

Unit 3

Communication Electronics

Lesson 3.7

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Lesson Title Basic Electronic Theory – Series and Parallel Circuits

Curriculum Area Math, World Language, Language Arts - Writing

Grades 6 – 8

Duration 2 to 3 class periods

Content Standards M – 1, M – 2, M – 4, WL – 2, WR - 1

Benchmarks M – 1.3, M – 2.1, M – 4.1, WL – 2.1, WR – 1.1, WR – 1.2

Goals

- To develop students' understanding of basic electronic theory
- To develop students' operational understanding of series circuits
- To develop students' operational understanding of parallel circuits

Objectives

- Students will draw and construct a simple series circuit and explain its operation
- Students will draw and construct a simple parallel circuit and explain its operation

Resource Materials

Now You're talking, Chapter 5

Understanding Basic Electronics, Chapter 13, pages 13-3 through 13-9

Instructional Content

1. Finding the total resistance in a series circuit
2. Finding the total resistance in a parallel circuit

Activities

1. See Unit 3 Activity Sheet #3.6 Series & Parallel Circuits
2. Write a paragraph comparing and contrasting the series and parallel circuits.

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Activity Sheet #3.6

Series & Parallel Circuits

Steve Lalonde, WA7KWX

Introduction

Reading about circuits can be interesting, but building them can be a real joy. In this activity you will be given a chance to draw a circuit and then actually build that same circuit. This process will give you a practical application of circuits and the components that make them up.

Materials

- Roll of hook-up wire
- Three flashlight bulbs
- Two D-size batteries
- Toggle switch

Procedure 1

Draw a schematic diagram of a series circuit containing three flashlight bulbs, a battery, a switch and connecting wires. Have the teacher check your drawing for accuracy. Now build the circuit you have just drawn. Next, unscrew one of the light bulbs. What happens? Why?

Procedure 2

Draw a schematic diagram of a parallel circuit containing three flashlight bulbs, a battery, a switch and connecting wires. Have the teacher check your drawing for accuracy. Now build the circuit you have just drawn. Next, unscrew one of the light bulbs. What happens? Why?

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Activity Sheet #3.6

Electrical Components

Introduction

Learning how to build circuits can be fun as well as educational. In this activity you will have an opportunity to work with many of the electrical components (parts) we have discussed in the text. In the schematic diagram below you will find many schematic symbols normally found in electronic circuits.

Using the schematic symbols chart in the appendix of Now You're Talking, identify the components in the schematic below.

Figure: 3.25

ARRL Instructors Manual, page 5.135

- | | |
|----------|-----------|
| 1. _____ | 6. _____ |
| 2. _____ | 7. _____ |
| 3. _____ | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ | 10. _____ |

