuss and plan to prepare materials for 3S implementation**

**2. Prepare tools and materials for implementing sort**

- red tags
- hook
- shelves
- sponge
- pencil
- formats (for recording necessary and unnecessary items, plans etc...)
- sticker
- nails
- chip wood
- broom
- shadow board/ tools board

**3. Prepare tools and materials for implementing set in order**



**Prepare tools and materials for implementing shine**

- sponge
- broom
- detergent s
- brush
- spade
- vacuum cleaner
- oil
- bolts
- garbage containers
- floor scrubber cleaning Pads
- screws etc...

<b>LG #2 LAP Test</b>	<b>Practical Demonstration</b>
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Name: \_\_\_\_\_ Date: \_\_\_\_\_

Time started: \_\_\_\_\_ Time finished: \_\_\_\_\_

**Instructions:** Given necessary templates, workshop, tools and materials you are required to perform the following tasks.

Task 1: Identify and prepare tools and materials for implementing sort activity.

Task 2: Identify and prepare tools and materials to implement set in order.

Task 3: Identify and prepare tools and materials to implement shine activity.

## List of Reference Materials

- 5S for operators (1995)
- Journals/publications/magazines
- Job specifications
- Safety Manual and Guide