Strengthened Senior High School

DepED
DEPARTMENT OF EDUCATION

# Learning Activity Sheets for Domestic Refrigeration and Air-Conditioning Servicing

## TECH-PRO ELECTIVE



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**Learning Activity Sheets for Domestic Refrigeration and Air-Conditioning Servicing**
**Grade 11-Term 1**

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# Table of Contents

**Lesson Exemplar 1:** ..... **1**
**Lesson Exemplar 2:** ..... **2**
**Lesson Exemplar 3:** ..... **3**
**Lesson Exemplar 4:** ..... **4**
**Lesson Exemplar 5:** ..... **5**
**Lesson Exemplar 6:** ..... **6**

**LEARNING ACTIVITY SHEET (LAS)**

| | | | |
|---|---|---|---|
| **Learning Area** | DOMESTIC REFRIGERATION AND AIR-CONDITIONING SERVICING | **Term** | 1 |
| **Lesson Exemplar** | 1 | **Date** | |
| **Lesson Title/Topic:** | **Overview of Refrigeration and Air Conditioning servicing** | | |
| **Name** | | **Grade & Section** | |

I. Activity Sheet No. 1: Career Pathways Mapping
II. Objective(s): At the end of this activity, you should be able to:
   1. Classify career opportunities in the DomRAC industry into Contracting, Merchandising, Manufacturing and Consulting.
   References:
III. Materials needed: Printed or handwritten table, pen
IV. Instructions: Below are job descriptions. Write **C** for Contracting, **M** for Merchandising, **MFG** for Manufacturing, and **CON** for Consulting.

1. _____ Selling copper tubes and compressors to contractors.
2. _____ Bidding to install 50 AC units for a new mall.
3. _____ Working in a Carrier factory assembling condenser coils.
4. _____ Advising a hospital on energy-efficient HVAC design.
5. _____ House-to-house window-type AC repair.
6. _____ Importing and distributing refrigerants.
7. _____ Designing a ventilation system for a BPO office.
8. _____ Installing split-type ACs for a hotel.

V. Synthesis: In 2–3 sentences, explain which career path interests you most and why.

# LEARNING ACTIVITY SHEET (LAS)

| | | | |
|---|---|---|---|
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I. Activity Sheet No. 2: Label the Components (CCME)

II. Objective(s): At the end of this activity, you should be able to:
1. Identify and describe the four major components of a vapor-compression refrigeration system.

III. Materials needed: Diagram of a refrigerator or window-type AC, pen

IV. Instructions: Using the acronym **CCME (Compressor, Condenser, Metering Device, Evaporator)**, label the parts in the diagram below (draw or describe). Then match each component to its function

| Component Name | Function (Write letter) |
|---|---|
| 1. _____ | A. Releases heat to outside – gas turns to liquid |
| 2. _____ | B. Absorbs heat from room – liquid boils to gas |
| 3. _____ | C. Squeezes refrigerant – low to high pressure |
| 4. _____ | D. Drops pressure – creates cooling effect |

V. Synthesis: Why is the compressor called the “heart” of the refrigeration system? Answer one sentence.

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| | | | |
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I. Activity Sheet No. 3: Cycle Sequencing Relay
II. Objective(s): At the end of this activity, you should be able to:
1. Sequence the four stages of the refrigeration cycle correctly.
III. Materials needed: Cut-out cards (or write on paper), pen
IV. Instructions: Arrange the stages in correct order (1–4). Write the stage name and color arrow

| Order | Stage Name | Color Arrow | What happens? |
|---|---|---|---|
| 1 | _____ | _____ | Gas is squeezed → hot high-pressure gas |
| 2 | _____ | _____ | Gas condenses to liquid – heat released |
| 3 | _____ | _____ | Pressure drops – becomes cold liquid gas |
| 4 | _____ | _____ | Liquid boils to gas – heat absorbed |

V. Synthesis: What happens to the cycle if the compressor stops running? Explain briefly.

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| **Lesson Exemplar** | 4 | **Date** | |
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I. Activity Sheet No. 4: Heat Type Sorting
II. Objective(s): At the end of this activity, you should be able to:
1. differentiate sensible heat, latent heat, superheat, and subcooling.
III. Materials needed: Pen, paper
IV. Instructions: Identify each scenario as Sensible Heat, Latent Heat, Superheat, or Subcooling.

1. _____ Water temperature rises from 25°C to 40°C.
2. _____ Ice melts at 0°C – temperature stays the same.
3. _____ Refrigerant gas leaving the evaporator is 12°C hotter than its boiling point.
4. _____ Liquid refrigerant leaving condenser is 6°C cooler than its condensing point.
5. _____ Steam condenses into water at 100°C.
6. _____ You feel that a copper pipe is warm.

V. Synthesis: Why is latent heat more important than sensible heat for the cooling effect in an evaporator? (2 sentences)

## LEARNING ACTIVITY SHEET (LAS)

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|---|---|---|---|
| **Learning Area** | DOMESTIC REFRIGERATION AND AIR-CONDITIONING SERVICING | **Term** | 1 |
| **Lesson Exemplar** | 5 | **Date** | |
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I. Activity Sheet No. 5: Pre-Installation Site Survey
II. Objective(s): At the end of this activity, you should be able to:
1. Perform a basic site survey using the 9 factors.
III. Materials needed: Tape measure, checklist form (provided below), pen
IV. Instructions: Survey your classroom or room at home. Check each factor and write your findings.

| Factor | Finding (e.g. 20 sq m, west window, etc) | Acceptable? (Yes/No/Needs Adjustment) |
|---|---|---|
| Room size & layout | | |
| Heat load (people, appliances, lights) | | |
| Airflow & ventilation | | |
| Drainage possible? | | |
| Insulation (ceiling/walls) | | |
| Power supply (voltage, outlet) | | |
| Structural support (wall type) | | |
| Maintenance access | | |
| Codes/permits | | |

V. Synthesis: Based on your survey, what AC capacity (HP) would you recommend?

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| **Learning Area** | DOMESTIC REFRIGERATION AND AIR-CONDITIONING SERVICING | **Term** | 1 |
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I. Activity Sheet No. 6: Sequence the Steps
II. Objective(s): At the end of this activity, you should be able to:
1. Sequencing the six major steps of window-type AC installation.
III. Materials needed: pen
IV. Instructions: Number the steps from 1 (first) to 6 (last). Write your answer in the Order column.

| Step | Description | Order |
|---|---|---|
| A | Apply insulation/foam sealant around gaps | |
| B | Slide unit into cavity with slight downward slope outside | |
| C | Install condensate drain hose | |
| D | Measure and prepare the cavity opening | |
| E | Connect to dedicated grounded outlet | |
| F | Install mounting bracket level and secure | |

V. Synthesis: What is the most dangerous mistake in electrical installation for window-type AC? Why?