DOCUMENT RESUME

ED 124 714 CE 007 317

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TITLE Electricity. Electrical Appliance Serviceman (Major Resistive Type).
INSTITUTION Orange County Public Schools, Orlando, Fla.
REPORT NO VT-102-806
NOTE 218p.
AVAILABLE FROM Orange County Career Development Program, 410 Woods Avenue, Orlando, Florida 32805 (Single copies available at cost)

EDRS PRICE MF-$0.83 HC-$11.37 Plus Postage.
DESCRIPTORS *Appliance Repairing; *Curriculum Guides; *Electrical Appliance Servicemen; Electricity; Entry Workers; *Individualized Instruction; Instructional Materials; Job Training; Learning Activities; Secondary Education; Study Guides; Trade and Industrial Education; *Workbooks

ABSTRACT

Two types of materials comprise the curriculum guide: descriptive information about student, job and individualized instruction techniques for use by the instructor and a set of 10 learning activity packages for the student. Together, these form a work unit which, when successfully completed by the student, provides the necessary skills for an entry-level position as an electrical appliance serviceman. Materials for the instructor consist of the following: description of type of student for whom the curriculum is intended, a brief description of the job, a breakdown of the job into specific tasks, job prerequisites, a prerequisite test for students, job objectives, and a bibliography of books and films. In addition, each learning activity package is preceded by a task detailing sheet listing the steps in performing the task, type of performance skill required, and degree of learning difficulty. Each learning activity package contains: directions, overall goal, specific objectives, activities, study and work sheets, pretest, posttest, and evaluation sheet. Related academic material in a variety of disciplines is included. The 10 appliances are electric lamps, coffee makers, hair dryers, popcorn poppers, skillets, waffle irons, roaster-broilers, ranges, hot water heaters, and clothes dryers. (Author/RG)

ELECTRICITY

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ORANGE COUNTY CAREER DEVELOPMENT PROGRAM

410 Woods Avenue

Orlando, Florida 32805

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ORANGE COUNTY CAREER DEVELOPMENT PROGRAM
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TO THE INSTRUCTOR

THE JOB ENTRY PACKAGE

The materials in this package have been developed in two distinct sections -- the developmental phase which looks closely at the job and the student, and the curriculum phase designed for actual student use (Learning Activity Packages). These two components together form a "Job Entry" -- a unit of work which, when completed by the student, insures his training in a designated job skill.

COMPONENTS OF THE JOB ENTRY PACKAGE

I. Developmental or Preliminary Phase - (blue sheets) placed at the beginning of the Job Entry for use by the instructor.

Includes the following components:

A. Description of Student Population: designed to describe the type of student for whom the curriculum was developed.

B. Job Description: a brief description of the job. This forms the basis for developing the job entry curriculum. (Course Description is used in "Introduction" packs.)

C. Task Listing Sheet: a breakdown of the job into specific tasks. (Not included in "Introduction" packs.)

D. Task Detailing Sheets: placed before each learning activity package to indicate steps in performing specific vocational tasks being dealt with in package; includes the type of performance of each task (manipulation, discrimination, recall, etc.) and the learning difficulty of each. (Not included in "Introduction" packs.) Vocational instructional objectives are fashioned from these details.

E. Job Prerequisites: listing of standards student must meet before gaining entrance to a specific job entry study.

F. Prerequisite Test: checklist to be used by the instructor to determine if student meets stated prerequisites. Includes suggested types of tests to be used.

G. Job Objectives: a composite list of all vocational and related academic objectives which must be met by student in order to be certified in a particular job entry. Individual LAP packages are fashioned from these objectives.

II. Curriculum Phase - (white sheets) for use by students. One LAP package is developed to correspond with each task detailing sheet. The LAP package includes both vocational materials and fused, related academic material in a variety of disciplines.

Includes the following components:

A. directions.

B. goal of package: states package's broad objective and includes statement of minimum acceptable performance.

C. specific objectives: states the expected behavior changes in the student.

D. activities: those specific things the student must do to accomplish stated specific objectives.

E. study and work sheets: included within package for particular activities.

F. Pretest: a test instrument to be administered before giving students package; this is used to determine if the students need to cover material within package. If student proves his competency, he may take post test and, if results are satisfactory, proceed to the next LAP.

G. Post Test: a test instrument to be administered upon completion of learning activity package. If student completes successfully, he may continue to next LAP within job entry.

H. Evaluation sheet: a checklist used by the instructor to record student progress.

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Bibliography: a composite list of all reference material used within LAPs.

SUGGESTIONS FOR IMPLEMENTATION OF LEARNING ACTIVITY PACKAGES

Using individualized instruction, (LAPs), requires some changes in classroom methods. Since individualizing instruction allows the

student to move at his own pace according to his particular abilities; it allows him to gain self-reliance; it also necessitates that the instructor assume the additional role of manager and director.

Individualized instruction prods the student to plot his own course, while the instructor acts as a guide to insure that course is a fruitful one.

The following suggestions are designed to aid the instructor in his new role as classroom manager and director.

1. For activities involving discussions, films, speakers, field trips or demonstrations by instructor, group participation is often necessary. In such cases the instructor should simply stop individual work on LAPs and proceed with group activities. If necessary, students may be briefly refreshed at the appropriate time on content of demonstration, film, etc., either by teacher, fellow student or printed outline of material covered.

   If available, a resource center containing films, tapes, etc., could also be utilized to allow the student who has missed a group film showing, etc., to "catch up" individually.

2. Teachers often find themselves swamped with students clamoring to have activities checked, evaluation sheets signed, etc.

   A good method for avoiding this is to design a "Key" for each LAP (or at least for those activities where a "Key" method would be plausible), allow the student to grade his own LAPs and, if desired, complete his own evaluation sheet.

   This method has the advantage of allowing the student to see why he has "missed" a particular question. Seeing the correct answer will force him to re-evaluate his thinking, and, thus, enhance the learning process. If he does not understand a particular answer, he has this opportunity to discuss it with the instructor and correct his thinking before taking the post test.

   Secondly, by completing his own evaluation sheet, the student gains a sense of accomplishment as each activity is checked off and he evaluates his progress and recognizes any weak areas.

   Of course, there is the problem of the dishonest student who copies the "Key." The solution to this problem is to design a post test which is comprehensive enough to cover all material within a package. This post test is then graded by the instructor. At this time, the student who has cheated in his package completion will be exposed and can be instructed to redo the package's activities. This procedure shifts the responsibility

for proper completion of LAPs to the shoulders of the student, eliminating irritating and unnecessary prodding by the instructor.

HINT: It is a good idea to establish a permanent area for use of the "Key" to avoid its being misplaced.

3. One classroom procedure which avoids a great deal of confusion and use of teacher time is the development of a good filing system.

It is a good idea to use a filing cabinet (boxes will do) to hold all LAPs, Keys, Supplemental Material, etc., to be utilized by students. Label these clearly to allow the students to get materials as they are needed. This will eliminate the necessity of interrupting the teacher each time a resource is needed.

HINT: If desired, students can be required to sign for materials on a sign out sheet.

4. A file folder should be maintained for each student; evaluation checklists, indicating successful completion or stated objectives, should be faithfully filed in this folder. Pretests and post tests may also be included as a part of the student's file.

5. A record should be made charting student progress in the completion of LAPs. The following example might be employed:

		LAP #1	LAP #2	LAP #3
Student's Name	Date Completed			
	P.T. grade:			
	COMMENTS:			
" "	" "			
" "				
" "	" "			

6. Students often learn best by working in teams; pair or group students and allow them to work together whenever practical. Let brighter students help slower ones.

If a student reaches an activity which requires a partner (role playing, etc.), ask if any other students in the class are about ready for the particular activity -- if so, let those students work together. If a student appears to be either far ahead or far behind in his activities, it may be necessary for the instructor to be the "partner."

7. It might be helpful to post a printed list of class procedures and include the locations of various materials incorporated in LAPs.

8. If a few students are moving ahead of the class, you may wish to design supplemental packages which go into greater depth on the subject being studied, or include "enrichment" activities within regular packages to be done by those who have exceptional capabilities.

9. Where the team approach is utilized and the student uses the same package in a number of classes, it is often wise for the teacher or teacher's aide to collect and distribute packages to avoid loss.

10. It is also suggested that the instructor maintain a master copy of all materials used indicating necessary changes for purposes of future revision.

Though it does involve some changes in methods and philosophy, the individualized LAP approach has many advantages and great potential for meeting the needs of all learners. Through implementation of the above suggestions, and additional ideas of your own, you will find it a rewarding and exciting teaching experience.

ELECTRICITY

DESCRIPTION OF STUDENT POPULATION

Physical Characteristics	Male, 14-18 years old, fairly strong and agile, good vision and the use of both hands.
Education	9-12 grade education, generally below average reading level; most know simple arithmetic operations, but cannot calculate rapidly or perform algebraic operations. A few can read and do math at grade level.
Motivation	Desire to learn a skill and obtain a good paying job in the electrical field. A few are not interested in their trade. Many desire cars, motorcycles and girls.
Interests	Like to work with their hands. Enjoy both indoor and outdoor work. Many enjoy sports competition, chess, checkers and playing cards.
Attitudes, Biases and Prejudices	Some live in a poor environment, others enjoy a good home and family life. All are friendly and like to have fun. Several act immature and are mischievous. Many dislike academic subjects, but will work to obtain a satisfactory grade. A few will compete against their peers for grades.

ELECTRICITY

JOB DESCRIPTION

JOB ENTRY - ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

An Electrical Appliance Serviceman (Major Resistive Type) has the skill to analyze and replace faulty components found in electric roaster-broilers, electric coffee makers, electric hair dryers, electric ranges, automatic clothes dryers, electric lamps, electric skillets, electric hot water heaters, electric popcorn poppers and electric waffle irons. He has the ability to utilize the required test equipment.

ELECTRICITY

TASK LISTING SHEET

JOB ENTRY - ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

NO.	TASK	FREQUENCY OF PERFORMANCE	IMPORTANCE	LEARNING DIFFICULTY
1	Disassembles and reassembles electric lamps. Checks for proper operation.	Frequently	1	Moderate
2	Disassembles and reassembles electric coffee maker. Checks for proper operation	Frequently	2	Moderate
3	Disassembles and reassembles electric hair dryer. Checks for proper operation	Once in a While	2	Moderate
4	Disassembles and reassembles electric popcorn popper. Checks for proper operation.	Once in a While	2	Moderate
5	Disassembles and reassembles electric skillet. Checks for proper operation.	Once in a While	2	Moderate
6	Disassembles and reassembles electric waffle iron. Checks for proper operation	Once in a while	2	Moderate
7	Disassembles and reassembles electric roaster-broiler. Checks for proper operation	Once in a While	2	Moderate
8	Disassembles and reassembles electric ranges. Checks for proper operation	Frequently	1	Difficult

ELECTRICITY

TASK LISTING SHEET

JOB ENTRY - ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

NO.	TASK	FREQUENCY OF PERFORMANCE	IMPORTANCE	LEARNING DIFFICULTY
9	Disassembles and reassembles hot water heater. Checks for proper operation	Frequently	1	Difficult
10	Disassembles and reassembles automatic clothes dryer. Checks for proper operation	Frequently	1	Difficult

ELECTRICITY

JOB PREREQUISITES

JOB ENTRY - ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

1. The student must have successfully completed the Orientation package (1A1).
2. The student must have successfully completed the Safety package (1A2).
3. The student must have the use of both hands.
4. The student must have at least functional vision.
5. The student must be able to read at fourth grade level.
6. Normal color vision is desirable, but not essential.
7. Assume knowledge of basic arithmetic operations, including addition, subtraction, multiplication and division.
8. Assume that the student's biases or prejudices are not so strong as to prevent him from interacting with a wide variety of customers.

ELECTRICITY

PREREQUISITE TEST

JOB ENTRY - ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

	Yes	No
1. The student has successfully completed the Orientation package (1A1). Classroom records.	____	____
2. The student has successfully completed the Safety package (1A2). Classroom records.	____	____
3. The student has the use of both hands. Teacher observation.	____	____
4. The student has functional vision. Teacher observation or vision test.	____	____
5. The student can read at a fourth grade level. Teacher to administer R.F.U. Reading Test.	____	____
Score____ Reading Level____		
6. The student has normal color vision. Teacher observation or test.	____	____
7. The student has basic computative skills. Teacher to administer W.R.A.T. or L.S.I. Math Test.	____	____
Score____ Grade Level____		
8. The student is able to interact with a wide variety of customers. Teacher judgment.	____	____

ELECTRICITY

JOB OBJECTIVES

JOB ENTRY - ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

1. To develop in the electrical repair student the ability to recognize, disassemble and reassemble the different types and major components of electric lamps as evidenced by his ability to complete the following with 100% accuracy.

   a. List and illustrate five types of electric lamps.

   b. Describe in writing the operating principles of an electric lamp.

   c. Explain in writing the operating principles of a three-way electric lamp.

   d. List five major components of an electric lamp.

   e. Describe in writing the function of each of the five major components of an electric lamp.

   f. Disassemble an electric lamp.

   g. Demonstrate the proper procedure for checking an electric lamp using an ohmmeter.

   h. Reassemble an electric lamp and check for proper operation.

2. To develop in the electrical repair student the ability to recognize, disassemble and reassemble the different types of electric coffee makers as evidenced by his ability to complete the following with 75% accuracy.

   a. List in writing two given types of electric coffee makers.

   b. Explain in writing the operating principles of two given types of electric coffee makers.

   c. List five major components of an electric coffee maker.

   d. Explain in writing the function of five major components of an electric coffee maker.

   e. Disassemble an electric coffee maker.

   f. Using an ohmmeter, demonstrate the proper procedure for checking the electrical components of an electric coffee maker.

JOB OBJECTIVES cont.

g. Reassemble an electric coffee maker and check for proper operation.

h. Draw the schematic circuit diagram of a percolator and brewer type of electric coffee maker.

3. To develop in the electrical repair student the ability to recognize, disassemble, repair and reassemble electrical hair dryers as evidenced by his ability to complete the following with 75% accuracy.

a. List the three major components of an electric hair dryer.

b. Describe in writing the function of each major component of an electrical hair dryer.

c. Disassemble an electric hair dryer.

d. Using an ohmmeter, demonstrate the proper procedure for checking the motor of an electrical hair dryer.

e. Reassemble an electrical hair dryer and check for proper operation.

4. To develop in the electrical repair student the ability to disassemble, repair and reassemble an electric popcorn popper as evidenced by his ability to complete the following with 75% accuracy.

a. List three major components of an electric popcorn popper.

b. Explain in writing the operating principle of an electric popcorn popper.

c. Draw the internal electrical circuit of an electric popcorn popper.

d. Demonstrate the proper procedure for checking an electric popcorn popper, using an ohmmeter.

e. Disassemble an electric popcorn popper.

f. Reassemble an electric popcorn popper and check for proper operation.

5. To develop in the electrical repair student the ability to disassemble, repair and reassemble an electric skillet as evidenced by his ability to complete the following with 100% accuracy.

a. List four major components of an electric skillet.

JOB OBJECTIVES cont.

b. Describe in writing the operating principle of an electric skillet.

c. Describe in writing the function of the four major components of an electric skillet.

d. Draw the electrical circuit of an electric skillet.

e. Disassemble an electric skillet.

f. Using an ohmmeter, check an electric skillet for shorts, grounds and continuity.

g. Reassemble an electric skillet and check for proper operation.

6. To develop in the electrical repair student the ability to disassemble, repair and reassemble an electric waffle iron as evidenced by his ability to complete the following with 80% accuracy.

a. List five major components of an electric waffle iron.

b. Describe the function of each major component of an electric waffle iron.

c. Disassemble an electric waffle iron.

d. Demonstrate the proper method for checking the major electrical components of an electrical waffle iron with an ohmmeter.

e. Draw the electrical circuit of an electric waffle iron.

f. Reassemble an electric waffle iron and check for proper operation.

7. To develop in the electrical repair student the ability to disassemble, repair and reassemble electric roasters and broilers as evidenced by his ability to complete the following with 80% accuracy.

a. List five major components of an electric roaster-broiler.

b. Describe the function of each major component of an electric roaster-broiler.

c. Disassemble an electric roaster-broiler.

d. Demonstrate the proper method for checking the heating elements of a roaster-broiler, using an ohmmeter.

e. Draw the electrical circuit of an electric roaster-broiler.

f. Reassemble an electric roaster-broiler and check for proper operation.

8. To develop in the electrical repair student the ability to disassemble, repair and reassemble an electric range as evidenced by his ability to complete the following with 80% accuracy.

   a. List two types of electric ranges.

   b. Describe in writing the operating principles of an electric range.

   c. List five major components of an electric range.

   d. Describe in writing the function of each major component of an electric range.

   e. Disassemble an electric range.

   f. Demonstrate the proper procedure for removing and checking a heating element of an electric range, using an ohmmeter.

   g. Reassemble a range and check for proper operation.

   h. Draw the electrical circuit for a surface element having three heat positions.

9. To develop in the electrical repair student the ability to disassemble, repair and reassemble an electric hot water heater as evidenced by his ability to complete the following with 80% accuracy.

   a. List two types of electric water heaters.

   b. Describe in writing the operating principles of an electric hot water heater.

   c. List five major components of an electric hot water heater.

   d. Describe in writing the function of each major component of an electric hot water heater.

   e. Remove the heating elements from an electric hot water heater.

   f. Demonstrate the proper procedure of using an ohmmeter to check the resistance of the heating elements of an electric hot water heater.

   g. Reinstall the heating elements in an electric hot water heater and check for proper operation.

   h. Draw the internal electrical circuit of a "Dual" element electric hot water heater.

JOB OBJECTIVES cont.

10. To develop in the electrical repair student the ability to disassemble, repair and reassemble an automatic clothes dryer as evidenced by his ability to complete the following with 80% accuracy.

    a. List two general classes of automatic clothes dryers.

    b. List five essential parts of an automatic clothes dryer.

    c. Describe in writing the function of the five essential parts of an automatic clothes dryer.

    d. Describe in writing the operating principles of the two general classes of automatic clothes dryers.

    e. Remove the resistance heaters from an electric automatic clothes dryer and with an ohmmeter, check the heater for proper ohmic value.

    f. Disassemble an electric and/or gas automatic clothes dryer.

    g. Reassemble an electric and/or gas automatic clothes dryer and check for proper operation.

    h. Draw the internal wiring diagram of a typical automatic clothes dryer.

11. To develop desired academic skills for job entry, Electrical Appliance Serviceman (Major Resistive Type), the electrical repair student will complete an assigned number of learning activities which involve each of the following with 80% accuracy.

    a. Spell, define, pronounce and give synonyms for given lists of related words.

    b. Write sentences that show the meanings of a given list of words.

    c. List 5 electrical appliances and state in writing the use of each.

    d. Identify subjects and verbs in original job related sentences.

    e. List nouns from a group of job related words.

    f. Identify nouns, verbs, adjectives and prepositional phrases in job related sentences.

    g. List 5 qualities that an electrical repairman must possess.

    h. Identify orally and/or in writing the purpose of the National Electric Code.

JOB OBJECTIVES cont.

i. List three types of generating plants that make electric energy available to man.

j. Using selected references, research, identify and mark on a given map, three hydro-electric plants.

k. Recall main points of a related report by identifying and locating hydro-electric plants on a given map of the United States.

l. Given a map of the United States, label the states in which hydro-electric plants are located.

m. Describe in writing the operation of two given types of electric generating plants.

n. Report in writing on the origin of electricity used in area homes.

o. Write reports on men who contributed to the field of electricity.

p. Demonstrate an understanding of a report on Alexander Graham Bell.

q. Demonstrate the ability to add, subtract, multiply and divide by solving related math word problems.

r. Draw three related geometric shapes.

s. Construct a vertical bar graph showing the number of electric hot water heaters manufactured over a ten year period.

t. Compute the discount and net price of a given number of related problems.

ELECTRICITY

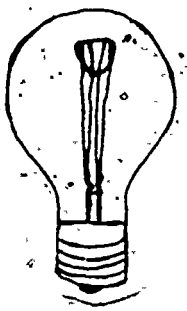
TASK DETAILING SHEET

JOB ENTRY - ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

TASK: OVERHAUL AND REPAIR OF ELECTRIC LAMPS

NO.	STEPS IN PERFORMING TASK	TYPE OF PERFORMANCE	LEARNING DIFFICULTY
1	Lists and illustrates five types of electric lamps	Recall	Moderately Difficult
2	Describes operating principles of an electric lamp	Recall	Moderately Difficult
3	Explains operating principles of a three-way electric lamp	Recall	Moderately Difficult
4	Lists five major components of an electric lamp.	Recall	Moderately Difficult
5	Describes functions of major components of an electric lamp	Recall	Moderately Difficult
6	Disassembles an electric lamp	Manipulation	Easy
7	Demonstrates the proper procedure for using an ohmmeter when checking an electric lamp	Discrimination	Moderately Difficult
8	Reassembles an electric lamp	Manipulation	Easy
9	Tests electric lamp for proper operation	Discrimination	Moderately Difficult

ELECTRIC LAMPS



INCANDESCENT LAMP

A BRIGHT IDEA -- BE A LAMP DETECTIVE

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

NAME_____

LAP #1B1

ELECTRIC LAMPS

I. Directions

1. Read the entire package carefully. If you need help, see the instructor.

2. See instructor for pretest.

3. Complete the learning activities.

4. Complete the post test.

A score of 100% is needed on the electrical repair post test and a score of 80% is needed on the related post tests as evidence for successful completion of this package.

II. Goal: To develop in the electrical repair student the ability to recognize, disassemble and reassemble the different types and major components of electric lamps.

III. Specific Objectives

The student will

1. list and illustrate five types of electric lamps.

2. describe in writing the operating principles of an electric lamp.

3. explain in writing the operating principles of a three-way electric lamp.

4. list five major components of an electric lamp.

5. describe in writing the function of each of the five major components of an electric lamp.

6. disassemble an electric lamp.

7. demonstrate the proper procedure for checking an electric lamp using an ohmmeter.

8. reassemble an electric lamp and check for proper operation.

9. identify orally and/or in writing the purpose of the National Electrical Code.

10. spell and define a given list of related words.

ELECTRIC LAMPS

III. Specific Objectives cont.

11. list 3 types of generating plants that make electric energy available to man.

12. demonstrate the ability to add, subtract, multiply and divide by solving related math word problems.

IV. Activities, Materials and Resources

1. List five types of electric lamps. Refer to "Hardware and Device Display Board" located in electric lab for this information. Use page 4 of this package.

2. On page 4 of this package, draw a picture illustrating each of the five types of electric lamps. Refer to the following resources for aid in completing this activity: Electric and Electronics Basic, pages 142-147; How to Repair Small Appliances, Volume 2, pages 119-122.

3. On page 5 of this package, describe in writing the operating principles of an electric lamp. Use the references listed in activity #2 for aid in completing this activity.

4. On page 5 of this package, explain in writing the operating principles of a three-way electric lamp. Refer to references listed in activity #2.

5. List five major components of an electric lamp. Use page 6 of this package.

6. On page 6 of this package, describe in writing the function of each of the five major components of an electric lamp.

7. Disassemble an electric lamp. See the instructor if you need assistance.

8. Demonstrate to the instructor the proper procedure for checking an electric lamp using an ohmmeter.

9. Reassemble an electric lamp and check for proper operation.

10. On page 7 of this package, write one or two paragraphs on the purpose of the National Electrical Code. Use the library or classroom materials for references as directed by the instructor.

11. Learn to spell the words on the vocabulary list on pages 8-10 of this package.

12. Write a definition for each word on pages 8-10 that you do not already know. (You will be tested on all the words.) Use your dictionary!

13. List the three types of generating plants that make electric energy available to us. Use the library for reference material.

14. Solve the math problems on pages 11 and 12 of this package.

ELECTRIC LAMPS

Worksheet for Activities #1 and #2:

List and illustrate the 5 types of electric lamps.

1. _____

2. _____

3. _____

4. _____

5. _____

ELECTRIC LAMPS

Worksheet for Activities #3 and #4:

Operating principles of an electric lamp - _____

Operating principles of a three-way electric lamp - _____

ELECTRIC LAMPS

Worksheet for Activities #5 and #6:

COMPONENT	FUNCTION
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____

ELECTRIC LAMPS

Worksheet for Activity #10:

ELECTRIC LAMPS

Worksheet for Activities #11 and #12: VOCABULARY

1. incandescent - _____

2. bulb - _____

3. socket - _____

4. three-way - _____

5. filament - _____

6. version - _____

7. connectors - _____

8. ordinarily - _____

9. insulation - _____

10. knurled - _____

11. asbestos - _____

12. fiberglass - _____

13. mogul - _____

ELECTRIC LAMPS

Worksheet for Activities #11 and #12 cont.. VOCABULARY

14. candelabra - _____

15. medium - _____

16. intermediate - _____

17. tungsten - _____

18. oxygen - _____

19. argon - _____

20. nitrogen - _____

21. ability - _____

22. evacuated - _____

23. flourescent - _____

24. vaporized - _____

25. mercury - _____

Worksheet for Activities #11 and #12 cont. VOCABULARY

26. phosphors - _____

_____

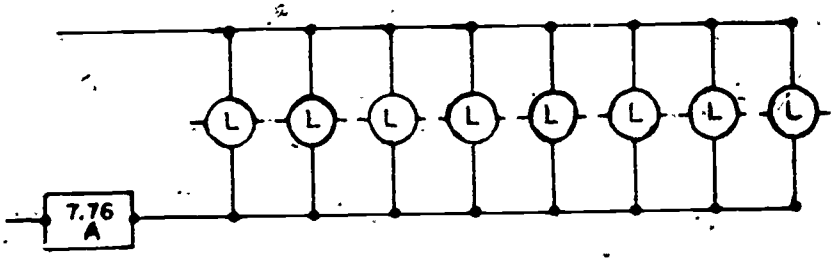
27. ballast - _____

_____

ELECTRIC LAMPS

Worksheet for Activity #14:

1. If 8 lamps (hot) require a total current of 7.76 amps. in the circuit, what number of amperes would 2 lamps require? All the lamps are of the same type and each requires the same number of amperes.



2. In replacing 55 lamp bulbs, an apprentice broke 6. What percent did he break?

3. A lamp having 25 ohms resistance used 529 watts. How many amperes does the lamp use?

$$\text{Current} = \frac{\text{Watt}}{\text{ohms}}$$

4. A lamp consumes 287 watts and has a hot resistance of 46 ohms. How many amperes will it take?

$$\text{Amps.} = \frac{287}{46}$$

5. In wiring eight houses the electricians find that they must install 68, 58, 87, 69, 74, 57 sockets. What is the total number of lamps needed?

6. A certain machine room used 2160 watts for bench lighting. All of these were used by 60 watt lamps. How many lamps were connected?

ELECTRIC LAMPS

Worksheet for Activity #14 cont.:

7. What would be the total number of amperes in a circuit if the following lamps are connected to the circuit: one 25 watt lamp, .21 amp.; one 100 watt lamp, .92 amp.; one 40 watt lamp, 136 amp. and one 200 watt lamp. 1.82 amps.?

8. How much current will flow through a lamp that has a resistance (hot) of 24.5 ohms and is connected across a 115 volt circuit?

9. A lamp with a resistance (hot) of 75 ohms is connected across 115 volts. What current will the lamp receive?

10. A lamp that requires a current of 0.72 amp. when connected to a circuit with a potential (E) of 115 volts will have a resistance (hot) of how many ohms?

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC LAMPS

LAP #1B1

PRETEST: Oral and/or Performance NAME_____

1. List five types of electric lamps. (Use display board in electric lab.)

2. Describe the operating principles of an electric lamp.

3. Explain the operating principles of a three-way lamp.

4. List five major components of an electric lamp.

5. Describe the function of each of the five major components of an electric lamp.

6. Demonstrate your ability to disassemble an electric lamp.

7. Demonstrate your ability to check an electric lamp, using an ohmmeter.

8. Demonstrate your ability to reassemble an electric lamp and check for proper operation.

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC LAMPS

LAP #1B1

POST TEST: VOCATIONAL NAME _____

Directions: Circle the correct answer.

1. Of the five types of electric lamps covered in this package, the one having the smallest base would be _____.

   a. mogul
   b. medium
   c. intermediate
   d. candelabra

2. Draw an illustration of one of the 5 types of electric lamps studied in the package. Be sure to include the name of the lamp type drawn.

3. The operating principal of an electric lamp does not depend on which of the following.

   a. tungsten filament
   b. argon gas
   c. evacuated glass bulb
   d. high amperage

4. The operating principle of a three-way lamp depends on which of the following choices.

   a. two filaments
   b. multi-base
   c. starting circuit
   d. very low voltage

5. Which of the choices listed is not a major component of an electric lamp?

   a. base
   b. filament
   c. dialectric
   d. sealed envelope

6. The filament is a major component of an electric lamp. Its function is which of the following?

   a. remove moisture
   b. act as a getter
   c. complete a circuit
   d. eliminate fumes

7. Which of the following listed tools would not be required to disassemble and reassemble an electric lamp.

   a. pliers
   b. hoist
   c. soldering iron
   d. screwdriver

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC LAMPS

LAP #1B1

POST TEST: VOCATIONAL cont. NAME _____

8. When checking an electric lamp with an ohmmeter, your meter is reading which of the following?

a. voltage
b. watts
c. amperage
d. resistance

9. Disassemble an electric lamp.

10. Reassemble an electric lamp; check for proper operation. Instructor will evaluate.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC LAMPS

LAP #1B1

POST TEST: LANGUAGE ARTS NAME _____

1. See instructor for spelling and definition test.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

g. _____

h. _____

i. _____

j. _____

k. _____

l. _____

m. _____

n. _____

o. _____

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC LAMPS

LAP #1B1

POST TEST: MATH NAME _____

1. A lamp having 30 ohms resistance, used 440.5 watts. How many amperes does the lamp use?

2. A lamp with a resistance (hot) of 45 ohms is connected across 115 volts. What current will the lamp receive?

3. What pressure (voltage) will be required to force 2.875 amps through an electric iron having a resistance of 40 ohms?

4. A lamp that requires a current of 0.68 amps when connected to a circuit with a potential (E) of 115 volts will have a resistance (hot) of how many ohms?

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC LAMPS

LAP #1B1

POST TEST: SOCIAL STUDIES NAME _____

1. What is the purpose of the National Electric Code? _____

_____

_____

_____

_____

_____

_____

2. List the three types of generating plants.

a. _____

b. _____

c. _____

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC LAMPS

LAP #1B1

EVALUATION

NAME _____

The student can	Date Completed	Initial
1. list and illustrate five types of electric lamps.		
2. describe in writing the operating principles of an electric lamp.		
3. explain in writing the operating principles of a three-way electric lamp.		
4. list five major components of an electric lamp.		
5. describe in writing the function of each of the five major components of an electric lamp.		
6. disassemble an electric lamp.		
7. demonstrate the proper procedure for checking an electric lamp using an ohmmeter.		
8. reassemble an electric lamp and check for proper operation.		
9. identify orally and/or in writing the purpose of the National Electrical Code.		
10. spell and define a given list of related words.		
11. list 3 types of generating plants that make electric energy available to man.		
12. demonstrate the ability to add, subtract, multiply and divide by solving related math word problems.		

ELECTRICITY

TASK DETAILING SHEET

JOB ENTRY - ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

TASK: OVERHAUL AND REPAIR OF ELECTRIC COFFEE MAKERS

NO.	STEPS IN PERFORMING TASK	TYPE OF PERFORMANCE	LEARNING DIFFICULTY
1	Lists two types of electric coffee makers	Recall	Easy
2	Explains operating principles of two given types of electric coffee makers.	Recall	Moderately Difficult
3	Lists five major components of an electric coffee maker	Recall	Moderately Difficult
4	Explains functions of five major components of electric coffee makers	Recall	Moderately Difficult
5	Disassembles an electric coffee maker	Manipulation	Easy
6	Demonstrates the proper procedure for checking an electric coffee maker, using an ohmmeter	Discrimination	Moderately Difficult
7	Reassembles an electric coffee maker	Manipulation	Easy
8	Tests electric coffee maker for proper operation	Discrimination	Moderately Difficult
9	Draws the schematic circuit diagram of a percolator and [illegible] type electric coffee maker	Recall	Difficult

ELECTRIC COFFEE MAKERS

ELECTRICAL APPLIANCE SERVICE

NAME _____

LAP #1R.

ELECTRIC COFFEE MAKERS

I. Directions

1. Read the entire package carefully. If you need help, see the instructor.

2. See instructor for pretest.

3. Complete the learning activities.

4. Complete the post test.

   A score of 75% is needed on the electrical repair post test and a score of 80% is needed on each of the related post tests as evidence for successful completion of this package.

II. Goal: To develop in the electrical repair student the ability to disassemble, repair and reassemble the different types of electric coffee makers, their major components and proper operation of these components.

III. Specific Objectives

The student will

1. list in writing two given types of electric coffee makers.

2. explain in writing the operating principles of two given types of electric coffee makers.

3. list five major components of an electric coffee maker.

4. explain in writing the function of five major components of an electric coffee maker.

5. disassemble an electric coffee maker.

6. using an ohmmeter, demonstrate the proper procedure for checking the electrical components of an electric coffee maker.

7. reassemble an electric coffee maker and check for proper operation.

8. draw the schematic circuit diagram of a percolator and brewer type of electric coffee maker.

9. using selected references, research, identify and mark on a given map 3 hydro-electric plants.

ELECTRIC COFFEE MAKERS

II. Specific Objectives cont.

10. recall main points of a related report by identifying and locating hydro-electric plants on a given map of the United States.

11. given a map of the United States, label the states in which hydro-electric plants are located.

12. demonstrate the ability to add, subtract, multiply and divide by solving related math problems.

ELECTRIC COFFEE MAKERS

IV. Activities, Materials and Resources

1. On page 4 of this package, list two different types of electric coffee makers. Refer to How to Repair Small Appliances, Vol.1, pages 39-42 and Home Appliance Servicing, pages 136-149 for this information.

2. See the instructor for aid in viewing the film strip, Disassembly and Reassembly of an Electric Coffee Maker.

3. On page 4 of this package, explain in writing the operating principles of two types of electric coffee makers. Use the references given in activity #1 as an aid.

4. Using the references given in activities #1 and #2, list in writing five major components of an electric coffee maker. Use page 5 of this package.

5. Using the references given in activity #1, explain in writing the function of the five major components you listed in activity #4. Use page 5 of this package.

6. Disassemble an electric coffee maker and orally name the five major components of an electric coffee maker. (Coffee maker available in shop.)

7. Using the ohmmeter, demonstrate the proper procedure for checking the electrical components of an electric coffee maker. (Ohmmeter available in shop.)

8. Reassemble an electric coffee maker and check for proper operation.

9. On page 6 of this package, draw the schematic wiring diagram of a brewer and percolator type electric coffee maker. Use the references listed in activity #1 as an aid.

10. Read the report on "Water Power" on page 7 of this package.

11. Using the map of the United Stated on page 8 of this package, put an X on the spot where each hydro-electric plant named in "Water Power" is located. Label each plant.

12. Using the library for reference material, locate and identify 3 additional hydro-electric plants. Mark each on the map.

13. Label the states where you have located hydro-electric plants.

14. Solve the math problems on pages 9 and 10 of this package.

ELECTRIC COFFEE MAKERS

Worksheet for Activities #1 and #3:

TYPES OF COFFEE MAKERS	OPERATING PRINCIPLES OF COFFEE MAKERS
1.	
2.	

ELECTRIC COFFEE MAKERS

Worksheet for Activities #4 and #5:

COMPONENTS	FUNCTION
1.	
2.	
3.	
4.	
5.	

ELECTRIC COFFEE MAKERS

Worksheet for Activity #9:

DIAGRAM OF SCHEMATIC WIRING OF A BREWER OR PERCOLATOR TYPE ELECTRIC COFFEE MAKER

Report for Activity #10: WATER POWER

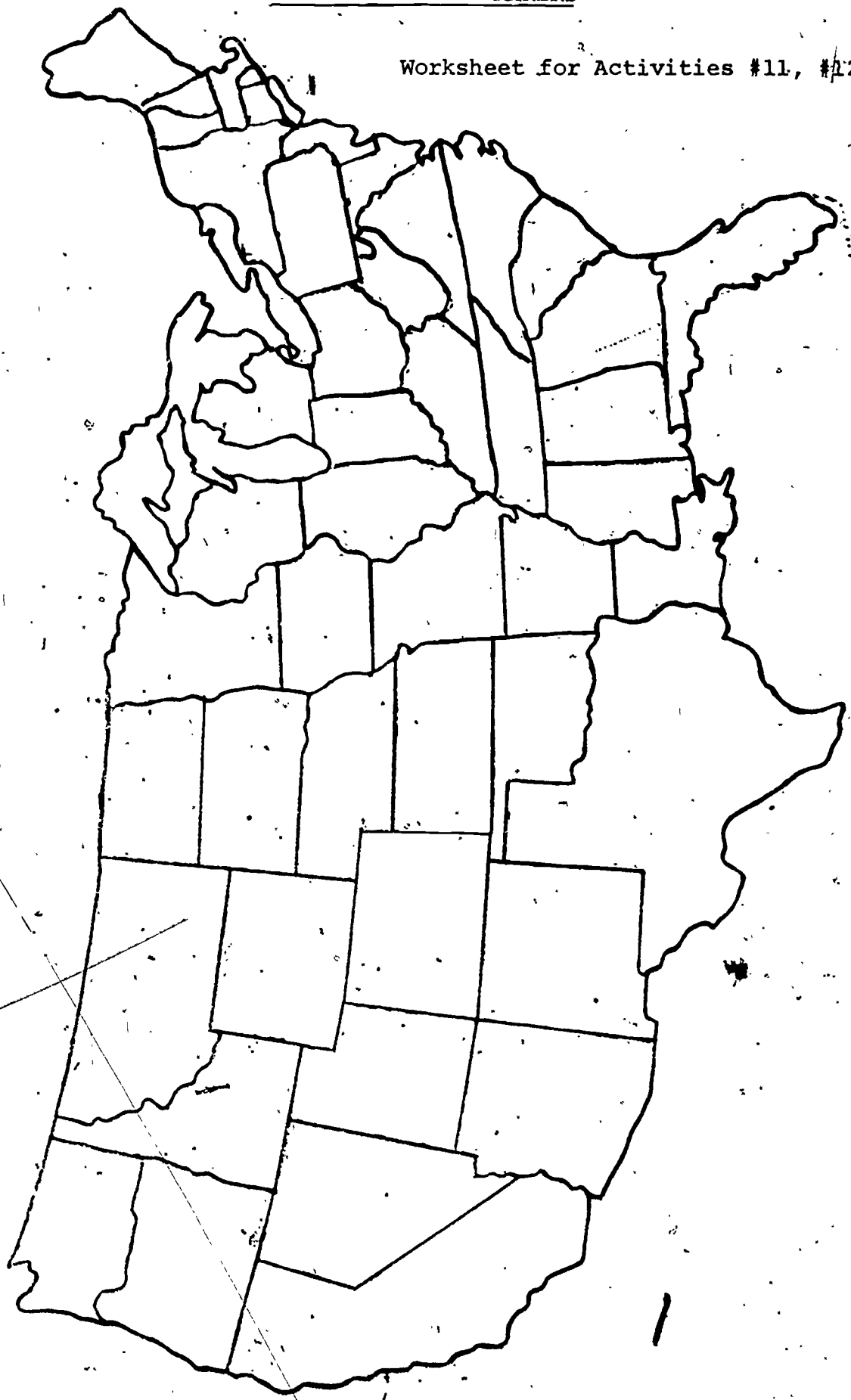
The electricity we use to give our appliances energy comes from far away. Sometimes it comes from a waterfall in the mountains. If there is no waterfall, then men make one. They dam up the river. The water they have stored behind the dam runs through pipes. There are many hydro-electric power plants at dams and waterfalls.

The machine that makes electricity in the power plants is called a generator.

There are many famous places in the United States where men turn generators with water power. In New York State, Niagara Falls is a natural waterfall that is used to make electricity. In the West, men dammed up the Colorado River and built a power plant at Hoover Dam. In the South, Norris Dam makes power from the Tennessee River.

ELECTRIC COFFEE MAKERS

Worksheet for Activities #11, #12 and #13:



ELECTRIC COFFEE MAKERS

Worksheet for Activity #14:

Formulas:

$I = \frac{W}{E}$, $W = E \times I$; $E = \frac{W}{I}$

1. A 1000 watt coffee maker when connected to 115 volts will take how many amps.?

2. A 1250 watt coffee maker connected to 115 volts takes what amount of current?

3. A coffee maker consuming 748 watts when connected to a circuit measured a current of 3.4 amps. What was the voltage across the circuit?

4. What are the watts consumed in a coffee maker circuit with an e.m.f. of 115 volts and a current of 6.5 amps. flowing? $W = E \times I$.

5. What pressure, in volts, is necessary for a coffee maker circuit of 3300 watts and a current of 15 amps.?

$$E = \frac{W}{I}$$

6. What is the resistance of a coffee maker circuit that consumes 2300 watts and draws a current of 20 amps.?

$$R = \frac{W}{I^2}$$

7. What is the current required in a coffee maker circuit having a resistance of 7.66 ohms and 1725 watts?

$$I = \sqrt{\frac{W}{R}}$$

8. What is the cost of repairing a 3000 watt coffee maker at $5.75 per hour if it takes three hours to repair it?

ELECTRIC COFFEE MAKERS

Worksheet for Activity #14 cont.

9. A large industrial plant bought 27 coffee makers for their employees in order that they may enjoy coffee during a break in work. If each coffee pot costs $8.79, what was the total cost?

10. What current will flow through a 1750 watt electric coffee maker when a pressure of 115 volts is maintained?

$$I = \frac{W}{E}$$

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC COFFEE MAKERS

LAP #1B2

PRETEST: Oral and/or Performance NAME_____

1. List two different types of electric coffee makers.

2. Explain the operating principles of a given type of electric coffee maker.

3. List five major components of an electric coffee maker.

4. Explain the functions of the five major components of an electric coffee maker.

5. Demonstrate to the instructor the proper method of disassembling an electric coffee maker.

6. With the ohmmeter, demonstrate to the instructor the proper procedure for checking the electrical components of an electric coffee maker.

7. Demonstrate to the instructor the proper method of reassembling an electric coffee maker and checking it for proper operation.

8. Draw a schematic wiring diagram of a brewer and percolator type electric coffee maker.

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC COFFEE MAKERS

LAP #1B2

POST TEST: VOCATIONAL NAME _____

Directions: Underline the correct answer or answers.

1. Two of the following type coffee makers were covered in this package. Underline the types covered.

   a. seep
   b. broil
   c. percolator
   d. brewer

2. The operating principle of a brewer type electric maker depends on which of the following?

   a. blower fan
   b. magnet switch
   c. heater-plate nose
   d. speader plate

3. Of the following four choices, three are not major components of an electric coffee maker. Underline the one that is.

   a. blower fan
   b. baffle plate
   c. separator bar
   d. pilot lamp

4. The function of the lower bowl in a brewer type electric coffee maker is which of the following?

   a. create a vacuum
   b. act as a nose plate rest
   c. support speader plate
   d. insulate the elements

5. When disassembling an electric coffee maker, you normally would not use which of the following?

   a. pliers
   b. screw driver
   c. socket wrench
   d. hoist

6. Disassemble an electric coffee maker. Instructor will evaluate performance.

7. When checking the electrical components of an electric coffee maker, using an ohmmeter, you are checking.

   a. wattage
   b. amperage
   c. current
   d. resistance

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC COFFEE MAKERS

LAP #1B2

POST TEST: VOCATIONAL cont. NAME _____

8. Reassemble an electric coffee maker and check for proper operation. Instructor will evaluate.

9. Draw an electric wiring diagram of both the percolator and brewer type electric coffee maker.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC COFFEE MAKERS

LAP #1B2

POST TEST: SOCIAL STUDIES NAME_____

1. List 5 hydro-electric plants located in the United States. Make sure you list at least one plant which you learned about in your research.

   a._____

   b._____

   c._____

   d._____

   e._____

2. Name the states that each plant above is located in and locate each on a map supplied by the instructor.

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC COFFEE MAKERS

LAP #1B2

POST TEST: MATH NAME _____

1. A 1200 watt coffee maker when connected to 115 volts will take how many amps?

2. What are the watts consumed in a coffee maker circuit with an e.m.f. of 115 volts and a current of 12.5 amps flowing?

3. What pressure, in volts, is necessary for a coffee maker circuit of 1437.5 watts and a current of 12.5 amps? $E = \frac{W}{I}$

4. What is the cost to repair a 2500 watt coffee maker at $4.95 per hour if it takes 2 1/2 hours to repair it?

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC COFFEE MAKERS

LAP #1B2

EVALUATION

NAME _____

The student can	Date Completed	Initial
1. list in writing two given types of electric coffee makers.		
2. explain in writing the operating principles of two given types of electric coffee makers.		
3. list five major components of an electric coffee maker.		
4. explain in writing the function of five major components of an electric coffee maker.		
5. disassemble an electric coffee maker.		
6. using an ohmmeter, demonstrate the proper procedure for checking the electrical components of an electric coffee maker.		
7. reassemble an electric coffee maker and check for proper operation.		
8. draw the schematic circuit diagram of a percolator and brewer type of electric coffee maker.		
9. using selected references, research, identify and mark on a given map 3 hydro-electric plants.		
10. recall main points of a related report by identifying and locating hydro-electric plants on a given map of the United States.		

ELECTPICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC COFFEE MAKERS

LAP #1B2

EVALUATION cont. NAME _____

The student can	Date Completed	Initial
11. given a map of the United States, label the states in which hydro-electric plants are located.	_____	_____
12. demonstrate the ability to add, subtract, multiply and divide by solving related math problems.	_____	_____

ELECTRICITY

TASK DETAILING SHEET

JOB ENTRY - ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

TASK: OVERHAUL AND REPAIR OF ELECTRIC HAIR DRYERS

NO.	STEPS IN PERFORMING TASK	TYPE OF PERFORMANCE	LEARNING DIFFICULTY
1	Lists three major components of an electric hair dryer	Recall	Easy
2	Describes functions of electrical hair dryer components	Recall	Easy
3	Disassembles an electric hair dryer	Manipulation	Easy
4	Demonstrates the procedure for checking the motor of an electric hair dryer with an ohmmeter	Discrimination	Moderately Difficult
5	Reassembles an electric hair dryer	Manipulation	Easy
6	Tests an electric hair dryer for proper operation	Discrimination	Moderately Difficult

ELECTRIC HAIR DRYERS

Bonnet-style Dryer

ELECTRIC HAIR DRYERS

I. Directions

1. Read the entire package carefully. If you need help, see the instructor.
2. See instructor for pretest.
3. Complete the learning activities.
4. Complete the post test.

   A score of 75% is needed on the electrical repair post test and a score of 80% is needed on each of the related post tests as evidence for successful completion of this package.

II. Goal: To develop in the electrical repair student the ability to recognize the major components of electrical hair dryers and their proper operation.

III. Specific Objectives

The student will

1. list the three major components of an electric hair dryer.
2. describe in writing the function of each major component of an electric hair dryer.
3. disassemble an electric hair dryer.
4. using an ohmmeter, demonstrate the procedure for checking the motor of an electric hair dryer.
5. reassemble an electric hair dryer and check for proper operation.
6. spell a given list of related words.
7. write sentences that show the mainings of a given list of words.
8. [illegible] a given list of words.
9. list [illegible] and state in writing the use of each.
10. demonstrate the ability to add, subtract, multiply and [illegible] problems.

ELECTRIC HAIR DRYERS

IV. Activities, Materials and Resources

1. On page 3 of this package, list three major components of an electric hair dryer. Use How to Repair Small Appliances, Vol. II, pages 51-63, as a reference for this activity.

2. On page 3 of this package, describe the function of each major component of an electric hair dryer. Refer to the reference given in activity #1 as an aid in completing this activity.

3. See the instructor for aid in viewing the slide film, Disassembly and Reassembly of an Electric Hair Dryer.

4. Disassemble an electric hair dryer and orally name to the instructor all the major components.

5. Using an ohmmeter and the proper procedure, check the motor of an electric hair dryer. (Ohmmeter available in shop.)

6. Reassemble an electric hair dryer and check for proper operation.

7. Learn to spell the words in the vocabulary list, pages 4-6 of this package.

8. Use each word in "Spelling List A" on pages 4 and 5 in a sentence that shows its meaning. You may use more than one word in each sentence.

9. Write a short definition or a synonym for each word in "Spelling List B" on pages 5 and 6 of this package.

10. List the name and use of each electrical appliance in your home that is not considered a kitchen appliance. Try to think of at least 3.

11. Solve the math problems on pages 7 and 8 of this package.

ELECTRIC HAIR DRYERS

Worksheet for Activities #1 and #2:

COMPONENTS	FUNCTION
1.	
2.	
3.	

ELECTRIC HAIR DRYERS

Worksheet for Activities #7, #8 and #9:

SPELLING LIST A

1. elaborate - _____

2. stowed - _____

3. spatula - _____

4. thermoplastic - _____

5. circulation - _____

6. epoxy - _____

7. resin - _____

8. intermittent - _____

9. commutator - _____

10. ventilating - _____

11. rotor - _____

12. armature - _____

Worksheet for Activities #7, #8 and #9 cont.

13. identical -

14. thermostat -

15. duplicate -

16. spirals -

17. vinyl -

SPELLING LIST B

1. bonnet -

2. models -

3. materials -

4. molded -

5. [illegible]

6. [illegible]

7. [illegible]

ELECTRIC HAIR DRYERS

Worksheet for Activities #7, #8 and #9 cont.

8. painstakingly -

9. professional -

10. groove -

11. concave -

12. blobs -

13. brittle -

14. collapse -

15. pliable -

16. snip -

17. duct -

ELECTRIC HAIR DRYERS

Worksheet for Activity #11:

1. An electric hair dryer has a resistance of 11 ohms and uses power at the rate of 1200 watts. On what voltage does this hair dryer operate?

$$\text{volts} = \sqrt{\text{watts} \times \text{ohms}}$$

2. What is the net price of a hair dryer, list price $26.75, discount 22%?

3. If an electric dryer radiates sufficient heat at an 8 amp. load on a 110 volt circuit, what will the resistance be?

4. What pressure (voltage - E) will be required to force 10 amps. through an electric hair dryer having a resistance of 11 ohms?

5. What are the watts consumed in a circuit with an e.m.f. of 115 volts and a current of 9.5 amps. flowing?

6. What pressure, in volts, is necessary for a hair dryer circuit of 1552 watts and a current of 8.5 amps.?

7. What is the current required in a hair dryer circuit having a resistance of 9.6 ohms and 1380 watts?

8. An electrical repairman ordered the following parts at a 25% discount. What was the net price?

Quantity		List Price Per Unit	Discount Price
8	Elements	3.78	
12		.97	
125 ft.		.12 ft.	
8		.18	
		TOTAL NET	

ELECTRIC HAIR DRYERS

Worksheet for Activity #11 cont.

9. A electrical repairman fixed 18 hair dryers in 33 hours at an average cost of $4.65 per hour for labor. What was his total charge for labor?

10. If the power, in watts, in a circuit amounted to 3800 watts, and 4 equal hair dryers consumed this amount of power, what would be the average wattage per hair dryer?

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC HAIR DRYERS

LAP #1B3

PRETEST: Oral and/or Performance NAME_____

1. List three major components of an electric hair dryer.

2. Describe the function of each major component of an electric hair dryer.

3. Disasserble an electric hair dryer.

4. Demonstrate the proper procedure for checking the motor of an electric hair dryer, using an ohmmeter.

5. Reassemble an electric hair dryer and check for proper operation.

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC HAIR DRYERS

LAP #1B3

POST TEST: VOCATIONAL NAME _____

1. Underline one of the following choices that is not a major component of an electric hair dryer.

   a. fan
   b. heater
   c. buffer
   d. bonnet

2. The function of the bonnet of an electric hair dryer is which of the following.

   a. distribute hot air
   b. suppress noise
   c. heat the air
   d. create air

3. Disassemble an electric hair dryer and name all major components for the instructor.

4. Using an ohmmeter, demonstrate to the instructor the proper method for checking the motor of an electric hair dryer.

5. Reassemble an electric hair dryer and check for proper operation. The instructor will check your work during the demonstration.

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC HAIR DRYERS

LAP #1B3

POST TEST: LANGUAGE ARTS NAME _____

1. See instructor for spelling test.

1. _____ 11. _____
2. _____ 12. _____
3. _____ 13. _____
4. _____ 14. _____
5. _____ 15. _____
6. _____ 16. _____
7. _____ 17. _____
8. _____ 18. _____
9. _____ 19. _____
10. _____ 20. _____

2. Use each word below in a sentence that shows its meaning.

1. thermoplastic - _____
2. circulation - _____
3. commutator - _____
4. rotor - _____
5. thermostat - _____
6. vinyl - _____
7. spirals - _____

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC HAIR DRYERS

LAP #1B3

POST TEST: LANGUAGE ARTS cont. NAME _____

3. Define, or write a synonym for, each word below.

a. blobs - _____

b. groove - _____

c. illustrating - _____

d. pliable - _____

e. molded - _____

f. synchronous - _____

g. concave - _____

h. duct - _____

4. List 3 electrical appliances and the use of each. (Omit kitchen appliances.)

a. _____

b. _____

c. _____

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC HAIR DRYERS

LAP #1B3

POST TEST: MATH NAME _____

1. An electric hair dryer has a resistance of 10 ohms and uses power at the rate of 1322 watts. On what voltage does this hair dryer operate?

$$\text{volts} = \sqrt{\text{watts} \times \text{ohms}}$$

2. What voltage will be required to force 12 amps. through an electric hair dryer having a resistance of 9.6 ohms?

3. If an electric hair dryer radiated sufficient heat at a 7 amp. load on a 115 volt circuit, what will the resistance be?

4. What is the amperage required in a hair dryer circuit having a wattage of 1450 and voltage of 115?

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC HAIR DRYERS

LAP #1B3

EVAULATION NAME _____

The student can	Date Completed	Initial
1. list three major components of an electric hair dryer.		
2. describe in writing the function of each major component of an electric hair dryer.		
3. disassemble an electric hair dryer.		
4. using an ohmmeter, demonstrate the proper procedure for checking the motor of an electric hair dryer.		
5. reassemble an electric hair dryer and check for proper operation.		
6. spell a given list of related words.		
7. write sentences showing the meaning of a given list of words.		
8. define, or write a synonym for, a given list of words.		
9. list 3 electrical appliances and state in writing the use of each.		
10. demonstrate the ability to add, subtract, multiply and divide by solving related math problems.		

ELECTRICITY

TASK DETAILING SHEET

JOB ENTRY - ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

TASK: OVERHAUL AND REPAIR OF ELECTRIC POPCORN POPPERS

NO.	STEPS IN PERFORMING TASK	TYPE OF PERFORMANCE	LEARNING DIFFICULTY
1	Lists three major components of an electric popcorn popper	Recall	Moderately Difficult
2	Explains operating principles of an electric popcorn popper	Recall	Moderately Difficult
3.	Draws the internal electrical circuit of an electric popcorn popper	Recall	Moderately Difficult
4	Demonstrates the proper method for checking an electric popcorn popper with an ohmmeter	Discrimination	Difficult
5	Disassembles an electric popcorn popper	Manipulation	Easy
6	Reassembles an electric popcorn popper	Maniplation	Easy
7	Tests electric popcorn popper for proper operation	Discrimination	Moderately Difficult

ELECTRIC POPCORN POPPERS

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

NAME_____

LAP #1B4

ELECTRIC POPCORN POPPERS

I. Directions

1. Read the entire package carefully. If you need help, see the instructor.

2. See instructor for pretest.

3. Complete the learning activities.

4. Complete the post test.

A score of 75% is needed on the electrical repair post test and a score of 80% is needed on each of the related post tests as evidence for successful completion of this package.

II. Goal: To develop in the electrical repair student the ability to disassemble, repair and reassemble an electric popcorn popper and the proper operation of each major component.

III. Specific Objectives

The student will

1. list three major components of an electric popcorn popper.

2. explain in writing the operating principle of an electric popcorn popper.

3. draw the internal electrical circuit of an electric popcorn popper.

4. demonstrate the proper procedure for checking an electric popcorn popper, using an ohmmeter.

5. disassemble an electric popcorn popper.

6. reassemble an electric popcorn popper and check for proper operation.

7. describe in writing the operation of two given types of electric generating plants.

8. spell a given list of job related words.

9. write 10 original sentences using a given list of words.

10. [illegible] subjects and verbs in original job related sentences.

11. demonstrate the ability to add, subtract, multiply and divide [illegible] job related math problems.

ELECTRIC POPCORN POPPERS

IV. Activities, Materials and Resources

1. On page 3 of this package, list three major components of an electric popcorn popper. Use as reference: How to Repair Small Appliances, Volume I, pages 43-45.

2. See the instructor for aid in viewing the film, Checking and Repairing an Electric Popcorn Popper.

3. On page 3 of this package, explain in writing the operating principles of an electric popcorn popper. Use the references given in activities #1 and #2.

4. On page 3 of this package, draw the internal electrical circuit of an electric popcorn popper. Use the references given in activities #1 and #2.

5. Using an ohmmeter, demonstrate the proper procedure for checking an electric popcorn popper. Instructor will observe your work. (Ohmmeter available in shop.)

6. Disassemble an electric popcorn popper. Check appliance and tools out of shop tool crib.

7. Reassemble an electric popcorn popper. Check for proper operation. Return all equipment to tool crib.

8. Using the library for references, write a one page report on the operation of the steam-electric plant and the atomic-electric generating plant. Use page 4 of this package.

9. Learn to spell the words listed on pages 5 and 6 of this package.

10. Using the words listed on pages 5 and 6 of this package, write 10 job related sentences.

11. Underline the subjects and circle the verbs in your 10 sentences from activity #10.

12. Solve related math problems on pages 7 and 8 of this package.

ELECTRIC POPCORN POPPERS

Worksheet for Activities #1, #3 and #4:

MAJOR COMPONENTS

a. _____

b. _____

c. _____

OPERATING PRINCIPLE

_____

_____

_____

_____

DRAWING OF ELECTRICAL CIRCUIT:

ELECTRIC POPCORN POPPERS

Worksheet for Activity #8:

REPORT ON
GENERATING PLANTS

ELECTRIC POPCORN POPPERS

Worksheet for Activities #9, #10 and #11: VOCABULARY

1. popular - _____

2. especially - _____

3. version - _____

4. regulated - _____

5. elaborate - _____

6. thermostatic - _____

7. device - _____

8. container - _____

9. _____ - _____

10. ceramic - _____

ELECTRIC POPCORN POPPERS

Worksheet for Activities #9, #10 and #11 cont. VOCABULARY

11. identical - _____

_____

12. accurately - _____

_____

13. duplicate - _____

_____

14. exact - _____

_____

15. insulated - _____

_____

ELECTRIC POPCORN POPPERS

Worksheet for Activity #12:

1. A corn popper circuit connected to a potential (E) of 115 volts and having 6 amps. flowing will consume how many watts?

2. An 1100 watt corn popper when connected to 115 volts will take how many amps?

3. What amount of current will a 950 watt corn popper take when connected to 115 volts?

4. A corn popper that requires a current of 7.2 amps. when connected to a potential (E) of 115 volts will have a resistance of how many ohms?

5. What is the resistance of a corn popper circuit that consumes 632.5 watts and draws a current of 5.5 amps?

6. If the operator of a popcorn machine was able to pop 10 boxes of popcorn every five minutes, how many boxes of popcorn would he be able to make in a week with an eight hour working day?

7. If four popcorn poppers working at capacity made 240 boxes of popcorn in an hour, how many boxes of popcorn would 13 poppers make in an hour?

8. A popcorn operator lost 1/8 of his popcorn through waste; if he made 960 total, what was this?

ELECTRIC POPCORN POPPERS

Worksheet for Activity #12 cont.

9. If it cost $6.75 to repair three popcorn poppers, how much would it cost to repair 13 poppers?

10. A corn popper connected to a potential of 115 volts and having 8.7 amps flowing will consume how many watts?

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC POPCORN POPPERS

LAP #1B4

PRETEST: Oral and/or Performance NAME_____

1. List three major components of an electric popcorn popper.

2. Explain the operating principles of an electric popcorn popper.

3. Demonstrate the proper procedure for checking an electric popcorn popper, using an ohmmeter.

4. Disassemble an electric popcorn popper.

5. Reassemble an electric popcorn popper and check for proper operation.

6. Draw the internal electric circuit of an electric popcorn popper.

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC POPCORN POPPERS

LAP #1B4

POST TEST: VOCATIONAL NAME _____

Directions: Circle the correct answer or answers.

1. Circle one of the following that is not a major component of an electric popcorn popper.

   a. container
   b. heating element
   c. ceramic blocks
   d. magnet

2. Which one of the following is an operating principle of an electric popcorn popper?

   a. brush seating
   b. regulated heat
   c. plate heat
   d. wet heat

3. Check an electric popcorn popper, using an ohmmeter. (Instructor will evaluate.)

4. Disassemble an electric popcorn popper. (Instructor will evaluate.)

5. Reassemble an electric popcorn popper and check for proper operation. (Instructor will evaluate.)

6. Draw the internal electric circuit of an electric popcorn popper.

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC POPCORN POPPERS

LAP #1B4

POST TEST: SOCIAL STUDIES NAME _____

Briefly describe the operation of the steam and atomic-electric generating plants.

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC POPCORN POPPERS

LAP #1B4

POST TEST: LANGUAGE ARTS NAME _____

1. [illegible] instructor for spelling test.

a. _____ i. _____

b. _____ j. _____

c. _____ k. _____

d. _____ l. _____

e. _____ m. _____

f. _____ n. _____

g. _____ o. _____

h. _____

2. Write 10 of the words above in complete sentences.

a. _____

_____

b. _____

_____

c. _____

_____

_____

_____

_____

_____

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC POPCORN POPPERS

LAP #1B4

POST TEST: LANGUAGE ARTS cont. NAME _____

f. _____

_____

g. _____

_____

h. _____

_____

i. _____

_____

j. _____

_____

3. Underline the subject and circle the verbs in the sentences you wrote in question #2.

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC POPCORN POPPERS

LAP #1B4

POST TEST: MATH NAME _____

1. A corn popper connected to a potential of 115 volts and having 6.8 amps flowing will consume how many watts?

2. If it costs $5.45 to repair four corn poppers, how much would it cost to repair 17 poppers at the same rate?

3. What is the resistance of a corn popper circuit that consumes 839.5 watts and draws a current of 7.3 amps?

4. A popcorn operator lost 3 7/8% of his popcorn through waste. How many boxes of a 745 box total was this?

ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

ELECTRIC POPCORN POPPERS

LAP #1B4

EVALUATION

NAME _____

The student can	Date Completed	Initial
1. list three major components of an electric popcorn popper.		
2. Explain in writing the operating principle of an electric popcorn popper.		
3. draw the internal electrical circuit of an electric popcorn popper.		
4. using an ohmmeter, check an electric popcorn popper.		
5. disassemble an electric popcorn popper.		
6. reassemble an electric popcorn popper and check for proper operation.		
7. describe the operation of two types of electrical generating plants.		
8. spell a given list of related words.		
9. write 10 sentences using a given list of related words.		
10. identify subject and verbs in original job related sentences.		
11. demonstrate the ability to add, subtract, multiply and divide by solving related math problems.		

ELECTRICITY

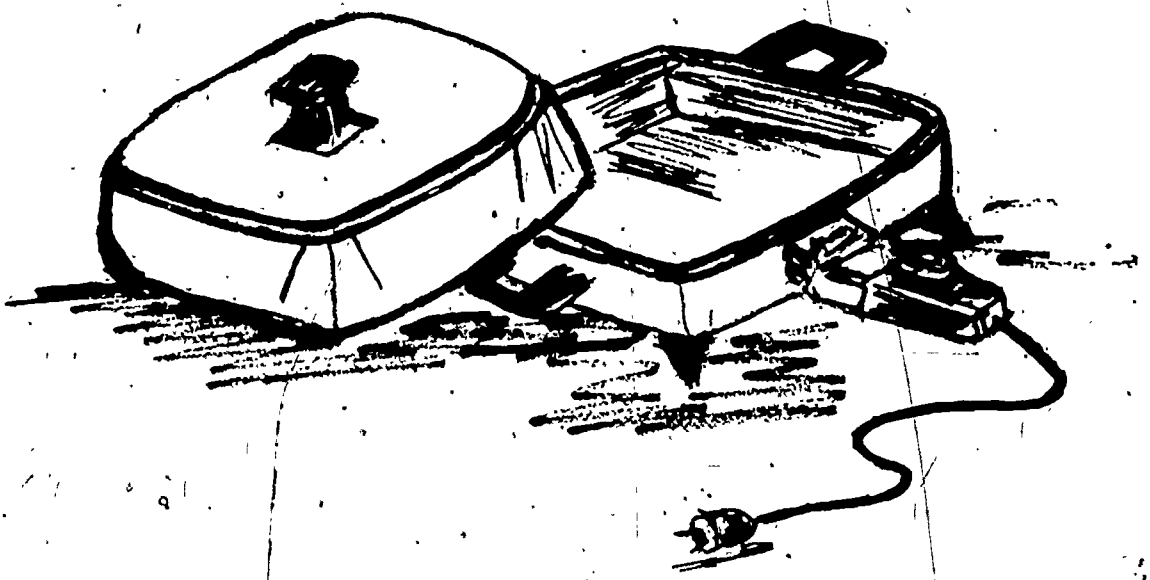
TASK DETAILING SHEET

JOB ENTRY - ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

TASK: OVERHAUL AND REPAIR OF AN ELECTRIC SKILLET

NO.	STEPS IN PERFORMING TASK	TYPE OF PERFORMANCE	LEARNING DIFFICULTY
1	Lists four major components of an electric skillet	Recall	Moderately Difficult.
2	Describes operating principle of an electric skillet	Recall	Moderately Difficult
3	Describes the function of each of the major components of an electric skillet	Recall	Moderately Difficult
4	Draws the electric circuit of an electric skillet	Recall Discrimination	Moderately Difficult
5	Disassembles an electric skillet	Manipulation	Easy
6	Tests electric skillet with an ohmmeter for shorts, grounds and continuity	Discrimination	Moderately Difficult
7	Reassembles an electric skillet	Manipulation	Easy
8	Tests electric skillet for proper operation	Discrimination	Moderately Difficult

ELECTRIC SKILLET



ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

NAME _____

LAP #185

ELECTRIC SKILLET

I. Directions

1. Read the entire package carefully. If you need help, see the instructor.

2. See instructor for pretest.

3. Complete the learning activities.

4. Complete the post test.

A score of 100% is needed on the electrical repair post test, and a score of 80% is needed on each of the related post tests as evidence for the successful completion of this package.

II. Goal: To develop in the electrical repair student the ability to disassemble, repair and reassemble an electric skillet.

III. Specific Objectives

The student will

1. list 4 major components of an electric skillet.

2. describe, in writing, the operating principle of an electric skillet.

3. describe, in writing, the function of the 4 major components of an electric skillet.

4. draw the electrical circuit of an electric skillet.

5. disassemble an electric skillet.

6. using an ohmmeter, check an electric skillet for shorts, grounds and continuity.

7. reassemble an electric skillet and check for proper operation.

8. spell and pronounce a given list of related words.

9. define a given list of related terms.

10. match synonyms with a given list of words.

11. list nouns from a group of job related words.

III. Specific Objectives cont.

12. report in writing on the origin of electricity used in area homes.

13. demonstrate the ability to perform fundamental math processes by working related problems.

IV. Activities, Materials and Resources

1. On a separate sheet of paper, list 4 major components of an electric skillet. Consult How to Repair Small Appliances, Vol. I, pages 45-48.

2. On a separate sheet of paper, describe in writing the operating principle of an electric skillet. Use reference in Activity #1.

3. View film, The Repair of an Electric Skillet. (Resource Center)

4. On a separate sheet of paper, describe in writing the function of each of the 4 major components of an electric skillet. Use references in Activity #1.

5. Draw the electric circuit of an electric skillet. Use reference in Activity #5.

6. Disassemble an electric skillet (tools and skillet available in shop).

7. Demonstrate the use of an ohmmeter by checking an electric skillet for shorts, grounds and continuity. (Ohmmeter available in shop.)

8. Reassemble an electric skillet and check for proper operation. (Return skillet and tools to crib.)

9. Spell and pronounce the words on pages 4 and 5 of this package.

10. Write definitions next to the words listed on pages 4 and 5 of this package.

11. Complete the synonym exercise on page 6 of this package.

12. Circle the nouns on pages 4 and 5 of this package.

13. Write a report tracing the electrical power used in your home back to its original source.

14. Complete the math problems on pages 7-10 in this package.

ELECTRIC SKILLET

Worksheet for Activities #9, 10 and 12: VOCABULARY

neon - _____

sensind - _____

aluminum - _____

tubing - _____

thermometer - _____

skillet - _____

source - _____

thermostatic - _____

vessel - _____

contacts - _____

ridge - _____

casting - _____

ELECTRIC SKILLET

Worksheet for Activities #9, 10 and 12 cont. VOCABULARY

tiny - _____

plastic - _____

immersed - _____

adjusting - _____

unfortunately - _____

servicing - _____

ELECTRIC SKILLET

Worksheet for Activity #11: SYNONYMS

Match the words in Column 1 with a synonym in Column 2. (A synonym is a word with a similar meaning.)

A. skillet	_____	kettle, bowl, etc.
B. vessel	_____	elevated part
C. tiny	_____	dipped
D. ridge	_____	part
E. immersed	_____	clear
F. view	_____	secured
G. element	_____	frying pan
H. translucent	_____	little
I. unfortunately	_____	sketch
J. sealed	_____	unluckily

ELECTRIC SKILLET

Study Questions for Activity #14:

1. Two electricians worked a total of 640 hours on a job. Each worked on an 8 hour, 5 day week schedule. How many weeks did each man work?

2. A copper contact was insulated from its support with one piece of mica 1/64" thick, 2 pieces of fibre each 1/8" thick and 1/16" press board; the copper is 3/4" thick and the support 7/8" thick. What is the total thickness of copper, insulation and support?

3. If an electrician worked 5 1/2 hours a day on a certain job at $1.75 an hour, what was his pay for a 5 day work week?

4. How much will it cost to operate an electric skillet that consumes .75 kw. (kilowatt) per hour at the rate of $.05 per kw. hr. (kilowatt hour)?

5. A buyer was told he could purchase 70 screwdrivers. He needed ten 4" lengths, twelve 6" lengths, twenty 8" lengths and twenty 10" lengths. How many heavy 24" length screwdrivers can he buy and remain within his quota?

ELECTRIC SKILLET

Study Questions for Activity #14 cont.

6. On electrical goods purchased for $4,500.00, a contractor was allowed 3% off for cash. What was his total cash payment?

7. A circuit having 2 ohms resistance uses 2,048 watts. How many amperes does the circuit use?

$$\text{current} = \sqrt{\frac{\text{watts}}{\text{ohms}}}$$

8. What would be the temperature of an electric skillet in degrees Fahrenheit if the centigrade temperature was 200°?

$$C = \frac{(F-32)\ 5}{9}$$

when C = temperature in degrees (centigrade)
F = temperature in degrees (Fahrenheit)

9. What pressure (voltage -E) will be required to force 4.5 amps through an electric skillet having a resistance of 25 ohms?

$$E = IR$$

ELECTRIC SKILLET

Study Questions for Activity #14 cont.

10. What is the amount of wattage used in a single phase circuit drawing 39 amps of 220 volts with a 90% power factor?

$$W = E \times I \times P.F.$$

P.F. = power factor

11. What would be the total cost to repair an electric skillet, if the following materials and labor were required: one control rheostat at $3.75, one thermostat at $5.39 and two hours of labor at $2.50 per hour?

NOTE: The diameter of some of the standard wire are as follows.

#10 = .102"	#11 = .090"	#12 = .081"
#13 = .072"	#12 = .064"	#16 = .051"

12. How much larger is the diameter of #11 wire then #16 wire?

13. Is a #10 wire larger or smaller than a #12 wire, and how much?

Study Questions for Activity #14 cont :

14. A wire is 72 thousandths of an inch in diameter. What number wire is it?

15. Sometimes, in the manufacture of wire, the wire is slightly larger or smaller than intended. If you measured a wire and found it to be .079" in diameter, for what standard wire size would you assume it was intended?

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC SKILLET

LAP #1B5

PRETEST: Oral and/or Performance NAME _____

1. List 4 major components of an electric skillet.

2. Orally describe the operating principles of an electric skillet.

3. Orally describe the function of the 4 major components of an electric skillet.

4. Draw the electrical circuit of an electric skillet.

5. Disassemble an electric skillet.

6. Demonstrate the proper method of checking an electric skillet for shorts, grounds and continuity with an ohmmeter.

7. Reassemble an electric skillet and check for proper operation.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC SKILLET

LAP 4-B5

POST TEST: VOCATIONAL NAME _____

Indicate the correct answer to the left of each of the following questions.

_____ 1. Which of the following choices is not a major component of an electric skillet?

a. heating element
b. sensing element
c. thermostatic control
d. reservoir

_____ 2. The principle of an electric skillet is best described by which of the following?

a. high frequency cooking
b. sonic cooking
c. cooking by electric heat
d. radiant cooking

_____ 3. Which of the following is not a major component of an electric skillet?

a. thermostat
b. built in heating element
c. mounting mechanism
d. skillet cooking surface

_____ 4. The electric circuit of an electric skillet is which of the following?

a. series circuit
b. short circuit
c. parallel circuit
d. is not a circuit

_____ 5. Which of the following tools would not be used to disassemble or reassemble an electric skillet?

a. screwdriver
b. come along
c. pliers
d. hoist

ELECTRIC SKILLET

IAP #1B5

POST TEST: VOCATIONAL cont. NAME _____

_____ 6. If an electric skillet had a short circuit, your ohmmeter would read which of the following?

a. 120 volts
b. infinity
c. 60 watts
d. zero

7. Disassemble an electric skillet.

8. Using an ohmmeter, check an electric skillet for shorts, grounds and continuity.

9. Reassemble an electric skillet and check for proper operation.

10. Draw the electrical circuit of an electric skillet.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC SKILLET

LAP #1B5

POST TEST: LANGUAGE ARTS NAME _____

1. See instructor for spelling and pronunciation test.

a. _____ h. _____

b. _____ i. _____

c. _____ j. _____

d. _____ k. _____

e. _____ l. _____

f. _____ m. _____

g. _____ n. _____

2. Define 10 of the above words.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

g. _____

h. _____

i. _____

j. _____

3. Write a synonym for each of the following words.

a. view _____

b. sealed _____

ELECTRIC SKILLET

LAP #1B5

POST TEST: LANGUAGE ARTS cont. NAME _____

c. unluckily _____

d. tiny _____

e. vessel _____

f. skillet _____

g. translucent _____

4. List 7 words from questions #1, 2 and 3 that can be used as nouns.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

g. _____

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC SKILLET

LAP #1B5

POST TEST: SOCIAL STUDIES NAME _____

See the instructor for an oral test on your report.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC SKILLET

LAP #1B5

POST TEST: MATH NAME _____

1. A contractor purchased $6,575.00 worth of electrical goods. If he was allowed 4% off for paying cash, what was his total cash payment?

2. What voltage would be needed to force 6.5 amps. through an electric skillet having a resistance of 30.5 ohms?

E=IR

3. Three electricians worked a total of 66 hours to complete a job, how much did each man make off of the job if they were being paid $3.55 per hour?

4. An appliance serviceman purchased the following items: three thermostats at $4.75 each, 5 rheostats at $5.35 each, one heating element at $6.40, and twenty feet of electrical line cord at $.23 per foot. What was the total cost of his bill?

ELECTRIC SKILLET

LAP #1B5

POST TEST: MATH cont. NAME _____

5. What is the amount of wattage used in a circuit drawing 17 amps. at 110 volts with an 80% power factor.

$W = E \times I \times P.F.$

6. If #10 wire has a diameter of .102" and #14 has a diameter of .064", how much larger will the #10 wire be?

7. If an electric skillet consumes .55 kw. (kilowatt) per hour at the cost of $.05 per kw. hr. (kilowatt hour), how much would it cost to operate the skillet for 12 hours?

8. If an appliance serviceman bought six screwdrivers for $25.00, how much did he pay for each screwdriver?

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC SKILLET

LAP #1B5

EVALUATION

NAME _____

The student can	Date Completed	Initial
1. list 4 major components of an electric skillet.		
2. describe, in writing, the operating principle of an electric skillet.		
3. describe, in writing, the function of the 4 major components of an electric skillet.		
4. draw the electrical circuit of an electric skillet.		
5. disassemble an electric skillet.		
6. using an ohmmeter, check an electric skillet for shorts, grounds and continuity.		
7. reassemble an electric skillet and check for proper operation.		
8. spell and pronpunce a given list of related words.		
9. define a given list of related terms.		
10. match synonyms with a given list of words.		
11. list nouns from a group of job related words.		
12. report in writing on the origin of electricity used in area homes.		
13. demonstrate the ability to perform fundamental math processes by working related problems.		

ELECTRICITY

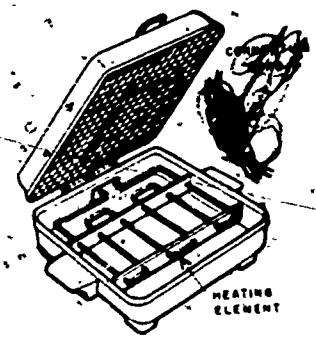
TASK DETAILING SHEET

JOB ENTRY - ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

TASK: OVERHAUL AND REPAIR OF AN ELECTRIC WAFFLE IRON

NO.	STEPS IN PERFORMING TASK	TYPE OF PERFORMANCE	LEARNING DIFFICULTY
1.	Identifies five major components of an electric waffle iron and the functions of each	Recall	Moderately Difficult
2	Disassembles an electric waffle iron	Manipulation	Easy
3	Tests with an ohmmeter the electrical components of an electric waffle iron	Discrimination	Moderately Difficult
4	Reassembles an electric waffle iron	Manipulation	Easy
5	Tests an electric waffle iron for proper operation	Discrimination	Moderately Difficult
6	Draws electrical circuit of an electric waffle iron	Manipulation	Difficult

ELECTRIC WAFFLE IRON



ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

NAME _____

LAP #1B6

ELECTRIC WAFFLE IRON

I. Directions

1. Read the entire package carefully. If you need help, see the instructor.

2. See instructor for pretest.

3. Complete the learning activities.

4. Complete the post test.

A score of 75% is needed on the electrical repair post test and a score of 80% is needed on each of the related post tests as evidence for successful completion of this package.

II. Goal: To develop in the electrical repair student the ability to disassemble, repair and reassemble electric waffle irons and their proper operation.

III. Specific Objectives

The student will

1. list five major components of an electric waffle iron.

2. describe the function of each major component of an electric waffle iron.

3. disassemble an electric waffle iron.

4. demonstrate the proper method for checking the major electrical components of an electric waffle iron with an ohmmeter.

5. draw the electrical circuit of an electric waffle iron.

6. reassemble an electric waffle iron; check proper operation.

7. spell a given list of job related words.

8. write a report on a given person in the electrical field.

9. using a report on Samuel Morse, identify the adjectives.

10. demonstrate the ability to add, subtract, multiply and divide by computing related math word problems.

IV. Activities, Materials and Resources

1. On page 3 of this package, list five major components of an electric waffle iron. Use Home Appliance Servicing, pages 114-122, for reference.

2. Describe in writing the function of the five major components of an electric waffle iron using the reference given in activity #1. Use page 3 of this package.

3. View the film, The Disassembly, Checking and Reassembly of an Electric Waffle Iron.

4. Disassemble an electric waffle iron. (Available in shop.)

5. Using an ohmmeter, check for continuity, shorts and grounds on all electrical components of an electric waffle iron.

6. On page 4 of this package, draw the electrical circuit of an electric waffle iron.

7. Reassemble an electric waffle iron and check for proper operation. Return appliance and equipment to tool crib.

8. Using page 5 of this package, write a one page report on one of the following men:

   James Clerk Maxwell
   Heinrich Rudolf Hertz

9. Spell the words on pages 6 and 7 of this package.

10. Read and study the report on "Samuel Morse" on page 8 of this package.

11. Underline all the adjectives in the report on "Samuel Morse." Do not underline the articles, the, an, and a.
    NOTE: If you need help, see the instructor for an English package on adjectives.

12. Work the related math word problems on pages 9-11 of this package.

ELECTRIC WAFFLE IRON

Worksheet for Activities #1 and #2:

	COMPONENT	FUNCTION
1.		
2.		
3.		
4.		
5.		

ELECTRIC WAFFLE IRON

Worksheet for Activity #6:

DIAGRAM OF THE ELECTRICAL CIRCUIT OF A WAFFLE IRON

ELECTRIC WAFFLE IRON

Worksheet for Activity #9: VOCABULARY

1. typical
2. mechanism
3. guardian
4. product
5. indicating
6. girdles
7. grease
8. batter
9. replaceable
10. grids
11. reversed
12. interchangeable
13. shunt
14. differ
15. commence
16. flex
17. warp
18. contacts
19. termination
20. construction
21. coefficient
22. pyrometer
23. vegetable

Worksheet for Activity #9 cont.

VOCABULARY

24. ascertain
25. welded
26. bedded

ELECTRIC WAFFLE IRON

Worksheet for Activities #10 and #11:

SAMUEL MORSE

(1791-1872)

Young Samuel Morse was born in Charlestown, Massachusetts in 1791. He was graduated from Yale College in 1810, and went to Europe to study art. His pictures won many prizes and he was also a sculptor and a writer. Samuel became an art teacher in the College of the City of New York, but he found himself more interested in electricity than in art.

Morse had an idea that sounds could be sent out over electric wires. The telegraph was a system of wires and electromagnets that attracted a piece of metal. This attraction caused a clicking sound whenever electricity flowed in the wire.

By 1835, he had set up a telegraph line in his room and sent his messages in a series of dots and dashes which spelled out words. This became known as the "Morse Code." It is still used today.

Morse was sure his telegraph could carry messages over very long distances. So he went to Washington to ask Congress to give him enough money to build a telegraph line long enough to prove his telegraph.

In 1843, he went to Washington and again begged Congress for the money. He went home to wait for an answer and told his friends that he had lost all hope. But the next morning, a man knocked on his door.

"You've got the money! You've got the money!" he shouted.

Congress had voted to give Samuel Morse $30,000 to buld a telegraph line from Washington to Baltimore.

Morse built his telegraph line and on May 24, 1844, he tapped out his famous message, "What hath God wrought?" The message was received in Baltimore. His telegraph worked!

Wires were strung all over the country. They carried news and messages to all parts of the nation with great speed. When you send or receive a telegram, remember Samuel Morse who made it all possible.

ELECTRIC WAFFLE IRON

Worksheet for Activity #12:

1. A 500 watt electric waffle iron, when connected to 115 volts, will take how many amps of current?

2. What would be the resistance of a wire having a length of 1032 feet and a diameter of 16.2 mils?

$$R = \frac{KL}{d^2}$$ when L = length in feet, d^2 = diameter (in mils) squared, K = 10.8 (constant for copper)

3. If 125 feet of wire costs $12.75, what would 500 feet cost at the same rate?

4. How much current will flow through a waffle iron that has a resistance (hot) of 62 ohms and is connected across a 115 volt circuit?

5. What pressure, in volts, is necessary for a circuit of 1625 watts and a current of 14.3 amps?

ELECTRIC WAFFLE IRON

Worksheet for Activity #12 cont.

6. If the temperature of a waffle iron was 185° F., what would this be in degrees Centigrade?

$$C = \frac{(F-32)5}{9}$$

7. Find the load in kilowatts of a waffle iron circuit that takes 12.4 amps with an e.m.f. of 115 volts.

$$Kw = \frac{E \times I}{1000}$$

8. During a certain year, the monthly consumption of current in kilowatt hours in a certain house was as follows: Jan., 45; Feb., 40; Mar., 42; Apr., 38; May, 39; June, 47; July, 50; Aug., 52; Sept., 46; Oct., 41; Nov., 39; and Dec., 51. Find the total kilowatt hours expended during the year.

   What would be the total electric bill if they were charged 9.5¢ per kilowatt hour?

9. What is the impedance of a coil with 3 ohms of resistance and 12 ohms reactance?

$$Z = \sqrt{R^2 + X^2}$$

Z = impedance
when R = resistance
X = reactance

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC WAFFLE IRON

LAP #1B6

PRETEST: Oral and/or Performance NAME _____

1. Name the five major components of an electric waffle iron.

2. Explain the function of each major component of an electric waffle iron.

3. Disassemble an electric waffle iron.

4. Check the electric waffle iron for shorts, grounds and continuity.

5. Reassemble an electric waffle iron and check for proper operation.

6. Draw the electrical circuit of an electric waffle iron.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC WAFFLE IRON

LAP #1B6

POST-TEST: VOCATIONAL NAME _____

1. Five of the following are not major components of an electric waffle iron; circle these five.

a. adjustment rod
b. sole plate
c. transfer shaft
d. thermostat
e. mixing valve
f. float switch
g. trigger latch
h. grids

_____ 2. The function of the adjusting rod in an electric waffle iron is which of the following?

a. allow clearance
b. degrees of brownness
c. level control
d. dashpot actuator

_____ 3. When disassembling an electric waffle iron, which of the following would not be used?

a. hacksaw
b. Phillips screwdriver
c. come along
d. pliers
e. anvil

_____ 4. When checking the element of an electric waffle iron for continuity, which of the following instruments would be used?

a. ammeter
b. voltmeter
c. amprobe
d. ohmmeter

_____ 5. The electrical circuit of an electric waffle iron, with respect to its feed, is which of the following?

a. series
b. series-parallel
c. parallel
d. no connection

_____ 6. Which of the following tools would not be used when re-assembling an electric waffle iron?

a. screwdriver
b. pliers
c. small wrench
d. feeler gauge

7. Draw the electrical circuit of an electric waffle iron on the back of this page.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC WAFFLE IRON

LAP #1B6

POST TEST: LANGUAGE ARTS NAME _____

1. See the instructor for a spelling test.

a. _____ k. _____

b. _____ l. _____

c. _____ m. _____

d. _____ n. _____

e. _____ o. _____

f. _____ p. _____

g. _____ q. _____

h. _____ r. _____

i. _____ s. _____

j. _____ t. _____

2. Underline the adjectives in the sentences below.

No modern factory, home or business could run effectively today without some electricity. Each home and factory must have electric wires and equipment arranged for their best use. Electrical workers must install this electrical equipment while the building is being constructed. The modern skyscraper would not be a desirable place to work if electricity were not available to run the many escalators and elevators.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC WAFFLE IRON

LAP #1B6

POST TEST: SOCIAL STUDIES NAME _____

1. State 2 facts about one of the following men:

James Clerk Maxwell
Hienrich Rudolf Hertz

a. _____

b. _____

2. Fill in the blanks.

a. Samuel Morse invented the _____.

b. The system used to send messages over a wire is called the _____.

c. The first telegraph message was sent in _____. (1744, 1844, 1944)

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC WAFFLE IRON

LAP #1B6

POST TEST: MATH NAME _____

1. If 100 feet of wire costs $14.50, what would 450 feet cost at the same rate?

2. A 750 watt electric waffle iron, when connected to 110 volts, will take how many amps of current?

3. If the temperature of a waffle iron is 205° F., what would this be in degrees Centigrade?

$$C = \frac{(F-32)5}{9}$$

4. An appliance repairman made the following charges on electric waffle iron: #1, $4.00 labor and $7.00 parts; #2, $4.95 labor and $4.00 parts; #3, $3.00 labor and $2.67 parts; and #4, $5.80 labor and $3.48 parts.

   A. What was the total labor charged? _____

   B. What was the total parts charged? _____

   C. What was the total of all the charges? _____

   D. What was the average cost of repair for a waffle iron? _____

   E. If the repairman estimated that 32% of the total charge was profit, how much profit did he make on the 4 waffle irons?

   _____

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC WAFFLE IRON

LAP #1B6

EVALUATION

NAME _____

The student can	Date Completed	Initial
1. list five major components of an electric waffle iron.		
2. describe the function of each major component of an electric waffle iron.		
3. disassemble an electric waffle iron.		
4. demonstrate the proper method for checking the major electrical components of an electric waffle iron with an ohmmeter.		
5. draw the electrical circuit of an electric waffle iron.		
6. reassemble an electric waffle iron and check for proper operation.		
7. spell a given list of job related words.		
8. write a report on a given person in the electrical field.		
9. using a report on Samuel Morse, identify the adjectives.		
10. demonstrate the ability to add, subtract, multiply and divide by computing related math word problems.		

ELECTRICITY

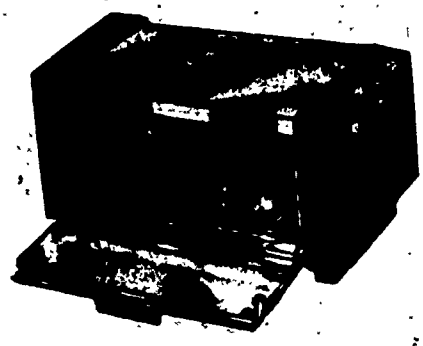
TASK DETAILING SHEET

JOB ENTRY - ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

TASK: OVERHAUL AND REPAIR OF AN ELECTRIC ROASTER-BROILER

NO.	STEPS IN PERFORMING TASK	TYPE OF PERFORMANCE	LEARNING DIFFICULTY
1	Identifies five major components of an electric roaster-broiler and their functions	Recall	Moderately Difficult
2	Disassembles an electric roaster-broiler	Manipulation	Easy
3	Tests with an ohmmeter the heating element of an electric roaster-broiler	Discrimination	Moderately Difficult
4	Draws the electrical circuit of an electric roaster-broiler	Recall Discrimination	Moderately Difficult
5	Reassembles an electric roaster-broiler	Manipulation	Easy
6	Tests electric roaster-broiler for proper operation	Discrimination	Moderately Difficult

ELECTRIC ROASTER-BROILER



ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

NAME _____

LAP #1B7

ELECTRIC ROASTER-BROILER

I. Directions

1. Read the entire package carefully. If you need help, see the instructor.

2. See instructor for pretest.

3. Complete the learning activities.

4. Complete the post test.

   A score of 80% is needed on both the electrical repair and related post tests as evidence for successful completion of this package.

II. Goal: To develop in the electrical repair student the ability to disassemble, repair and reassemble an electric roaster-broiler.

III. Specific Objectives

The student will

1. list five major components of an electric roaster-broiler.

2. describe the function of each major component of an electric roaster-broiler.

3. disassemble an electric roaster-broiler.

4. demonstrate the proper method for checking the heating elements of an electric roaster-broiler, using an ohmmeter.

5. draw the electrical circuit of an electric roaster-broiler.

6. reassemble an electric roaster-broiler and check for proper operation.

7. spell and define a given list of job related words.

8. from a report on Alexander Graham Bell, identify nouns, verbs and adjectives.

9. demonstrate an understanding of a report on Alexander Graham Bell by answering teacher selected questions.

10. demonstrate the ability to add, subtract, multiply and divide by computing a given number of related math word problems.

IV. Activities, Materials and Resources

1. Read Home Appliance Servicing, pages 122-133. List five major components of an electric roaster-broiler on page 3 of this package.

2. Describe in writing the function of each previously named components of an electric roaster-broiler on page 3 of this package.

3. On page 4 of this package, draw an electric roaster-broiler.

4. View the film, Disassembly and Reassembly of an Electric Roaster-Broiler.

5. Disassemble an electric roaster-broiler.

6. Demonstrate the proper procedure for checking the resistance of the elements of an electric roaster-broiler. (Ohmmeter available in tool crib.)

7. Learn to spell the words on pages 5-7 of this package.

8. Write definitions for any words on pages 5-7 of this package that you do not know.

9. Read and study the report on Alexander Graham Bell, pages 8 and 9 of this package, and answer the study questions on page 10 of this package.

10. Identify the underlined words in the report on pages 8 and 9 this package. Use the following abbreviations: n. = noun, v. = verb, adj. = adjective. (See instructor for English package if you need help.)

11. Compute the related math problems on pages 11 and 12 of this package.

ELECTRIC ROASTER-BROILER

Worksheet for Activities #1 and #2:

	COMPONENT	FUNCTION
1.		
2.		
3.		
4.		
5.		

ELECTRIC ROASTER-BROILER

Worksheet for Activity #3

DIAGRAM OF THE ELECTRICAL WIRING OF AN ELECTRIC ROASTER-BROILER

ELECTRIC ROASTER-BROILER

Worksheet for Activities #7 and #8: VOCABULARY

roaster - _____

_____

absorption - _____

_____

portable - _____

_____

characteristics - _____

_____

particular - _____

_____

regulating - _____

_____

predetermined - _____

_____

numerous - _____

_____

process - _____

_____

casserole - _____

_____

values - _____

_____

convenience - _____

_____

ELECTRIC ROASTER-BROILER

Worksheet for Activities #7 and #8 cont. VOCABULARY

components - _____

separated - _____

asbestos - _____

lock washers - _____

friction - _____

incorporates - _____

manufactured - _____

porcelain - _____

essentially - _____

embedded - _____

rotisserie - _____

grooves - _____

ELECTRIC ROASTER-BROILER

Worksheet for Activities #7 and #8 cont. VOCABULARY

nichrome - _____

_____

defective - _____

_____

prod - _____

_____

properties - _____

_____

diameter - _____

_____

arbors - _____

_____

ceramic - _____

_____

inaccurate - _____

_____

calibrated - _____

_____

Worksheet for Activities #9 and #10:

ALEXANDER GRAHAM BELL
(1847-1922)

Three years after Samuel Morse invented the telegraph, Alexander Graham Bell was born in Scotland. His father was a famous teacher and his mother was an artist. As children, Alexander and his brothers learned a lot from their parents. The young boys were taught art and music by their mother. Their father taught them science and how to speak well. They studied the mouth, ear and throat to find out how to form sounds properly.

As a young man, Alexander became a teacher of speech and music. When he was 23, he and his family moved to the United States and he opened his own school for the deaf in Boston.

While teaching, he became interested in science and started experimenting. He began to work on a machine that would carry voices over electric wires. He worked very hard and almost gave up hope that he would ever invent such a machine.

One day while experimenting, Bell spilled acid on himself. It burned his arm and he screamed.

"Mr. Watson, Mr. Watson, come here! I need your help!"

Watson, his assistant, came running into the room shouting, "It works! I heard you over the telephone downstairs!" Alexander Bell had made the first telephone call.

Alexander Bell formed a company to sell his invention, but no one would buy it, so he decided to keep the company himself. Within a few years, telephone lines were connecting large American cities. By

Worksheet for Activities #9 and #10 cont. ALEXANDER GRAHAM BELL

1915, telephone lines ran all the way across the country and many Americans had telephones in their homes.

When Alexander Graham Bell died, he was buried on a mountain in Nova Scotia, Canada. Every telephone in America was silent for one minute in his honor.

ELECTRIC ROASTER-BROILER

Study Questions for Activity #9: ALEXANDER GRAHAM BELL

1. Alexander Graham Bell was born in the state of _____ in the year _____.

2. Bell's father was a _____ and his mother was a _____.

3. Bell was well educated by his _____.

4. In his youth, he was a teacher of _____.

5. When he was 23, he opened his own school for _____ children in _____.

6. His experiment consisted of a machine that would carry _____ over _____.

7. He formed a _____ to sell his invention.

8. No one would buy his company so he _____.

9. By the year _____, telephcne lines ran across the entire United States.

10. How was Bell honored when he died? _____

_____

_____

_____

ELECTRIC ROASTER-BROILER

Worksheet for Activity #11:

1. An electric roaster marked $45 was on sale at a 25% discount. Find (a) the amount of reduction and (b) the sale price of the roaster.

   $p = rb$ and $b - p$.

2. If $148 is the profit for repairing electrical appliances and this represents 10% of the contract price, what is the contract price?

   $b = \frac{p}{r}$

3. John sold $1,600 of electrical appliances one summer to help pay for his school expenses. Find the amount he earned if the rate of commission was 15%.

   $p = rb$

4. If a broiler cost $65 and sells for $45, what is the percent of reduction in price?

5. If the sales tax is 4%, what would be the tax on a purchase of $75.95?

Worksheet for Activity #11 cont.

6. Mary bought a broiler at 33 1/3% off in a reduction sale. If she paid $33.95 for it, what was the regular price?

7. Find the total cost plus tax on 8 electric roasters at $64.47 each.

8. Which is greater, 4 roasters for $37.50 each or 3 for $45.75 each? How much greater?

9. A certain electric broiler is 72% efficient. What is the output if the input is 1210 watts?

10. What is the ratio of 48 broilers to 96 broilers? Express the results as a fraction.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC ROASTER-BROILER

LAP #1B7

PRETEST

NAME _____

1. List five major components of an electric roaster broiler.

   a. _____ d. _____

   b. _____ e. _____

   c. _____

2. Describe to the instructor the function of the previously named five major components of an electric roaster-broiler.

3. Disassemble an electric roaster-broiler.

4. Demonstrate the proper method of using an ohmmeter to check the elements of an electric roaster-broiler.

5. Reassemble an electric roaster-broiler.

6. Draw the electrical circuit of an electric roaster-broiler.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC ROASTER-BROILER

LAP #1B7

POST TEST: VOCATIONAL NAME _____

_____ 1. Which of the following is not a major component of an electric roaster-broiler?

a. side element
b. thermostat
c. circulating fan
d. grille assembly

_____ 2. Which of the following is the function of the cooking well in an electric roaster-broiler?

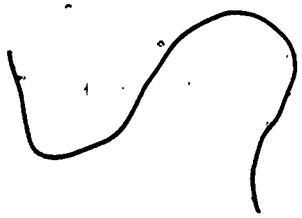
a. food placement
b. water storage
c. grease catcher
d. heat sole plate

3. Disassemble an electric roaster broiler; name the major components for the instructor.

4. Check the elements of an electric roaster-broiler with an ohmmeter.

5. Reassemble an electric roaster-broiler and check for proper operation.

6. Draw the internal electric circuit of an electric roaster-broiler.



ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC ROASTER-BROILER

LAP #1B7

POST TEST: LANGUAGE ARTS NAME _____

1. See instructor for a spelling test.

a. _____ n. _____

b. _____ o. _____

c. _____ p. _____

d. _____ q. _____

e. _____ r. _____

f. _____ s. _____

g. _____ t. _____

h. _____ u. _____

i. _____ v. _____

j. _____ w. _____

k. _____ x. _____

l. _____ y. _____

m. _____

2. Define 20 of the words above.

a. _____

_____

b. _____

_____

c. _____

_____

d. _____

_____

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC ROASTER-BROILER

LAP #1B7

POST TEST: LANGUAGE ARTS cont. NAME _____

e. _____

f. _____

g. _____

h. _____

i. _____

j. _____

k. _____

l. _____

m. _____

n. _____

o. _____

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC ROASTER-BROILER

LAP #1B7

POST TEST: LANGUAGE ARTS cont. NAME _____

p. _____

q. _____

r. _____

s. _____

t. _____

3. Identify the underlined words below. Use n for noun, v for verb, and adj for adjective.

No one knows what the future holds in store. Scientists, engineers, and others predict many new uses for electricity in the near and distant future. Some of these are already available: educational television, radio facsimile, a device to print newspapers and pictures in our own homes, automatic cooking, and solar-powered radios.

Large-scale desalting of ocean water, control of the weather, and more use of rocket propulsion so man can travel safely in space are in the foreseeable future. As these things become available, electricity will play a bigger role.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC ROASTER-BROILER

LAP #1B7

POST TEST: SOCIAL STUDIES NAME _____

1. Alexander Graham Bell was well educated by his _____.

2. When Bell was young, his first job was as a _____.

3. Alexander Graham Bell inve ted the _____.

4. His machine carried _____ over _____.

5. How was Bell honored when he died? _____

_____

_____

_____ _____

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC ROASTER-BROILER

LAP #1B7

POST TEST: MATH NAME _____

1. Find the total cost plus tax of 6 electric roasters at $49.75 each.

2. An electric broiler marked $49.50 was on sale at a 15% discount. Find the amount of the reduction and the sale price of the broiler.

3. If a broiler was bought at a 20% discount sale and the sale price was $35, what was the regular price?

4. If a roaster cost $39.50 and sells for $32.50, what is the percent of reduction in price?

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC ROASTER-BROILER

LAP #1B7

EVALUATION

NAME _____

The student can	Date Completed	Initial
1. list five major components of an electric roaster-broiler.		
2. describe the function of each major component of an electric roaster-broiler.		
3. disassemble an electric roaster-broiler.		
4. demonstrate the proper method of checking the heating elements of an electric roaster-broiler.		
5. draw the electrical circuit of an electric roaster-broiler.		
6. reassemble an electric roaster-broiler and check for proper operation.		
7. spell and define a given list of job related words.		
8. from a report on Alexander Graham Bell, identify nouns, verbs and adjectives.		
9. demonstrate an understanding of a report on Alexander Graham Bell by answering teacher selected questions.		
10. demonstrate the ability to add, subtract, multiply and divide by computing a given number of related math word problems.		

ELECTRICITY

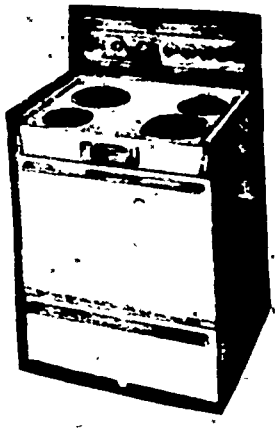
TASK DETAILING SHEET

JOB ENTRY - ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

TASK: OVERHAUL AND REPAIR OF ELECTRIC RANGES

NO.	STEPS IN PERFORMING TASK	TYPE OF PERFORMANCE	LEARNING DIFFICULTY
1	Identifies two types of electric ranges	Recall	Easy
2	Describes the operating principles of electric ranges	Recall	Moderately Difficult
3	Identifies five major components of an electric range and their functions	Recall	Moderately Difficult
4	Disassembles an electric range.	Manipulation	Easy
5	Removes a heating element from an electric range and tests it with an ohmmeter	Discrimination	Moderately Difficult
6	Reassembles an electric range	Manipulation	Easy
7	Tests an electric range for proper operation	Discrimination	Moderately Difficult
[illegible]	Draws the electrical circuit for a surface heating element	Recall Discrimination	Moderately Difficult

ELECTRIC RANGES



ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

NAME_____

LAP #1B8

ELECTRIC RANGES

I. Directions

1. Read the entire package carefully. If you need help, see the instructor.

2. See instructor for pretest.

3. Complete the learning activities.

4. Complete the post test.

A score of 80% is needed on both the electrical repair and related post tests as evidence for successful completion of this package.

II. Goal: To develop in the electrical repair student the ability to disassemble, repair and reassemble an electric range.

III. Specific Objectives

The student will

1. list two types of electric ranges.

2. describe in writing the operating principles of an electric range.

3. list five major components of an electric range.

4. describe in writing the function of each major component of an electric range.

5. disassemble an electric range.

6. demonstrate the proper procedure for removing and checking a heating element from an electric range, using an ohmmeter.

7. reassemble an electric range and check for proper operation.

8. draw the electrical circuit for a surface element having three heating positions.

9. spell a given list of job related words.

10. define a given list of job related words.

11. write short reports on men who contributed to the field of electricity.

12. demonstrate the ability to add, subtract, multiply and divide by solving a given number of related math word problems.

ELECTRIC RANGES

IV. Activities, Materials and Resources

1. Read Home Appliance Servicing, pages 195-233 and How to Repair Major Appliances, pages 131-146. On page 3 of this package, list two types of electric ranges.

2. On page 3 of this package, draw two types of electric ranges. Use the references given in activity #1.

3. On page 4 of this package list five major components of an electric range and give the function of each component Use the references given in activity #1.

4. On page 5 of this package describe the operating principles of an electric range.

5. See the instructor for aid in viewing the film, Removing and Replacing a Heating Element in an Electric Range.

6. Disassemble an electric range and orally name to the instructor all major components. (Electric range available in shop.)

7. Demonstrate to the instructor the proper method for the removal, repair and the reinstallation of a heating element for an electric range, using an ohmmeter.

8. Reassemble an electric range and check for proper operation.

9. Draw the electrical circuit for a surface element with three heat positions on page 6 of this package.

10. Spell and define the words on pages 7-9 of this package.

11. Complete the matching activity on page 10 of this package.

12. On page 11 of this package, write a half page report about both Guglielma Marconi and James Ambrose Fleming. Be sure to include their contributions to the field of electricity.

13. Compute the related math word problems on pages 12 and 13 of this package.

ELECTRIC RANGES

Worksheet for Activities #1 and #2:

Types of Ranges

1. _____ 2. _____

Draw the two types of ranges below.

(1) (2)

ELECTRIC RANGES

Worksheet for Activity #3 cont.

	COMPONENT	FUNCTION
1.		
2.		
3.		
4.		
5.		

ELECTRIC RANGES

Worksheet for Activity #4: OPERATING PRINCIPLES OF ELECTRIC RANGES

ELECTRIC RANGES

Worksheet for Activity #9:

Draw a surface element with three heat positions.

ELECTRIC RANGES

Worksheet for Activity #1:

VOCABULARY

essentially -

variations -

metallic -

chromium -

deterioration -

frequency -

neutral -

nameplate -

consequently -

load -

transformer -

utility -

Worksheet for Activity #10 cont.: VOCABULARY

network -

calculated -

equipped -

insulated -

oven -

ohmic -

distribution -

composition -

melt -

type -

wye -

installation -

ELECTRIC RANGES

Worksheet for Activity #10 cont.

VOCABULARY

1900° F. -

assumption -

watt -

simultaneously -

simmer -

potential -

broil -

alloys -

ELECTRIC RANGES

Worksheet for Activity #11: MATCHING

Place the letters in column I next to the correct definition in column II.

COLUMN I

A.	composition	_____	the degree of electrification
B.	melt	_____	fixing in position
C.	type	_____	a mixture of 2 or more metals
D.	wye	_____	turn from a solid to a liquid
E.	installation	_____	unit of electric power
F.	1900° F.	_____	happening at the same time
G.	assumption	_____	taken for granted
H.	watt	_____	to cook by exposing to direct heat
I.	simultaneously	_____	kind
J.	simmer	_____	to boil gently
K.	potential	_____	a type of hook-up
L.	broil	_____	make-up
M.	alloys	_____	nineteen hundred degrees Fahrenheit

ELECTRIC RANGES

Worksheet for Activity #12: REPORTS

Guglielmo Marconi -

James Ambrose Fleming -

ELECTRIC RANGES

Worksheet for Activity #13: MATH

1. How much will it cost per hour to operate an electric range that consumes .45 kw (kilowatt) per hour at the rate of $.04 per kw hr. (kilowatt hour)?

2. What would be the cost to operate the same range 2.5 hours per day for 21 days if the first 20 kw. hrs. used cost $.05 per kw. hr. and all over kw. hrs. cost $.04 per kw. hr.?

3. If a screw measures 1/8" in diameter, what size hole must a washer have to be .006" larger than the screw?

4. On a range purchased for $185, a repairman was allowed 3% off for cash. What was the total cash payment?

5. What would be the temperature of a range oven in degrees (Fahrenheit) if the centigrade temperature was 200°?

$$F = \frac{9}{5} (C + 32^\circ).$$

Worksheet for Activity #13 cont.. MATH

6. If an electric range radiates sufficient heat at a 10 amp. load on a 220 volt circuit, what will be the hot resistance?

$$R = \frac{E}{I}$$

7. What pressure, in volts, is necessary for a circuit of 1625 watts and a current of 14.3 amps?

$$E = \frac{W}{I}$$

8. What is the capacity of a range oven with inside dimensions of 27" long and 24" wide and 18" high?

$$V = lwh$$

9. Change 50° Fahrenheit to centigrade.

$$C = \frac{5}{9}(F - 32^\circ)$$

10. A repairman charged 25% of the cost of repairing a range. If the range cost $235 new, what was the amount charged for repair?

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC RANGES

LAP #1B8

PRETEST: Oral and/or performance NAME _____

1. Name two types of electric ranges.

2. With the instructor, discuss the operating principles of an electric range.

3. Name five major components of an electric range.

4. Explain the function of the five major components of an electric range.

5. Disassemble, reassemble and check an electric range for proper operation.

6. Remove and check a heating element from an electric range, using an ohmmeter.

7. Draw the electrical circuit for a surface element with three heat positions.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC RANGES

LAP #1B8

POST TEST: VOCATIONAL NAME _____

_____ 1. Which of the following is common to all types of electric ranges?

a. current
b. voltage
c. resistance
d. a, b and c

_____ 2. The operating principle of an electric range is which of the following?

a. heating a resistor
b. mild pilot flame
c. cheap operating cost
d. hard to control heat

_____ 3. Which of the following is not a major component of an electric range?

a. baking element
b. broiler element
c. surface heating element
d. flash tube

_____ 4. The function of the broiler element is which of the following?

a. boil eggs
b. bake a cake
c. char steaks
d. used for simmering

5. List the five major components of an electric range and the function of each component.

a. _____

b. _____

c. _____

d. _____

e. _____

6. Remove a heating element from an electric range and check the resistance of the element with an ohmmeter. Record the resistance reading.

_____

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC RANGES

LAP #1B8

POST TEST: VOCATIONAL cont. NAME _____

7. Disassemble and reassemble an electric range and check for proper operation.

   NOTE: If the student has demonstrated his ability to complete this activity, this question may be waived at the discretion of the instructor.

8. Draw the electrical circuit of a surface element having three heat positions.

ELLCTRIC'L APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC RANGES

LAP #188

POST TEST: LANGUAGE ARTS NAME _____

1. See the instructor for a spelling test.

a. _____ k. _____

b. _____ l. _____

c. _____ m. _____

d. _____ n. _____

e. _____ o. _____

f. _____ p. _____

g. _____ q. _____

h. _____ r. _____

i. _____ s. _____

j. _____ t. _____

2. Write a definition for 10 of the above words.

a. _____

_____

b. _____

_____

c. _____

_____

d. _____

_____

e. _____

_____

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC RANGES

LAP #1B8

POST TEST: LANGUAGE ARTS cont. NAME _____

f. _____

g. _____

h. _____

i. _____

j. _____

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC RANGES

LAP #1B8

POST TEST: SOCIAL STUDIES NAME _____

1. State 3 facts about Guglielmo Marconi.

a. _____

b. _____

c. _____

2. State 3 facts about James Ambrose Fleming.

a. _____

b. _____

c. _____

3. Show a corrected copy of your report to the teacher.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC RANGES

LAP #1B8

POST TEST: MATH

NAME _____

1. If an electric range radiates sufficient heat at a 5 amp. load on a 220 volt circuit, what will be the hot resistance?

2. On a range purchased for $175, a repairman was allowed 5% off for cash. What was the total cash payment?

3. What would be the temperature of a range oven in degrees (Fahrenheit) if the centigrade temperature was 103°?

4. What is the capacity of a range oven with inside dimensions of 24" long, 22" wide, and 20" high?

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC RANGES

LAP #1B8

EVALUATION

NAME _____

The student can	Date Completed	Initial
1. list two types of electric ranges.		
2. describe in writing the operating principles of an electric range.		
3. list five major components of an electric range.		
4. describe in writing the function of each major component in an electric range.		
5. disassemble an electric range.		
6. demonstrate the proper procedure for removing and checking a heating element from an electric range, using an ohmmeter.		
7. reassemble an electric range and check for proper operation.		
8. draw the electrical circuit for a surface element having three heating positions.		
9. spell a given list of job related words.		
10. define a given list of job related words.		
11. write short reports on men who contributed to the field of electricity.		
12. demonstrate the ability to add, subtract, multiply and divide by solving a given number of related math word problems.		

ELECTRICITY

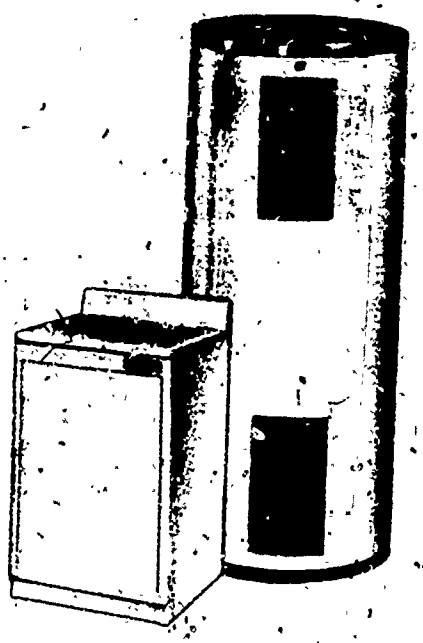
TASK DETAILING SHEET

JOB ENTRY - ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

TASK: OVERHAUL AND REPAIR OF AN ELECTRIC HOT WATER HEATER

NO.	STEPS IN PERFORMING TASK	TYPE OF PERFORMANCE	LEARNING DIFFICULTY
1	Identifies two types of electric hot water heaters	Recall	Easy
2	Describes the operating principle of an electric hot water heater	Recall	Moderately Difficult
3	Identifies five major components of an electric hot water heater and their functions	Recall	Moderately Difficult
4	Removes the heating elements from an electric hot water heater and checks with an ohmmeter	Manipulation Discrimination	Moderately Difficult
5	Reinstalls heating element in an electric hot water heater	Manipulation	Easy
6	Draws the internal electric circuit of a dual element electric hot water heater	Recall Discrimination	Moderately Difficult

ELECTRIC HOT WATER HEATER



ELECTRICAL APPLIANCE SERVICEMAN
(MAJOR RESISTIVE TYPE)

NAME _____

LAP #1B9

ELECTRIC HOT WATER HEATER

I. Directions

1. Read the entire package carefully. If you need help, see the instructor.

2. See instructor for pretest.

3. Complete the learning activities.

4. Complete the post test.

A score of 80% is needed on both the electrical repair and related post tests as evidence for successful completion of this package.

II. Goal: To develop in the electrical repair student the ability to disassemble, repair and reassemble an electric hot water heater.

III. Specific Objectives

The student will

1. list two types of electric hot water heaters.

2. describe in writing the operating principle of an electric hot water heater.

3. list five major components of an electric hot water heater.

4. describe in writing the function of each major component of an electric hot water heater.

5. remove the heating elements from an electric hot water heater.

6. demonstrate the proper procedure for using an ohmmeter to check the resistance of the heating elements of an electric hot water heater.

7. reinstall the heating elements in an electric hot water heater.

8. draw the internal electrical circuit of a dual element electric hot water heater.

9. define electrical repair.

10. list 5 qualities that an electrical repairman must possess.

III. Specific Objectives cont.

11. spell a given list of job related words.

12. orally define a given list of job related words.

13. draw 3 related geometric shapes.

14. construct a vertical bar graph showing the number of electric hot water heaters manufactured over a ten year period.

ELECTRIC HOT WATER HEATER

IV. Activities, Materials and Resources

1. Read How to Repair Major Appliances, pages 209-218, and Home Appliance Servicing, pages 158-173. On page 4 of this package, list two types of electric hot water heaters and the operating principle of both types.

2. Draw a picture of the two types of electric hot water heaters named in activity #1. Use page 4 of this package.

3. See instructor for aid in viewing the film, Removing, Testing and Reinstalling Heating Elements of an Electric Hot Water Heater.

4 On page 5 of this package, list five major components of an electric hot water heater and their functional purpose. Use the references given in activity #1.

5. Draw the internal electrical circuit of a dual element electric hot water heater on page 6 of this package. Use the references given in activity #1.

6. Remove the heating elements from an electric hot water heater and check element for proper resistance reading, using an ohmmeter. Record all readings. (Hot water heater available in shop.)

7. Reinstall heating elements in electric hot water heater and check for proper operation. (Instructor will observe.)

8. Define "electrical repair" on page 7 of this package.

9. List at least 5 qualities that an electrical repairman must possess to become successful in work on page 7 of this package.

10. Learn to spell the words on pages 8 and 9 of this package.

11. Define and learn the meanings of the words listed on pages 8 and 9 of this package.

12. Draw and label an oval, a rectangular and a cylindrical figure on page 10 of this package.

13. Construct a vertical bar graph on page 11 of this package.

ELECTRIC HOT WATER HEATER

Worksheet for Activities #1 and #2:

TYPES OF HOT WATER HEATERS	OPERATING PRINCIPLE
1.	
2.	

DRAW A PICTURE OF THE TWO TYPES OF HOT WATER HEATERS BELOW.

(1)	(2)

ELECTRIC HOT WATER HEATER

Worksheet for Activity #4:

	COMPONENT	FUNCTION
1.		
2.		
3.		
4.		
5.		

ELECTRIC HOT WATER HEATER

Worksheet for Activity #5

DRAW AN INTERNAL ELECTRICAL CIRCUIT OF THE DUAL-ELEMENT ELECTRIC HOT WATER HEATER BELOW.

ELECTRIC HOT WATER HEATER

Worksheet for Activities #8 and #9:

Define "electrical repair" - _____

_____

_____

List 5 qualities that an electrical repairman must possess to become successful in work.

a. _____

b. _____

c. _____

d. _____

e. _____

ELECTRIC HOT WATER HEATER

Worksheet for Activities #10 and #11: VOCABULARY

connected - _____

energy - _____

kilowatt-hour - _____

trend - _____

rural - _____

comparatively - _____

manual - _____

Monel - _____

galvanized - _____

hydrostatic - _____

P.S.I. - _____

capacity - _____

ELECTRIC HOT WATER HEATER

Worksheet for Activities #10 and #11 cont.: VOCABULARY

channel - _____

_____

geometrical - _____

_____

flushing - _____

_____

sickle - _____

_____

tubular - _____

_____

life belt - _____

_____

specifications - _____

_____

chlorine - _____

_____

guesstimate - _____

_____

Worksheet for Activity #12: GEOMETRIC SHAPES

(1)

(2)

(3)

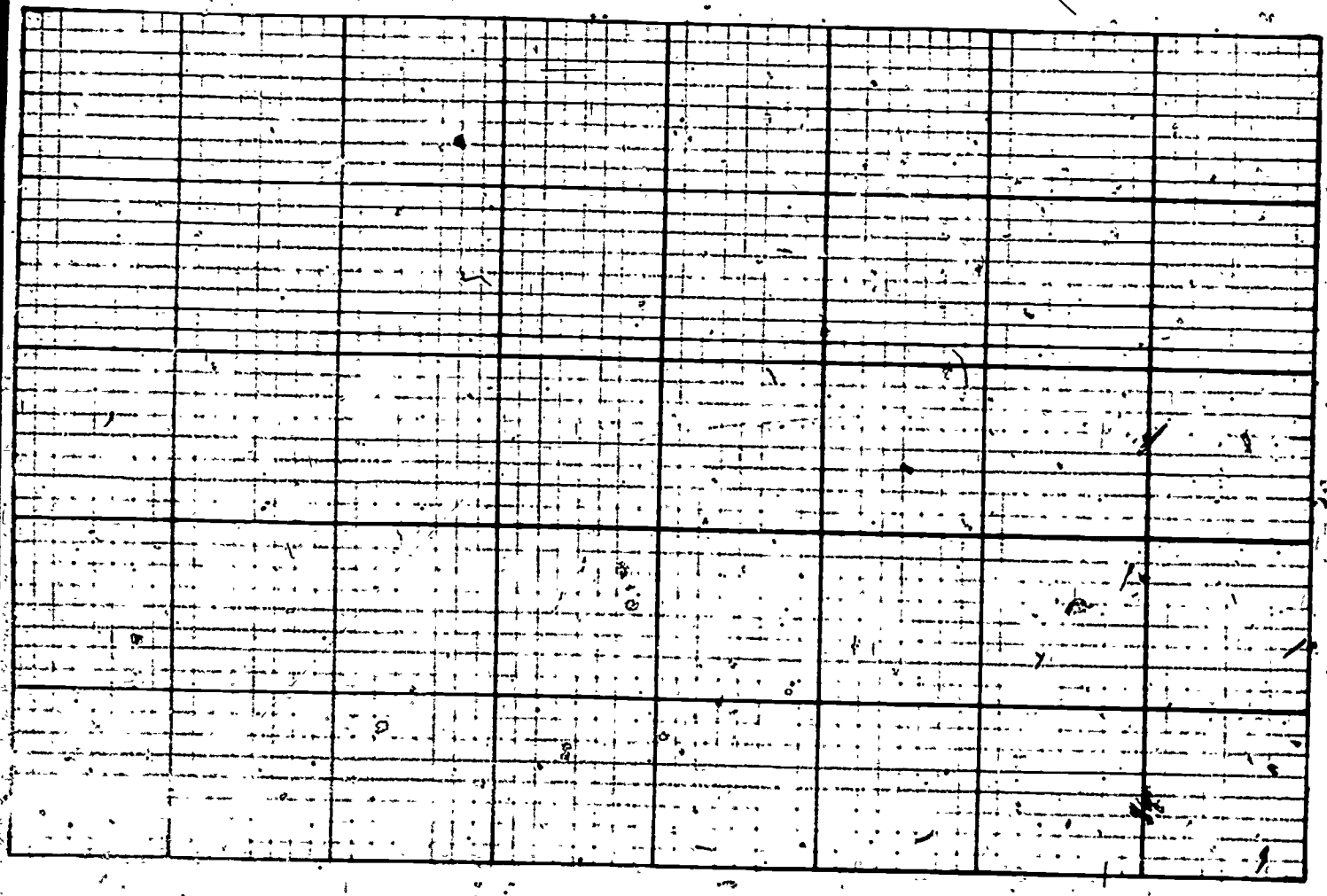
ELECTRIC HOT WATER HEATER

Worksheet for Activity #13: MATH

Electric hot water heaters manufactured in recent years were:

60,000 - 1972	22,000 - 1967
37,000 - 1971	11,000 - 1966
42,000 - 1970	9,000 - 1965
34,000 - 1969	7,000 - 1964
28,000 - 1968	2,000 - 1963

Use the above information and construct a vertical bar graph below.



ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC HOT WATER HEATER.

LAP #1B9

PRETEST: Oral and/or Performance NAME _____

1. Name two types of electric hot water heaters.

2. Explain to the instructor the operating principle of an electric hot water heater.

3. Name five major components of an electric hot water heater and explain the function of each.

4. Demonstrate the proper procedure for removing the heating elements from an electric hot water heater and checking both elements with an ohmmeter.

5. Demonstrate the proper method for reinstalling the heating elements in an electric hot water heater and check heater for proper operation.

6. Draw the internal electrical circuit for a dual element electric hot water heater.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC HOT WATER HEATER

LAP #1B9

POST TEST: VOCATIONAL NAME _____

_____ 1. Which of the following is not a type of electric hot water heater?

a. table top
b. console type
c. tank type

_____ 2. The operating principle of a hot water heater is which of the following?

a. heating a resistor
b. stopping water flow
c. solar exposure
d. pre-flame heating

_____ 3. Which of the following is not a major component of an electric hot water heater?

a. thermostat
b. heating element
c. spin solenoid
d. junction box

_____ 4. The function of the junction box on an electric hot water heater would be which of the following?

a. splicing line to appliance leads
b. a place for circuit breakers
c. relief valve location
d. name plate location

5. Remove the heating elements from an electric hot water heater, check both elements with an ohmmeter--record reading. Reinstall element in heater and check electric hot water heater for proper operation.

NOTE: If the student has demonstrated his ability to complete this activity, this question may be waived at the discretion of the instructor.

6. Draw the internal electrical circuit for an electric hot water heater.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC HOT WATER HEATER

LAP #1B9

POST TEST: LANGUAGE ARTS NAME _____

1. Electrical repair is - _____

2. See instructor for a spelling test.

a. _____ j. _____

b. _____ k. _____

c. _____ l. _____

d. _____ m. _____

e. _____ n. _____

f. _____ o. _____

g. _____ p. _____

h. _____ q. _____

i. _____ r. _____

3. Orally define any 14 of the words above for the instructor.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC HOT WATER HEATER

LAP-#1B9

POST TEST: SOCIAL STUDIES NAME _____

List 5 qualities an electrical repairman must possess.

a. _____

b. _____

c. _____

d. _____

e. _____

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC HOT WATER HEATERS

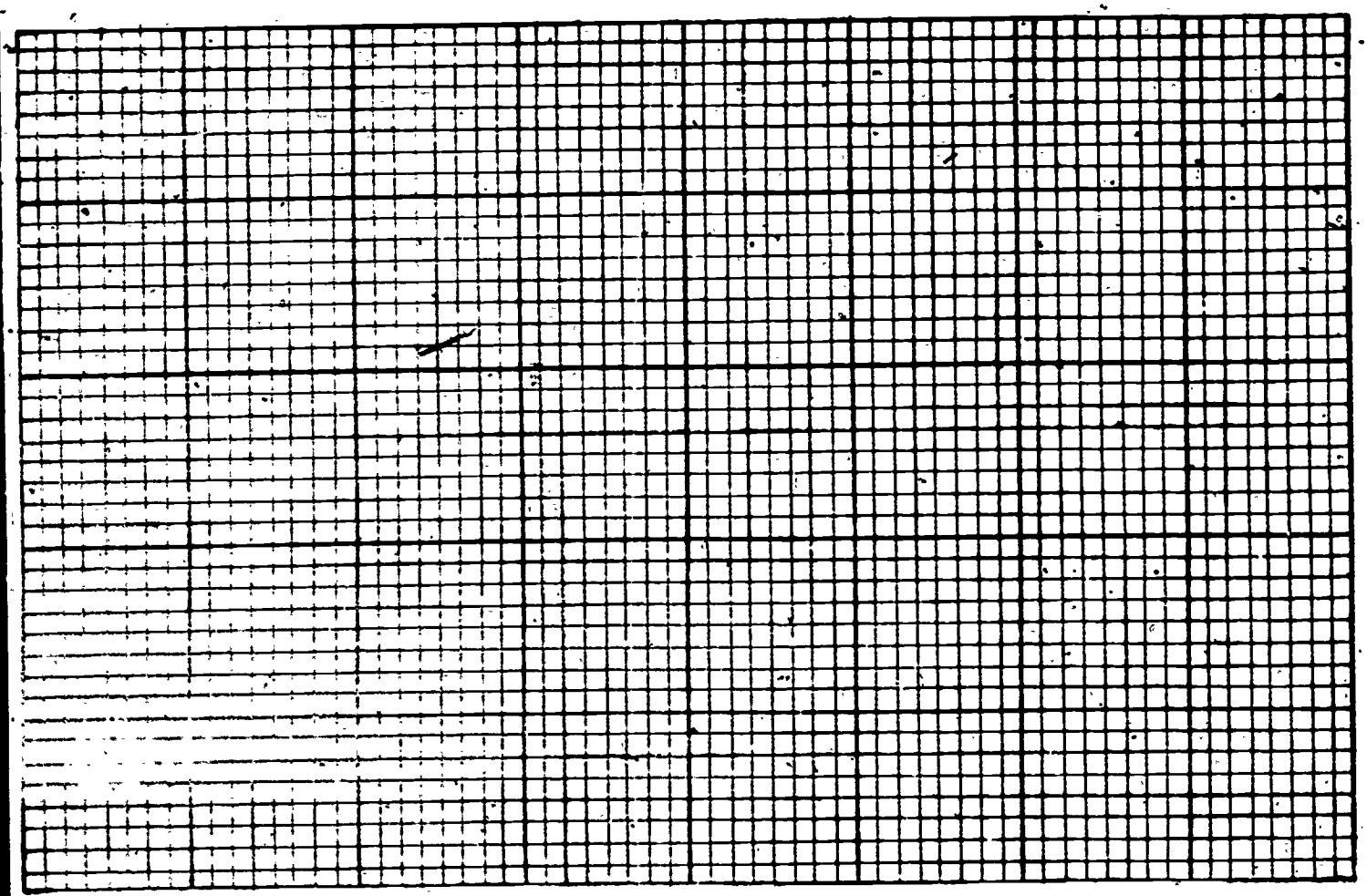
LAP #1B9

POST TEST: MATH NAME _____

1. Electric hot water heaters manufactured in a recent week were:

Monday	- 1,000	Thursday	- 9,000
Tuesday	- 4,000	Friday	- 12,000
Wednesday	- 7,000		

Use the above information and construct a vertical bar graph below.



ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC HOT WATER HEATER

LAP #1B9

POST TEST: MATH cont. NAME _____

2. Draw the following 3 geometric shapes.

(1) Oval

(2) Rectangular

(3) Cylindrical

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC HOT WATER HEATER

LAP #1B9

EVALUATION

NAME _____

The student can	Date Completed	Initial
1. list two types of electric hot water heaters.		
2. describe in writing the operating principle of an electric hot water heater.		
3. list five major components of an electric hot water heater.		
4. describe in writing the function of each major component of an electric hot water heater.		
5. remove the heating elements from an electric hot water heater.		
6. demonstrate the proper procedure for using an ohmmeter to check the resistance of the heating elements of an electric hot water heater.		
7. reinstall the heating elements in an electric hot water heater.		
8. draw the internal electrical circuit of a dual element electric hot water heater.		
9. define electrical repair.		
10. list 5 qualities that an electrical repairman must possess.		
11. spell a given list of job related words.		
12. orally define a given list of job related words.		

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

ELECTRIC HOT WATER HEAT

LAP #1B9

EVALUATION cont. NAME _____

The student can	Date Completed	Initial
13. draw 3 related geometric shapes.	_____	_____
14. construct a vertical bar graph showing the number of electric hot water heaters manufactured over a ten year period.	_____	_____

ELECTRICITY

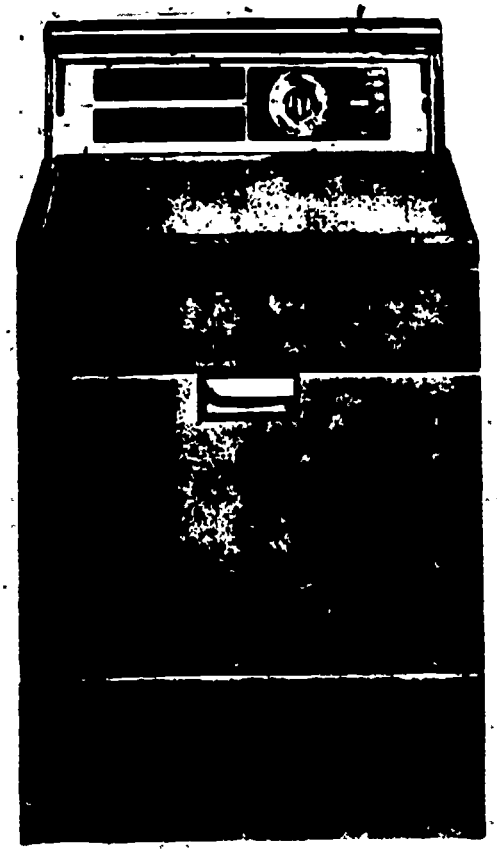
TASK DETAILING SHEET

JOB ENTRY - ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

TASK: OVERHAUL AND REPAIR OF AN AUTOMATIC CLOTHES DRYER

NO.	STEPS IN PERFORMING TASK	TYPE OF PERFORMANCE	LEARNING DIFFICULTY
1	Identifies two general classes of automatic clothes dryers	Recall	Easy
2	Identifies five essential parts of an automatic clothes dryer	Recall Discrimination	Moderately Difficult
3.	Describes the function of five essential parts of an automatic clothes dryer	Recall	Moderately Difficult
4	Describes the operating principle of an automatic clothes dryer	Recall	Moderately Difficult
5	Removes resistance heater from electric automatic clothes dryer and checks with an ohmmeter	Manipulation Discrimination	Moderately Difficult
6	Disassembles an automatic clothes dryer	Manipulation	Difficult
7	Reassembles an automatic clothes dryer	Manipulation	Difficult
8.	Tests automatic clothes dryer for proper operation	Manipulation Discrimination	Moderately Difficult
9	Draws the internal wiring diagram of an automatic clothes dryer	Recall Discrimination	Difficult

AUTOMATIC CLOTHES DRYER



ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

NAME _____

LAP #1B10

AUTOMATIC CLOTHES DRYER

I. Directions

1. Read the entire package carefully. If you need help, see the instructor.

2. See instructor for pretest.

3. Complete the learning activities.

4. Complete the post test.

A score of 80% is needed on both the electrical repair post test and related post tests as evidence for successful completion of this package.

II. Goal: To develop in the electrical repair student the ability to disassemble, repair and reassemble an automatic clothes dryer.

III. Specific Objectives

The student will

1. list two general classes of automatic clothes dryers.

2. list five essential parts of an automatic clothes dryer.

3. describe in writing the function of the five essential parts of an automatic clothes dryer.

4. describe in writing the operating principles of the two general classes of automatic clothes dryers.

5. remove the resistance heater from an electric automatic clothes dryer and check heater for proper ohmic value, using an ohmmeter.

6. disassemble an electric and/or gas automatic clothes dryer.

7. reassemble an electric and/or gas automatic clothes dryer and check for proper operation.

8. draw the internal wiring diagram of a typical automatic clothes dryer.

9. define, identify and use prepositional phrases in job related sentences.

10. write a report on a given person in the electrical field.

11. compute discount and net price on a given number of related problems.

AUTOMATIC CLOTHES DRYER

IV. Activities, Materials and Resources

1. Read Home Appliance Servicing, pages 405-433, and How to Repair Major Appliances, pages 107-130. On page 4 of this package, list two general classes of automatic clothes dryers.

2. On page 4 of this package, list the operating principles of the two general classes of automatic clothes dryers. Use the references given in activity #1.

3. On page 5 of this package, list the five essential parts and their functions of an automatic clothes dryer. Use the references given in activity #1.

4. See the instructor for aid in viewing the film, Disassembly and Reassembly of an Automatic Clothes Dryer.

5. Remove the resistance heater from an electric automatic clothes dryer. Using an ohmmeter, check the heater for proper ohmic value. Record all readings. (Dryer and ohmmeter available in shop.)

6. Disassemble an electric and/or gas automatic clothes dryer. Identify and name for the instructor five essential parts. (Instructor will observe.)

7. Reassemble an electric and/or gas automatic clothes dryer and check for proper oberation.

8. On page 6 of this package, draw the internal wiring diagram of a typical automatic clothes dryer. Use Home Appliance Servicing, page 422, as reference.

9. Write a definition for "prepositional phrase" on page 7 of this package. (See the instructor for an English package if you need help.)

10. Complete the exercise on page 7 of this package.

11. Write a sentence using each prepositional phrase below:

    a. to the operation - _____

    _____

    b. of a circuit - _____

    _____

IV. Activities cont.

c. with Bill - _____

_____

d. of automatic washers and dryers - _____

_____

_____

e. by yourself - _____

_____

12. Complete the exercise on page 8 of this package.

13. Write a report on Niels Bohr. Be sure to include his contributions to the electrical field. Use page 9 of this package.

14. Compute the discount and net price of related problems on page 10 of this package.

AUTOMATIC CLOTHES DRYER

Worksheet for Activities #1 and #2:

GENERAL CLASSES OF DRYERS	OPERATING PRINCIPLES
1.	
2.	

AUTOMATIC CLOTHES DRYER

Worksheet for Activity #3

ESSENTIAL PARTS	FUNCTION
1.	
2.	
3.	
4.	
5.	

AUTOMATIC CLOTHES DRYER

Worksheet for Activity #8:

Drawing of the internal wiring diagram of a typical automatic clothes dryer.

AUTOMATIC CLOTHES DRYER

Worksheet for Activities #9 and #10: PREPOSITIONS

Define "prepositional phrase" = _____

_____

_____

Circle the prepositions in the lists below.

about	from	after	in
above	the	at	like
and	to	around	list
down	bar	are	of
except	under	below	off
two	over	beside	go
for	wire	near	into
with	red	rode	
by	during	one	

Learn the prepositions!

AUTOMATIC CLOTHES DRYER

Worksheet for Activity #12: **PREPOSITIONAL PHRASES**

Underline all the prepositional phrases in the paragraph below.

The first step in the wiring of a circuit is the placement of parts where they are to be used in the complete circuit. The connecting wires must be cut to length and the insulation removed from the wire ends. To prevent "shorts," do not remove more insulation than is necessary to make a good connection. Begin the wiring from any convenient point in the circuit. Improper wiring by the student can cause some of the parts to be damaged when the circuit is placed in operation.

AUTOMATIC CLOTHES-DRYER

Worksheet for Activity #13: NIELS BOHR

AUTOMATIC CLOTHES DRYER

Worksheet for Activity #14: MATH

Find the discount and net price on each of the following clothes dryers.

	List Price	Rate of Discount	Amount of Discount	Net Price
1.	$360.00	12 1/2%		
2.	$183.00	16 2/3%		
3.	$150.00	25%		
4.	$400.00	20%		
5.	$168.00	33 1/3%		
6.	$520.00	15%		
7.	$250.50	30%		
8.	$245.75	10%		
9.	$120.00	5%		
10.	$255.00	14 2/7%		

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

AUTOMATIC CLOTHES DRYER

LAP #1B10

PRETEST: Oral and/or Performance NAME _____

1. Name two general classes of automatic clothes dryers and their operating principles.

2. Name five essential parts of an automatic clothes dryer and explain their functions.

3. Demonstrate your ability to remove the resistance heater from an electric automatic clothes dryer and check it with an ohmmeter for proper ohmic value.

4. Disassemble an electric and/or gas automatic clothes dryer. (Instructor will observe.)

5. Reassemble an electric and/or gas automatic clothes dryer and check for proper operation. (Instructor will observe.)

6. Draw the internal wiring diagram of a typical automatic clothes dryer.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

AUTOMATIC CLOTHES DRYER

LAP #1B10.

POST TEST: VOCATIONAL NAME _____

_____ 1. Which of the following is not considered in the general classes of an automatic clothes dryer?

a. electric
b. wind blown
c. gas
d. refrigerant

_____ 2. Which of the following is an operating principle of automatic clothes dryers?

a. squeeze drying
b. circulating heated air
c. wringer drying
d. wind blown

_____ 3. When checking the resistance heaters of an automatic clothes dryer, which of the following is the first thing that must be done to the ohmmeter?

a. put selector on voltage scale
b. put selector on amp scale
c. put selector on R scale

4. List five essential parts of an automatic clothes dryer and their function.

a. _____

_____

b. _____

_____

c. _____

_____

_____

d. _____

_____

e. _____

_____

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

AUTOMATIC CLOTHES DRYER

LAP #1B10

POST TEST: VOCATIONAL cont. NAME _____

5. Disassemble and reassemble an automatic clothes dryer and check for proper operation.

   NOTE: If the student has shown his ability to complete this activity, this question may be waived at the discretion of the instructor.

6. Draw the internal wiring diagram of a typical automatic clothes dryer.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

AUTOMATIC CLOTHES DRYER

LAP #1B10

POST TEST: LANGUAGE ARTS NAME _____

1. What is a "prepositional phrase?" _____

_____

_____

2. List 15 prepositions.

a. _____ i. _____

b. _____ j. _____

c. _____ k. _____

d. _____ l. _____

e. _____ m. _____

f. _____ n. _____

g. _____ o. _____

h. _____

3. Write a sentence using each prepositional phrase below.

a. with him - _____

_____

b. around the shop - _____

_____

c. for cutting wire and other things - _____

_____

_____

POST TEST: LANGUAGE ARTS cont. NAME _____

d. inside the automatic dryer - _____

_____

_____

4. Underline the prepositional phrases in the paragraphs below.

Pliers are indispensible tools in electrical work. They can cut, bend and twist wire into many shapes. Pliers have many different kinds of jaws and special names, depending on their use. Very often, special pipes, or conduits, are used to protect wires under concrete. These conduits must be cut and bent with special tools.

All good pliers are made from forged steel to exacting specifications. The handles of some pliers are insulated with hard rubber.

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

AUTOMATIC CLOTHES DRYER

LAP #1B10

POST TEST: SOCIAL STUDIES NAME _____

1. Show the corrected copy of your report to the instructor for a final grade.

2. Answer oral questions on Niels Bohr. (These will be taken from your report.)

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

AUTOMATIC CLOTHES DRYER

LAP #1B10

POST TEST: MATH NAME _____

1. Find the discount and net price of each of the following clothes dryers.

   a. List price of dryer = $205.75
      Rate of Discount = 25%

      Amount of Discount = _____

      Net Price = _____

   b. List price of dryer = $300.00
      Rate of Discount = 33 1/3%

      Amount of Discount = _____

      Net Price = _____

   c. List price of dryer = $185.00
      Rate of Discount = 20%

      Amount of Discount = _____

      Net Price = _____

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

AUTOMATIC CLOTHES DRYER

LAP #1B10

EVALUATION

NAME _____

The student can	Date Completed	Initial
1. list two general classes of automatic clothes dryers.		
2. list five essential parts of an automatic clothes dryer.		
3. describe in writing the function of the five essential parts of an automatic clothes dryer.		
4. describe in writing the operating principles of the two general classes of automatic clothes dryers.		
5. remove the resistance heater from an electric automatic clothes dryer and check heater for proper ohmic value, using an ohmmeter.		
6. disassemble an electric and/or gas automatic clothes dryer.		
7. reassemble an electric and/or gas automatic clothes dryer and check for proper operation.		
8. draw the internal wiring diagram of a typical automatic clothes dryer.		
9. define, identify and use prepositional phrases in job related sentences.		
10. write a report of a given person in the electrical field.		
11. compute discount and net price on a given number of related problems.		

ELECTRICAL APPLIANCE SERVICEMAN (MAJOR RESISTIVE TYPE)

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2. Darr, Jack, How to Repair Small Appliances, Volumes 1 and 2, Indianapolis, Indiana: Howard W. Sams and Company, Inc. (1971).

3. Stienberg, William B. and Ford, Walter B., Electricity and Electronics Basic, Chicago: American Technical Society (1961).

4. Tricomi, Earnest, How to Repair Major Appliances, Indianapolis, Indiana: Howard W. Sams and Company, Inc. (1971).

B. Films

1. Disassembly and Reassembly of an Electric Coffee Maker, Wymore Vocational Technical Center, Eatonville, Florida.

2. Disassembly and Reassembly of an Electric Hair Dryer, Wymore Vocational Technical Center, Eatonville, Florida.

3. The Checking and Repairing of Electric Popcorn Poppers, Wymore Vocational Technical Center, Eatonville, Florida.

4. Repair of an Electric Skillet, Wymore Vocational Technical Center, Eatonville, Florida.

5. The Disassembly, Checking and Reassembly of an Electric Waffle Iron, Wymore Vocational Technical Center, Eatonville, Florida.

6. Disassembly and Reassembly of an Electric Roaster-Broiler, Wymore Vocational Technical Center, Eatonville, Florida.

7. Removing and Replacing a Heating Element for an Electric Range, Wymore Vocational Technical Center, Eatonville, Florida.

8. Removing, Testing and Reinstalling the Heating Elements of an Electric Hot Water Heater, Wymore Vocational Technical Center, Eatonville, Florida.

9. Disassembly and Reassembly of an Automatic Clothes Dryer, Wymore Vocational Technical Center, Eatonville, Florida.