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ABSTRACT

The general purpose of the occupational analysis is to provide workable, basic information dealing with the many and varied duties performed in the garden center employee occupation. The document opens with a brief introduction followed by a job description. The bulk of the document is presented in table form. Six duties are broken down into a number of tasks and for each task a table is presented, showing: tools, equipment, materials, objects acted upon; performance knowledge (related also to decisions, cues and errors); safety--hazard; science; math--number systems; and communications. The duties include: caring for plants and facilities, allied products, and equipment in the garden center; making a sales transaction; maintaining inventory; and preparing merchandise for sale and delivery. (BP)

Occupational Analysis

GARDEN CENTER EMPLOYEE

Instructional Materials Laboratory
Trade and Industrial Education
The Ohio State University

5186

AN ANALYSIS OF THE GARDEN CENTER OCCUPATION

Developed By

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Occupational Analysis
E.P.D.A. Sub Project 73420
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Director. Tom L. Hindes
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The Instructional Materials Laboratory
Trade and Industrial Education
The Ohio State University

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FOREWORD

The occupational analysis project was conducted by The Instructional Materials Laboratory, Trade and Industrial Education, The Ohio State University in conjunction with the State Department of Education, Division of Vocational Education pursuant to a grant from the U.S. Office of Education.

The Occupational Analysis project was proposed and conducted to train vocational educators in the techniques of making a comprehensive occupational analysis. Instructors were selected from Agriculture, Business, Distributive, Home Economics, and Trade and Industrial Education to gain experience in developing analysis documents for sixty-one different occupations. Representatives from Business, Industry, Medicine, and Education were involved with the vocational instructors in conducting the analysis process.

The project was conducted in three phases. Phase one involved the planning and development of the project strategies. The analysis process was based on sound principles of learning and behavior. Phase two was the identification, selection and orientation of all participants. The training and workshop sessions constituted the third phase. Two-week workshops were held during which teams of vocational instructors conducted an analysis of the occupations in which they had employment experience. The instructors were assisted by both occupational consultants and subject matter specialists.

The project resulted in producing one hundred two trained vocational instructors capable of condulting and assisting in a comprehensive analysis of various occupations. Occupational analysis data were generated for sixty-one occupations. The analysis inlcuded a statement of the various tasks performed in each occupation. For each task the following items were identified: tools and equipment; procedural knowledge; safety knowledge; concepts and skills of mathematics, science and communication needed for successful performance in the occupation. The analysis data provided a basis for generating instructional materials, course outlines, student performance objectives, criterion measures, as well as identifying specific supporting skills and knowledge in the academic subject areas.

PREFACE

A garden center employee will be called upon to perform a variety of duties ranging from caring for plants, equipment and facilities to such business related areas as making sales and maintaining inventory. In a small garden center, the owner may perform all these duties. A larger center may employ several people to handle these duties separately. This analysis covers those duties and tasks performed by the workers. No supervisory tasks are included.

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JOB DESCRIPTION

The garden center worker performs duties necessary for successful garden center operation. The general duties include caring for plants, facilities and equipment, assembling, storing, caring for and operating allied products, and handling and preparing plants and products for delivery. The worker also makes sales transactions as well as taking, reveiving, and price inventory.

Duty A Caring for Plants and Facilities at the Garden Center

1 Water plants
2 Heel in plants
3 Mulch plants
4 Prepare potting mixture
5 Pot plants
6 Prune plants
7 Re-ball and burlap plants
8 Fertilize plants
9 Control plant pests
10 Store seasonal plants
11 Care of sales work, storage, and delivery areas

(TASK STATEMENT) WATER PLANTS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Balled and burlapped trees and shrubs
Container stock
Barefoot stock
Annuals
Hose
Flares
Mist
Soakers
Breakers
Sprinkler

PERFORMANCE KNOWLEDGE

Inspect plants
Connect watering devices
Adjust watering devices
Apply water

SAFETY – HAZARD

Safety:
Do not place hose in heavy traffic area
Do not operate at too high a pressure

Hazard:
Potential injury by tripping or falling
Potential injury by splash if chemicals and fertilizers are used in conjunction with watering (chemical burns)

DECISIONS

Determine time of water application
Determine rate of water application
Select proper equipment for water application

CUES

Plant appearance
Known requirements

ERRORS

Excessive wilting
Plant death

SCIENCE

Plant Processes
- Respiration
- Transpiration
- Photosynthesis

Environmental Conditions
Water movement into plants
- Osmosis
- Absorption

MATH – NUMBER SYSTEMS

Liquid and dry measures
(Liquid measures)
(Figure amount of water needed to fill containers with water when dry; to keep balled and burlap stock, bareroot stock and annuals moist at all times)

COMMUNICATIONS

Take verbal orders from supervisor
Read written work orders

(TASK STATEMENT) · HEEL IN PLANTS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Balled and burlapped trees and shrubs
Bareroot stock
Mulching materials
Garden rakes
Garden shovels
Wheelbarrow

PERFORMANCE KNOWLEDGE

Inspect plants
Apply mulching material
Water mulching material

SAFETY – HAZARD

Safety:
Do not lift more than 25 pounds of mulching material or planting stock from bending position
Use tools safely

Hazard:
Potential back injury or rupture
Potential cuts or bruises

DECISIONS

Determine reasons to heel in
Select mulching materials for heel in
Determine which plants to heel in
Determine amount of material to use

CUES

Plants appearance
Industry's accepted methods

ERRORS

Excessive wilting
Plant death

SCIENCE

Plant processes
Transpiration
Respiration
Photosynthesis
Environmental conditions
Water movement into plants
Osmosis
Absorption

MATH – NUMBER SYSTEMS

Dry measure
[Apply 3" of mulch to bottom, sides and top of stock]

Determination of area and volume of rectangular, cube and right triangular prisms
[Mulch - area and volume]

COMMUNICATIONS

Take verbal orders
Read written work orders

(TASK STATEMENT) MULCH PLANTS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Balled and burlapped shrubs and trees
Bareroot stock
Mulching materials
Shovels
Rakes
Wheelbarrow

PERFORMANCE KNOWLEDGE

Apply mulch
Water mulch

SAFETY – HAZARD

Safety:
Do not lift materials over 25 pounds from bending position
Use tools and equipment safely

DECISIONS

Determine reasons for mulching
Determine procedure for mulching
Select materials for mulching

CUES

Plant appearance
Plant requirement

ERRORS

Excessive wilting
Plant death

SCIENCE

Plant processes
- Transpiration
- Respiration
- Photosynthesis

Environmental conditions
Water movement into plants
- Osmosis
- Absorption

MATH – NUMBER SYSTEMS

Dry measures
[Figure amount of mulch needed]

Determination of area, perimeter and diagonals of quadrilaterals (4 sided figures)
[Figure square feet of mulching area]

Determination of area and volume of rectangular, cube and right triangular prisms
[Volume of mulch needed]

COMMUNICATIONS

Take verbal orders
Read written orders

(TASK STATEMENT) PREPARE POTTING MIXTURE

TOOLS, EQUIPMENT, MATERIALS OBJECTS ACTED UPON

Soil
Soil amendments
Sterilizing equipment and/or chemicals
Mixing equipment
Shovels
Hoes

PERFORMANCE KNOWLEDGE

Mixing soil and amendments
Adding soil and amendments
Sterilize soil

SAFETY - HAZARD

Safety
- Use extreme caution in operating soil sterilizer
- Be careful in use of tools
- Use chemicals with caution

Hazard
- Possible burns from steam sterilizer
- Explosion - steam leakage
- Chemicals can be fatal

DECISIONS

Determine proper mixture
Determine method of sterilization

CUES

Plant requirements
Equipment available for sterilization
Time needed for chemical sterilization

ERRORS

Disease
Drainage
Aeration

SCIENCE

Plant disease
Drainage
Aeration
Root development
Effect of heat on disease organisms

MATH - NUMBER SYSTEMS

Ratio and proportions
(Soil and soil amendments)

COMMUNICATIONS

Interpreting verbal orders
Reading comprehension of written orders and/or manuals

(TASK STATEMENT) POT PLANTS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Plants
Container
Potting mixture
Hand trowels

PERFORMANCE KNOWLEDGE

Select and fill containers
Inspect plants
Plant in container
Water after potting

SAFETY – HAZARD

Use caution in use of tools
Use caution in lifting or moving heavy plants

DECISIONS

Determine plant spacing
Determine depth of planting
Select appropriate container

CUES

Plant requirements
Growth rate

ERRORS

Improper drainage
Poor light

SCIENCE

Stem and root rot
Effect of light on plant growth

MATH – NUMBER SYSTEMS

Determination of area and volume of cylinders
[Potting mixture needed to fill container]

Measures of length
[Planting depth]

COMMUNICATIONS

Take verbal orders
Read written orders

(TASK STATEMENT) PRUNE PLANTS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Deciduous trees and shrubs
Evergreen trees and shrubs
Vines
Ground covers
Roses
Pruning shears
Wound dressing
Hedge clippers
Pruning knife
Saws

PERFORMANCE-KNOWLEDGE

Inspect plants
Prune plants
Apply wound dressing
Inspect and sharpen tools

SAFETY – HAZARD

Safety
Always use tools properly and with extreme cautions

DECISIONS

Determine technique of pruning
Select materials needed
Determine procedure to follow

CUES

Plant requirements
Growth rate
Fruit production rate

ERRORS

Undesirable shape
Stunted growth

SCIENCE

Apical dominance
Photoshynthesis
Aesthetics

MATH – NUMBER SYSTEMS

None

COMMUNICATIONS

Interpreting verbal orders
Reading comprehension of pruning manuals

(TASK STATEMENT) RE-BALL AND BURLAP PLANTS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Balled and burlapped plants
Burlap
Twine
Pinning nails
Knife, scissors or cutting tool

PERFORMANCE KNOWLEDGE

Inspect plants
Cut burlap
Re-ball and burlap
Insert pinning nails
Heel In
Mulch
Water

SAFETY - HAZARD

Safety
Do not lift more than 25 lbs. from a bending position
Use hand tools with care

DECISIONS

Know procedure in balling and burlapping
Select materials needed for balling and burlapping
Know how to heel, in mulch and water

CUES

Plant requirements
Growth rate
Plant appearance

ERRORS

Lose soil from plant
Plant death

SCIENCE

Root structures
Water loss from soil
Water movement
Environmental conditions

MATH - NUMBER SYSTEMS

Measures of length
(Measure burlap needed)
Determination of area of quadrilaterals (4-sided figures)
(Determine area of burlap needed)
Determination of area and volume of rectangular, cube and right triangular prisms
(Area and volume of ball)

COMMUNICATIONS

Interpret verbal orders
Reading comprehension of orders and/or manuals

(TASK STATEMENT) FERTILIZE PLANTS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Plants to be fertilized
Fertilizer
Applicators for fertilizer
Water if needed

PERFORMANCE KNOWLEDGE

Inspect plants
Select fertilizer
Mix fertilizer
Select applicator
Apply fertilizer
Clean equipment
Calibrate applicator
Read labels

SAFETY – HAZARD

Safety
Wear safety glasses
Be cautious of fertilizer splash to body

Hazard:
Irritation to skin and eyes by fertilizer

DECISIONS	CUES	ERRORS
Type of fertilization Time of fertilizer application Rates of fertilizer application Materials available for fertilization Methods of application	Soil requirements Plant requirements	Unhealthy plants Plant death

SCIENCE

Theories regarding nutrient entry into plants

Attraction of nutrient ions and soil

Plant structure

16 plant nutrients and deficiency symptoms

Effect of fertilization on plant foilage

Corrosion of equipment if not cleaned properly

MATH – NUMBER SYSTEMS

Ratio and proportion
(Fertilizer and dilution)

Liquid and dry measures

Determine area to apply fertilizer

COMMUNICATIONS

Interpret verbal orders
Reading comprehension of fertilizer labels

(TASK STATEMENT) CONTROL PLANT PESTS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Sprayers
Hose
Nozzles
Gloves
Protective clothing
Protective mask
Spreader or applicators
Chemicals

PERFORMANCE KNOWLEDGE

Identify pest
Identify host plants
Select control measure
Calibrate sprayers or spreader
Apply pesticide
Clean equipment
Measure area to be treated
Dilute pesticides
Read labels
Post signs or danger signals where pesticides are applied

SAFETY – HAZARD

Safety:
- Wear eye cover
- Wear gloves
- Wear mask
- Wear protective clothing
- Discard containers in proper manner
- Apply in proper manner
- Post appropriate warning signs

Hazard:
- Pesticides can be fatal

DECISIONS	CUES	ERRORS
Determine insect, fungus or weed Select proper control measure Determine time of control Determine method of control	Appearance of pest Accepted methods	Unsightly plants Weeds Dead plants

SCIENCE

Taxonomy of pest
Taxonomy of host plant
Toxic affect of pesticide
Toxic level of pesticide
Toxic affect of pesticide on host plant

MATH – NUMBER SYSTEMS

Determination of area of quadrilateral to be treated
Determination of area and volume of cylinders
[Applicator]
Ratio and proportion
[Purpose - help in calibrating spreader or sprayer]
Liquid and dry measure
Measures of temperature
[When to apply]

COMMUNICATIONS

Reading comprehension of labels or written directions

Interpret verbal orders

Comprehend OSHA laws concerning pesticide application

(TASK STATEMENT) STORE SEASONAL PLANTS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY – HAZARD
Balled and burlapped trees and shrubs Bareroot stock Container stock Wheelbarrow Mulch Shovels Anti-desiccants Sprayer	Mound up and mulch plants Mix and spray anti-desiccants Install wind breaker Clean equipment	Safety: Care in using tools Care in mixing and apply anti-desiccants Eye cover Protective clothing

DECISIONS	CUES	ERRORS
Determine how to mix and apply anti-desiccant Select proper wind breaking materials Determine how to mound and mulch plant Determine procedure for cleaning equipment	Plant requirements	Winter kill Wind damage

SCIENCE	MATH – NUMBER SYSTEMS	COMMUNICATIONS
Temperature effect on plants Wind effect on plants	Liquid measurement Determination of area and volume of rectangle Determination of area of quadrilaterals	Take verbal orders Read written reports

(TASK STATEMENT) CARE FOR SALES, WORK, STORAGE AND DELIVERY AREAS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY – HAZARD
Cleaning compounds Materials needed for replacement (light bulbs - sales tickets, etc.) Dust mops Dust pans Brooms Safety regulations quide	Clean shelves Clean aisles Clean restrooms Arrange plants and supplies Remove unsightly plants or parts Remove trash Replace light bulbs Replace stock Keep tools in proper place Store products Handle incoming and outgoing deliveries	Use tools, cleaning chemicals, replacement materials safely Use care in moving plants supplies, cartons, boxes etc. Lift with knees bent, not back

DECISIONS	CUES	ERRORS
Determine proper care of facilities at the garden center	Implied - application or procedure	Unsightly business Lost customers Unsafe business

SCIENCE	MATH – NUMBER SYSTEMS	COMMUNICATIONS
None	None	Interpret verbal orders Read written orders Comprehend safety regulations

Duty B Making a Sales Transaction

1 Interpret customer needs
2 Make the sale
3 Fill out sales slip
4 Operate cash register
5 Use of telephone
6 Operate credit systems of payment

(TASK STATEMENT) INTREPRET CUSTOMER NEEDS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY – HAZARD
Sample materials to be sold Customer	Ask questions Listen to customer Gather facts Offer suggestions Handle objections Read product labels and explain	

DECISIONS	CUES	ERRORS
Determine methods to use in evaluating customer needs How to apply "needs" interpretation to developing sales approach	Implied - application of principles of good sales techniques	Incorrect product recommendation No sale

SCIENCE	MATH – NUMBER SYSTEMS	COMMUNICATIONS
Principles of good sales techniques	Knowledge of monetary systems Basic counting with base ten	Recommendation writing Inductive reasoning Vocabulary Terminology Interpret verbal statements from customer

(TASK STATEMENT) MAKE THE SALE

TOOLS, EQUIPMENT MATERIALS OBJECTS ACTED UPON

Display shelves
Merchandise for sale
Demonstration kits
Tape recorders and/or video tape

PERFORMANCE KNOWLEDGE

Secure customer attention and interest
Demonstrate merchandise
Explain products labels
Show substitute products
Answer customer questions
Close the sale
Prepare sales papers

SAFETY - HAZARD

Safety:
- Caution in display or demonstration of merchandise
- Do not drop

Hazard:
- Broken glass
- Chemical splash
- Drop heavy merchandise on feet

DECISIONS

Determine needed product
Determine customers willingness to buy
Determine customers price range
Determine products to sell as substitutes

CUES

Analyze customer behavior
Analyze objections

ERRORS

Loss of sale
Unsatisfied customer

SCIENCE

Product knowledge - how product works (especially if product is pesticide or fertilizer)
Principles of salesmanship

MATH - NUMBER SYSTEMS

Basic knowledge of monetary system

COMMUNICATIONS

Reading comprehension
Persuasion
Diction
Vocabulary
Determine audience level
Denotative - connotative words
Emotional appeal

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(TASK STATEMENT) FILL OUT SALES SLIP

TOOLS, EQUIPMENT MATERIALS OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY – HAZARD
Variety of sales slips Pens, pencils, etc. Adding machine Calculator Cash register	Enter required information on sales slip Total sales items and add tax Have customer sign Separate copies and file	

DECISIONS	CUES	ERRORS
Determine procedure to fill out sales slip	Implied - Application of procedure	Difficulty in bookkeeping Over or undercharge customer

SCIENCE	MATH – NUMBER SYSTEMS	COMMUNICATIONS
	Addition of items sold Multiplication and division with whole numbers (figure sales tax)	Reading price tags Speaking in discussion of price with customer Writing clearly

(TASK STATEMENT) OPERATE CASH REGISTER

TOOLS, EQUIPMENT MATERIALS OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY – HAZARD
Cash register Adding machines Pencil, pen, etc.	Recognize the parts of cash register Select proper keys Enter transuction Ring up sale Make change Clear register	Safety: Be aware of electrical circuits of machines Hazard: Electrical shock

DECISIONS	CUES	ERRORS
Determine basic operation principles of cash register Determine principles of making change	Implied - application of procedure	Incorrect sales slip Incorrect register Incorrect monies received or paid out

SCIENCE	MATH – NUMBER SYSTEMS	COMMUNICATIONS
Basic understanding of electricity	Addition and subtraction of whole numbers Multiplication of whole numbers	Reading and comprehending machine manuals Listening to verbal orders

(TASK STATEMENT) USE A TELEPHONE

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY – HAZARD
Telephone Telephone directory	Receive sales order over phone Dictate information over phone Solicit business over phone Use telephone directory	

DECISIONS	CUES	ERRORS
Determine telephone numbers Determine procedure in dealing with customers over the telephone	Implied - application of procedure	Incorrect telephone usage

SCIENCE	MATH – NUMBER SYSTEMS	COMMUNICATIONS
	Knowledge of monetary systems in solicitation of business	Persuasion Poise Diction Enunciation

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(TASK STATEMENT) OPERATE CREDIT SYSTEM OF PAYMENT

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

'Charge cards
Master Charge sales forms
BankAmericard sales forms
Credit card machine

PERFORMANCE KNOWLEDGE

Select appropriate sales slips
Complete sales slip with necessary information
Operate machine correctly
Check credit rating

SAFETY – HAZARD

Safety:
Use machine with caution

Hazard:
Moving parts may cause injury

DECISIONS

Determine types of credit systems commonly used
Determine steps in filling out credit forms
Explain credit to customers

CUES

Analyze dollar benefit to you from extension of credit terms to customers

ERRORS

Difficulty in bookkeeping overcharge undercharge customer
Misunderstanding of credit and payment policy

SCIENCE

MATH – NUMBER SYSTEMS

Addition and subtraction of whole numbers
Multiplication of whole numbers

COMMUNICATIONS

Take verbal orders
Reading comprehension of machine usage

Duty C Caring for Allied Products in Garden Center

1 Assemble allied products
2 Service allied products
3 Demonstrate allied products
4 Store allied products

(TASK STATEMENT) ASSEMBLE ALLIED PRODUCTS

TOOLS, EQUIPMENT, MATERIALS OBJECTS ACTED UPON

Hand tools
Lawn mowers (In packaging cartons)
Seeding equipment (In packaging cartons)
Sprayers (In packaging cartons)
Spreaders (In packaging cartons)
Lawn ornaments (In packaging cartons)
Knife
Operators manuals
Lubricants

PERFORMANCE KNOWLEDGE

Select appropriate hand tools
Open cartons
Assemble mowers
Assemble seeding equipment
Assemble sprayers
Assemble spreaders
Assemble lawn ornaments
Lubricate allied products
Read manuals

SAFETY - HAZARD

Safety.
Careful and proper use of hand tools
Careful use of knife or cutting edges
Exercise care in lifting or moving heavy cartons or parts of equipment
Make sure equipment is assembled correctly and according to safety regulations

DECISIONS

Determine proper tools to use
Determine procedure for assembly

CUES

Implied - application of assembly and servicing procedure

ERRORS

Equipment will not function properly

SCIENCE

Torque in assembly
Viscosity - oils and greases

MATH - NUMBER SYSTEMS

Simple machines used to gain mechanical advantage

COMMUNICATIONS

Reading comprehension of operators manuals or assembly directions
Given verbal orders

TASK STATEMENT: SERVICE ALLIED PRODUCTS

TOOLS, EQUIPMENT, MATERIALS OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY HAZARD
Oil Gas Gauges Brushes Engine tools Operators manual Solvents Model engine Engines and related equipment Grease Water Funnel Gas can Fire extinguisher Spreaders Sprayers Chemicals and fertilizers Measuring devices Tools	Service equipment Repair or replace parts Fuel engine Lubricate engine Test run engine Service fuel and ignition Change oil Clean engine	Use caution around cleaning fluids Do not use fuels around rubber parts Stay clear of moving parts Properly dispose of solvents Do not fuel while engine is running or hot Avoid spilling fuels Wear protective clothing

DECISIONS	CUES	ERRORS
Determine requirements for lubrication Determine fuel requirements Determine procedure in refueling Determine amount of lubricant and type	Engine runs rough Engine overheats Starts hard	Will not run Runs rough Lost time

SCIENCE	MATH – NUMBER SYSTEMS	COMMUNICATIONS
Composition of matter, including protons, neutrons, electrons, atoms, molecules, elements [Types of fluids or steam which will clean parts of engines - compatibility of liquids] Fluids under pressure (Examples: incompressibility, transfer of pressure) Effect of heating and cooling on state of matter (Change of matter from one form to another) [carburation] Simple machines used to gain mechanical advantage [Starters - pumps] Work input, work output, friction and efficiency in simple machines Transfer of heat from one body to another [mufflers] Resistance of materials to flow of electrical current [plug points] Effects of friction on work processes and product quality [rust parts overheating] Given a coding system, recognize and identify each unit involved by assigning necessary symbols, numerical or literal [Viscosity] Relationship of force to distortion in an elastic body [do not over tighten] Effects of heating and cooling on expansion of materials [fuel exhaust]	Liquid and dry measures [volume of fuel and lubrication] Measures of length Addition and subtraction of whole numbers Reduction of fractions Addition and subtraction of decimal fractions Measures of time and speed (Example: time-seconds, minutes, etc.; speed-feet per minute, R.P.M. etc.) Measures of weight Determination of area, perimeter and diagonals of quadrilaterals (4 sided figures) Determination of area and circumferance of circles Use of arcs or chords in determining facts about a circle or its parts Ratio and proportion Read and interpret charts, tables, and/or graphs Measure with the Metric or English system and convert between them Locate by approximation rational numbers and integers on the number line (sequential ordering) Given an instrument of measure, determine precision and/or accuracy with respect to relative error, significant digits and tolerance	Reading comprehension of manuals, charts, tables, and/or graphs

(TASK STATEMENT) DEMONSTRATE ALLIED PRODUCTS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Hand tools
Seeders
Mowers
Spreaders
Sprayers
Oil
Fuel
Seed
Water to demonstrate sprayers
Fertilizer

PERFORMANCE KNOWLEDGE

Check machine lubrication
Replace worn or defective parts
Operate all features
Adjust cutting heights
Calibrate seeding, spraying, spreading equipment
Store fuel

SAFETY - HAZARD

Safety:
- Keep shields in place
- Be aware of others in area when demonstrating
- Proper use of fuel
- Clean area before demonstrating mowers or other power equipment
- Remove exhaust fume
- Careful use of chemicals

DECISIONS

Determine proper steps and methods in demonstrating equipment

CUES

Analyze purpose of demonstration
Analyze customer response
Apply appropriate technique and/or procedure

ERRORS

Incorrect operation
The lost sale

SCIENCE

MATH - NUMBER SYSTEMS

Measures of length [Necessary in calibration of equipment]
Measures of time and speed. (Example: time - seconds, minutes, etc. - speed - feed per minute, R.P.M., etc.) [Necessary in calibration of equipment]
Measures of weight [Necessary in calibration of equipment]
Liquid and dry measures [Fertilizer or chemicals]
Determination of area, perimeter and diagonals of polygons with more than 4 sides [Amount of fertilizer or chemicals]
Ratio and proportion [Amount of fertilizer or chemicals]
Determination of area and volume of rectangular, cube and right trinagular prisms [Amount of fertilizer or chemicals]
Determination of area and volume of cylinders [Amount of fertilizer or chemicals]
Read and intrepret tables, charts and/or graphs [Labels]

COMMUNICATIONS

Reading comprehension
Give verbal orders or instructions
Give written orders or instructions

(TASK STATEMENT) STORE ALLIED PRODUCTS

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY – HAZARD
Mowers Seeders Sprayers Spreaders Lawn ornaments Water Brushes Hand tools Cleaning compunds - de-greaser	Remove fuels or oils Disassemble equipment Clean equipment Packing products in containers or protective equipment Stored product placement	Safety: Safe use of hand tools Safe use of cleaning compounds Dispose of fuels and oil in proper method Care in lifting or moving equipment to be stored

DECISIONS	CUES	ERRORS
Determine correct storage procedures	Analyze length of storage Analyze storage conditions Analyze type of product	Reduce expected service life of equipment

SCIENCE	MATH – NUMBER SYSTEMS	COMMUNICATIONS
		Reading comprehension Take verbal orders

Duty D Maintaining Inventory

1 Take inventory
2 Receive inventory (incoming merchandise)
3 Price inventory

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(TASK STATEMENT) TAKE INVENTORY

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Inventory forms
- End of month
- Perpetual

Writing material
Hand counters, small calculators, etc.

PERFORMANCE KNOWLEDGE

Make physical count
Description of item
Enter price of unit
Calculate total price
Re-order low inventory

SAFETY – HAZARD

Safety:
- Use ladders instead of chairs
- Use caution in using ladders for climing purposes
- Be careful when moving materials to be counted
- Do not lift more than 25 lbs. from bending position

DECISIONS	CUES	ERRORS
Determine frequency of count Determine inventory method to use	Business needs Cost of taking inventory Type of products Frequency of count Administrative needs	Poor stock mangement Loss of funds

SCIENCE

MATH – NUMBER SYSTEMS

Addition and subtraction with whole numbers

Multiplication of whole numbers

COMMUNICATIONS

Writing clairty
Filling out form
Take verbal orders
Reading comprehension

(TASK STATEMENT) RECEIVE INVENTORY (INCOMING MERCHANDISE)

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY – HAZARD
Invoices Bill of lading Hand trucks Knife or cutting device Incoming merchandise	Wheel merchandise to storage area Open containers Examine contents against invoices Remove materals from cartons (if applicable) Place products in appropriate storage area	Safety: Caution in using cutting tools Do not lift more than 25 lbs. from bending position Do not drop merchandise Hazard: Cuts and abrasions Back injury Broken merchandise - chem cal burns

DECISIONS	CUES	ERRORS
Determine method used in recording incoming inventory shipments	Type of product Administrative needs	Poor stock management Loss of funds

SCIENCE	MATH – NUMBER SYSTEMS	COMMUNICATIONS
	Addition and subtraction of whole numbers Multiplication of whole numbers	Reading comprehension - packing list storage suggestions

(TASK STATEMENT) PRICE INVENTORY

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Calculator
Price tags
Merchandise to be priced
Marking materials (magic marker, etc.)

PERFORMANCE KNOWLEDGE

Know wholesale cost
Figure freight charges
Figure overhead cost
Figure profit desired
Determine selling price
Complete and apply price tag

SAFETY – HAZARD

Safety
Use caution in handling materials to be priced

Hazard
Broken material can be dangerous through cuts and chemicals

DECISIONS	CUES	ERRORS
Decide what price to charge	Product cost Shipping Storage Overhead Competition Business needs	Unfair, uncompetitive prices Loss of potential sales dollars

SCIENCE

MATH – NUMBER SYSTEMS

Addition and subtraction of whole numbers
Multiplcation and division with whole numbers
Addition and subtraction of decimal fraction
Multiplication and division of decimal fractions
Finding a percent of a number and what percent one number is of anpther

COMMUNICATIONS

Reading comprehension

Duty E Caring for Garden Center Equipment

1 Use tools and equipment
2 Inspect, maintain and repair tools and equipment
3 Store tools and equipment

(TASK STATEMENT) USE TOGLS AND EQUIPMENT

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY – HAZARD
Shovels Hoes Rakes Spades Shopping carts Mechanical equipment Fork lift Delivery truck Tractors Pruning shears Cleaning materials Vermeir spade Bulldozer Back Hoc Trember Chains Lift truck	Select proper tools for task undertaken Use hand tools correctly Operate mechanical equipment Clean tools and equipment after use	Safety: Careful use of hand tools Drive mechanical equipment slowly on rough ground Keep shields in place Avoid steep slopes with mechanical equipment

DECISIONS	CUES	ERRORS
Determine proper method of use of tools and equipment	Type of tool Specific use intended	Shorten expected tool life Inefficiency of using tools and equipment

SCIENCE	MATH – NUMBER SYSTEMS	COMMUNICATIONS
Work input, work output friction and efficiency in simple machines [Work output] Motion resulting from two or more forces acting on a point in a body [Pushing hand equipment]	Measures of weight [Equipment weight] Liquid and dry measures [Fuel capacity]	Reading comprehension of operators manuals Take verbal orders

(TASK STATEMENT) INSPECT, MAINTAIN AND REPAIR TOOLS AND EQUIPMENT

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Shovels
Hoes
Rakes
Spades
Shopping carts
Mechanical equipment
- Fork lift
- Delivery truck
- Tractor

Pruning shears
Grinding wheels
Sharpening stones
Lubricants
Vermeir spade
Bulldozer
Back Hoe
Trember
Chains
Lift truck

PERFORMANCE KNOWLEDGE

Inspect tools and equipment
Sharpen edges shovels, hocs rakes etc.
Drain and replace oil
Oil moving parts
Grease fittings
Replace broken handles
Replace spark plugs

SAFETY – HAZARD

Safety:
- Wear safety glasses
- Exercise caution in operating grinding or sharpening equipment
- Dispose of used motor oil properly
- Dispose of replaced parts properly
- Sharpened tools will be hot

DECISIONS	CUES	ERRORS
Determine proper method of maintenance and repair	Type of equipment Heavy usage Service requirements	Inefficiency in using tools and equipment
Determine time schedule of maintenance and repair of mechanical equipment	Type of equipment Heavy usage Service requirements	

SCIENCE

Oxidation - rusting of tools

Friction - sharpening of tools
moving parts of equipment

MATH – NUMBER SYSTEMS

Liquid measures (Oil replacement)

COMMUNICATIONS

Reading comprehension of manuals on operations

Take verbal orders

(TASK STATEMENT) STORE TOOLS AND EQUIPMENT

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY – HAZARD
Shovels carts Hoes Rakes Spade Shopping cart Mechanical equipment Fork lift Delivery truck Tractors Pruning shears Cleaning compounds Oil	Clean tools Clean equipment Apply protective coating (oil) Store tools and equipment	Safety: Wear safety glasses Store equipment and tools in a safe and designated area

DECISIONS	CUES	ERRORS
Determine proper method of storage of tools and equipment	Type of equipment	Tool and equipment life shortened Damage to tools and equipment

SCIENCE	MATH – NUMBER SYSTEMS	COMMUNICATIONS
Oxidation - rusting of tools and equipment	None	Reading comprehension Take verbal orders

Duty F Preparing Merchandise for Sale and Delivery

1 Handle and deliver merchandise
2 Stock, label and display merchandise

(TASK STATEMENT) HANDLE AND DELIVER MERCHANDISE

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Balled and burlapped trees and shrubs
Bareroot stock
Annuals
Potted plants
Card or rope
Tarps
Delivery truck
Fragile materials (Glass container - concrete materials)
Routing map
Mulch materials
Water
Wrapping foil
Ribbon
Plant sleeves

PERFORMANCE KNOWLEDGE

Wrap potted plant in foil, attach ribbon and put into sleeve
Handle balled and burlapped stock by the ball
Set bareroot stock in saw dust or similar material and wet down
Wrap small bareroot stock in polyethlene or wet burlap
Load merchandise to be delivered
Tie or secure plants
Cover with tarp to minimize wind damage
Handle fragile merchandise with care
Drive sensibly

DECISIONS

Determine care that should be provided in handling and delivery of merchandise

CUES

Type of merchandise delivered
Packaged protection of merchandise
Distance of delivery

ERRORS

Injured or dead plants
Broken merchandise

SAFETY - HAZARD

Safety
Do not lift materials weight more than 25 lbs. from bending position
Secure load
Drive safely - obey traffic laws

SCIENCE

Water used by plants

Wind effect on plants

MATH - NUMBER SYSTEMS

Measures of time and speed. (Example. time - seconds, minutes etc. speed - feet per minute, R.P.M., etc.) [Miles per hour]

Determination of area and volume of rectangular, cube and right triangular prisms. [Amount of foil to use - area]

COMMUNICATIONS

Take verbal orders
Reading comprehension

(TASK STATEMENT) STOCK, LABEL AND DISPLAY MERCHANDISE

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON

Hand truck
Cutting tools to open cartons
Marking pen
Labels
Dislay shelves
Display bins

PERFORMANCE KNOWLEDGE

Move materials from storage to display or sales area
Open container
Put price on merchandise
Place merchandise in bins or shelves
Display plants in descending order according to size

SAFETY – HAZARD

Safety:
Do not lift more than 25 lbs. from a bending position
Do not drop fragile merchandise

DECISIONS	CUES	ERRORS
Determine when to restock merchandise	Rate of sales Seasonal requirements Inventory level	Loss of sales Stagnant stock
Determine method of neat and efficient merchandise display	Display area space Customer attraction Type of product	

SCIENCE

MATH – NUMBER SYSTEMS

Read and intrepret tables, charts, and/or graphs
(Developing and understanding)

Addition and subtraction of whole numbers
(Figuring price of merchandise)

Multiplication of whole numbers
(Figuring price of merchandise)

COMMUNICATIONS

Writing clarity on labels
Preparation of charts - graphs - signs for displays and sales purposes