Common Electrical Circuits

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# “Loop” Circuits

For electricity to flow a “loop” path must be established in the conductor (wire). In a simple direct current (DC) circuit this is easy to see as the power source is usually a battery.



Think about how a flashlight works. Can you see the “loop”?

In alternating current (AC) circuits the “loop” is harder to see since the power source is usually a power station located many miles from the load (ex. light bulb). However, the loop still exists.



To control the flow of electricity (current) we install switches and other devices to interrupt the loop.

# Directions:

Symbol Key
Silver Screw
Brass Screw

Each device is assumed to be in a box. All wire connections must be made in a box. Determine which box will be the “source” of power. Draw in the wires and label with colors. Only one wire may be placed under a screw. Show connections made with wire nuts with a solid dot. White wires connect to silver screws, black (or red) wires connect to the brass screws.

# Example: Two Duplex Receptacles

Power source will be the left box.

Duplex
Receptacle

Duplex
Receptacle

Can you identify the “loop” in this circuit?

# Three Duplex Receptacles

Power source will be the center box.

Duplex
Receptacle

Duplex
Receptacle

Duplex
Receptacle

# Switched Lamp #1

Source of power will be the lamp box.

Switch

Lamp

# Switched Lamp #2

Source of power will be the switch box.

Switch

Lamp

# Switched Lamp with Duplex Receptacle #1

Source of power will be the Duplex Receptacle.

Switch

Lamp

Duplex
Receptacle

# Switched Lamp with Duplex Receptacle #2

Source of power will be the Lamp box.

Switch

Lamp

Duplex
Receptacle

# 3 Way Switch #1

Power source will be the left switch. This is a typical configuration found in hallway lighting.

# 3 Way Switch #2

3 way
Switch

3 way
Switch

Lamp

Power source will be the left switch (middle box). This is a typical scenario found with exterior lighting with switches at the doors.

3 way
Switch

3 way
Switch

Lamp