

Benchmarks – Indicators -- Mapping

Residential Wiring

1. **Understand and explain electrical energy fundamentals. (IV, VI)** (August) **CS, LS**
 - A. Define electron theory for current. **(wt)**
 - B. Illustrate the difference between insulators and conductors. **(wt, pt)**
 - C. Define the difference between AC and DC current. **(wt)**
 - D. Illustrate the difference between series and parallel circuits. **(wt, pt)**
 - E. Define electromagnetic induction. **(wt)**
 - F. Illustrate the makeup of an electrical circuit. **(wt, pt)**
 - G. Define the basic electrical terms. **(wt)**
 - H. Explain the need for electrical codes. **(wt)**

2. **Understand and explain electrical circuit theory. (IV, VI)** (August, September) **CS, LS**
 - A. Define and use “Ohm’s Law” to figure resistance, voltage, and current in series, parallel, and combination circuits. **(wt, pt)**
 - B. Define and calculate “power.” **(wt)**

3. **Point out and explain tools for the electrician. (I, II, VI)** (September) **CS, LS**
 - A. Physically match tools to correct names and explain the purpose and safety procedures to follow when using. **(to, pt)**

4. **Understand, explain, and demonstrate safety and grounding essentials. (I, II, VI)** (September) **CS, LS, HOTS**
 - A. List the basic safety rules applying to wiring. **(wt)**
 - B. Give safety requirements for installing temporary grounding. **(wt, pt)**
 - C. Describe conditions likely to affect severity of electrical shock. **(wt)**
 - D. Describe steps for helping a shock victim. **(wt, pt)**
 - E. Explain equipment grounding and system grounding. **(wt)**
 - F. Define “bonding” and how it is done. **(wt)**
 - G. Explain the operation of a GFCI. **(wt)**

5. **Understand and point out wiring systems. (III, V, VI)** (September, October) **CS, LS**
 - A. List the different conductor systems used in residential wiring. **(wt)**
 - B. Use the Code book to find requirements for installation of different conductor systems. **(pt)**

Infused Areas

CE = career education
GE = global education
CS = communication skills
HOTS = higher order thinking skills
MCGF = multicultural gender fair
LS = learning skills
TI = technology integration

Assessments

ws = worksheet
wt = written test
to = teacher observation
pt = performance test

Residential Wiring (continued)

- 6. Explain and demonstrate installing boxes and conductors. (I, II, III, IV, V, VI)** (October) **CS, HOTS, LS**
- A. Explain how to plan a wiring rough-in. (**wt, pt**)
 - B. Explain how electrical boxes should be located on walls and ceilings. (**wt**)
 - C. Properly install boxes. (**pt**)
 - D. Properly run and fasten conductors. (**pt**)
 - E. Cut and strip cable. (**pt**)
- 7. Explain and demonstrate planning branch circuits. (III, IV, V, VI)** (October) **CS, LS**
- A. Define a branch circuit. (**wt**)
 - B. Name types and purposes of branch circuits. (**wt**)
 - C. Calculate circuit loads. (**wt**)
 - D. List requirements for location of receptacles (**wt**)
 - E. List requirements for location of lighting. (**wt**)
 - F. Cite requirements for split-wired circuits. (**pt**)
- 8. Understand and explain reading prints and wiring circuits. (III, IV, V, VI)** (October, November) **CS, LS, HOTS**
- A. Recognize and use standard electrical symbols. (wt, pt)
 - B. See the relationship between a schematic, electrical plan, and a pictorial drawing. (to)
 - C. Read an electrical plan. (to)
 - D. Sketch an electrical plan of a floor plan. (pt)
 - E. Draw a cable layout on a floor plan. (pt)
- 9. Understand and explain the service entrance. (IV, V, VI)** (November) **CS, LS, HOTS**
- A. List components of the service panel. (**wt**)
 - B. List 8 basic guidelines on location of a residential service panel. (**wt**)
 - C. Calculate the size of entrance needed based on the power needs of the dwelling. (**pt**)
 - D. Install a service entrance. (**pt**)
- 10. Understand and explain appliance wiring and special outlets. (I, II, III, IV, V, VI)** (November) **CS, LS, HOTS**
- A. Discuss NEC regulations for appliance circuits and other circuits. (**to**)
 - B. Explain several methods for hooking up appliances. (**wt**)
 - C. Discuss installing practices for various appliances, motors, and special circuits. (**to**)

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Residential Wiring (continued)

11. Understand and demonstrate wire diagramming. (III, V, VI) (November, December) **CS, LS, HOTS**

- A. Explain the purpose of wire diagramming. **(to, wt)**
- B. Produce wire diagrams for various assigned circuits. **(pt)**

12. Demonstrate wiring practices. (I, II, III, IV, V, VI) (December) **CS, LS, HOTS**

- A. Produce various circuits using the wire diagrams. **(pt)**

13. Explain the career opportunities associated with wiring. (VII) (December) **CE, GE**

- A. List occupations that encompass wiring. **(wt)**
- B. Explain possible educational and training requirements. **(wt)**
- C. Explain possible skills needed for the wiring industry. **(wt)**

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Resources: Text books, worksheets, floor plans, scales, drafting paper, wiring tools, wire supplies, safety glasses, mock walls, Code book, service panel.