

**Subject Area:**

10-12th grade Electrical Trades

**Title:**

Lesson Plan 1

**Teacher:****School:**

Mt. Pleasant High School

**Lesson Objective(s) & Career Cluster:**

Students will be able to do the following:

1. Explain why drawings are important in the electrical field.
2. Identify what is included in a set of drawings.
3. Explain the importance of reading measurements using an architect's scale.
4. Scale dimensions from a print.
5. Read dimensions on a print.
6. Identify electrical symbols found on a small residential electrical plan.
7. Draw an electrical plan for a small residential home.

**Activity:**

Select a floor plan of a small residential structure and draw an electrical plan using architect's scale. Draw all receptacles, switches, distribution panel, meter base, and other required electrical features. Using the same drawing, develop a schematic of circuits required for the outlets, appliances, and fixtures. Indicate the size of conductors and over current protection device required.

**Evaluation:**

Divide students into groups and have students pick one of the three assignments.

Group I: Draw a typical small bathroom layout to include the following: one wall mounted light fixture over sink controlled by a single pole switch located at the door. One GFCI receptacle located next to the sink. One ceiling mounted exhaust fan to be controlled by a single pole switch located at the door.

Group II: Draw a small kitchen floor plan to include the following electrical symbols: Refrigerator, dishwasher, stove, GFCI protected receptacles at proper distance for counter tops, recessed can lights suitable for area controlled with a single pole switch located at doorway.

Group III: Draw a typical bedroom floor plan to include the following: duplex receptacles spaced per the 2005 National Electrical Code book. One ceiling fan with light kit controlled by two single pole switches located at doorway, a single 120 volt ac wire in with 9 volt battery back up ceiling mounted smoke detector. Instructor can review the National Fire Protection standards/local fire department

requirements for smoke alarm locations.

Note: the Instructor can grade each group or each student. Teamwork is the key.

**Extension/Modification and/or Instructional Methodology:**

Have students confirm the electrical requirements by writing down the article number using the 2005 National Electrical Code book.

**SCAN Skills:**

Creative thinking, decision making, problem solving, reasoning, responsibility, teamwork, technology, reading, writing, mathematics, and seeing things in their mind.

**Cooperative Learning Ideas, TAAS, TEKS Competencies:**

Divide students into groups and have them measure and draw a floor plan of the classroom. The floor plan to include all receptacles, switches, and light fixture symbols.

After measuring and drawing the floor plan have groups compare their floor plan with the other groups. Observe the students working together as a Team. This is a good time to discuss the importance of Teamwork.

TEKS 125.26 (2, 5) (D).

TEKS 125.26 (5) (A).

TEKS 125.26 (5) (B)

**Team Project, Guest Speaker, or Field Trip:**

Invite your local electrical inspector, utility representative, electrician and electrical supply representative to visit and speak with students.

**Resources:**

Architect scale, paper, pencil, eraser, set of common symbols used on electrical plan drawings and diagrams. 2005 National Electrical Code book. A set of residential plans showing the electrical requirements. Print Reading for Construction, Walter Brown, Daniel Dorfmueller. The Goodheart-Willcox Company, Inc.

City of Mount Pleasant, Texas. Director Building & Development, Electrical inspector, Eddie Peritt. Plumbing and Mechanical Inspector, Mike Browning.