**Electrical House Wiring**

**Package A**

 

**Student Learning Guide**

**Student Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Why TAKE THIS Package?**

|  |  |
| --- | --- |
| **j0229913** | * Explore the Electrical Trade.
* Learn how to wire a variety of circuits.
* Learn how to deal with electricity safely.
 |

**WHAT DO YOU NEED TO KNOW**

**BEFORE YOU START?**

|  |  |
| --- | --- |
| * This is the introductory module. Therefore there are no perquisites.
 | **hh01183_** |

**What you will know**

**and Be able to do**

**once finished?**

|  |  |
| --- | --- |
| j0301236 | * Wire a variety of common circuits.
* Identify the basic responsibilities of an electrician.
* Understand how different circuits work.
 |

**When should your**

**work be done?**

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| --- | --- |
| * This package must be completed after 20 periods. Refer to the Time Line activity for more detail.
 |  |

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| **ELECTRICAL A** | **ACTIVITY 01** |
| **Timeline Worksheet** |

One of the difficulties that arise in the Industrial Arts Lab is finishing activities and projects on time. This is mainly do to three problems:

* + Not having a clear idea of what needs to be completed.
	+ Working independently from the teacher and your other classmates.
	+ Missing classes and losing track of what you should have completed.

To help in finishing your activates and projects on time, you find below a Time Line Worksheet. This worksheet will help you organize your time, gives you an overview of what needs to be completed and an estimated amount of time to complete each activity.

**Note: This is a guideline and as time goes by, modifications could possibly be made. You do need to remember though, that at the end of the package, all activities and projects must be completed.**

**Description:**

A timeline Worksheet consists of 5 sections.

**1) Completion Period** – This is an estimate of the period that a particular activity or project should be **completed by**. I have already filled this out for you. You will see that the estimated periods run from 1 to 20. The reason for this, is that each package is designed to take only 20 periods to complete.

**2) Estimated Completion Date** – This is where you will place the calendar dates you should have activities and projects completed by.

**3) Completed** – Here you can keep track of the activities that you have completed.

**4) Activity –**This is name of the activity or project that needs to be completed.

# 5) Teacher Check Points –Activities with Teacher Check Points will have sections within the activity, that you will need to receive help from your teacher on. Refer to each activity for more details.

 **Instructions:**

On the next page you will find a Timeline Worksheet of activates and projects that need to be completed for this module. You will need to do the following.

1) Read over the time line and determine what you need to completed by the end of today.

 **Final Note:** You should refer back to this sheet throughout completing this package; it will help you keep on track towards finishing this package.

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| **ELECTRICAL A** | **ACTIVITY 01** |
| **Timeline Worksheet** |

**Student Name:\_\_\_\_\_\_\_\_\_\_\_\_\_ Term: 1 2 3 4 Mark: /10 %**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Completion Period** | **Estimated Completion Date** | **Completed** | **Activity** | **Teacher****Check Points** |
| 1 |  |  | Read Package Outline (Found in this handout) |  |
| 1 |  |  | Activity 01 - Time Line Worksheet | Check Point |
| 3 |  |  | Activity 02 - Electrical Safety |  |
| 3 |  |  | Activity 03 - Common Electrical Codes By Fixture |  |
| 3 |  |  | Activity 04 - Common Electrical Codes By Room |  |
| 3 |  |  | Activity 05 - Wire Colors and Gauges |  |
| 3 |  |  | Activity 06 - Fire Extinguishers | Check Point |
| 5 |  |  | Activity 07 - Circuit layout | Check Point #1Check Point #2 |
| 6 |  |  | Activity 08 - Wiring a Plug End | Check Point #1Check Point #2 |
| 17 |  |  | Activity 09 - Wiring Circuits | Check Point |
| 19 |  |  | Activity 10- Major Project | Check Point #1Check Point #2 |
| 20 |  |  | Activity 11 - ELEC A - Exam |  |

**Teacher Check Point Teacher Signature\_\_\_\_\_\_\_\_\_\_\_**

- Once you have completed this activity, please have your instructor check your **progress.**

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| **ELECTRICAL A** | **ACTIVITY 02** |
| **Electrical Safety** |

Student Name:\_\_\_\_\_\_\_\_\_\_\_\_ Term: 1 2 3 4 Mark: / %



**Instructions:**

Please answer the following questions using the Electrical House Wiring Information Package.

1. Why is it so important to work safely with or near electricity?
2. What are two injuries that can result from electrical currents?
	1.
	2.
3. List 4 general safety tips for working with or near electricity.
	1.
	2.
	3.
	4.
4. List 4 tips for working with electrical power tools?
	1.
	2.

* 1.
1. List 3 tips when working with power cords?
	1.
	2.
2. What is a ground Fault Circuit Interrupter and how do you test it?

|  |  |
| --- | --- |
| **ELECTRICAL A** | **ACTIVITY 03** |
| **Common Electrical Codes By Fixture** |

Student Name:\_\_\_\_\_\_\_\_\_\_\_\_ Term: 1 2 3 4 Mark: / %

**Instructions:**

Please answer the following questions using the Electrical House Wiring Information Package. – Common Electrical Code Requirements by Fixture.

1) By each of the common electrical codes, place the number for the type of fixture that it applies to. 1) Service Panel, 2)Electrical Boxes, 3)Wires and Cables, 4)Switches, 5)Receptacles, 6)Light fixtures

* locate all [switch](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#switch) boxes 48" above the finished floor.
* the locations of boxes may be altered if there are special circumstances, such as a child's bedroom or for wheelchair accessibility.
* every room must have either a built in light fixture or a [switch](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#switch) operated [receptacle](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#receptacle) to control a lamp.
* Use three way switches at the top and bottom of stairs, and at either ends of a hallway.
* try to run the wire 20" above the floor.
* If you are using plastic boxes, use [switches](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#switch) that have a grounding screw.
* Make sure that [switches](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#switch) are within easy reach of doorways
* there should be a [receptacle](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#receptacle) on every wall that is 24" or longer.
* Make sure that you follow the [installation instructions](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elec08abc/recessedlight.html) for recessed lighting.
* Make sure that wires are attached to electrical boxes with approved non metallic clamps
* You should use grounded [receptacles](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#receptacle) for every circuit.
* leave a minimum of 8" of wire extend past the front of the electrical box.
* Drill holes at least 2" from the edge of joists or studs to run cables through.
* make sure that the [receptacle](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#receptacle) is rated for the amperage of the circuit that it is connected to.
* If you have to drill closer than 2" to the edge, use a [nail plate](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elec09a/nailprotection.html) to protect the wire.
* do not bend wires at right angles, or bend them sharply.
* locate all electrical boxes 12" above the finished floor.
* make sure that wire connections or splices are placed entirely inside of electrical boxes.
* use [wire connectors (marrettes)](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elec08abc/appliances.html) to join wires.
* run cables at right angles to adjoining framing members.
* all circuits must be attached to the [ground](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#ground).
* there should be a [receptacle](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#receptacle) at least every 12 feet although they can be as close as every 6 feet.
* There must be at least one switch operated light or [receptacle](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#receptacle) in every room.
* Always use boxes that are [large enough](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elec08abc/boxfill.html) to hold all of the wires safely.
* There must be at least one switch operated light or [receptacle](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#receptacle) in every room.
* every wire needs to be attached with a wire [staple](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#staple) within 8" of an electrical box and every 48" along its run.
* You should have [GFCI receptacles](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elec08abc/gfci/gfci.html) in the first [receptacle](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#receptacle) in a circuit in bathrooms, kitchens, garages, and any outdoor circuits.
* Leave at least 1/4", but not more than 1" of sheathing where a wire enters an electrical box
* Connect a single wire to a single screw [terminal](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#terminal). If you need to attach more wires, make sure that you use a pigtail. Use wires that can handle the amperage of the circuit.

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| **ELECTRICAL A** | **ACTIVITY 04** |
| **Common Electrical Codes By Room** |

**Student Name:\_\_\_\_\_\_\_\_\_\_\_\_ Term: 1 2 3 4 Mark: / %**

**Instructions:**

Please answer the following questions using the Electrical House Wiring Information Package. – Common Electrical Code Requirements by Room.

1. By each of the common electrical codes, place the number for the type of fixture that it applies to. 1) Kitchen/Dinning , 2)Utility/Laundry , 3)Living/Bedrooms, 4)Outdoors, 5)Stairs/Hallway
	* Lighting for the kitchen and dining rooms should be on a separate circuit from the small appliance circuits.
	* Add additional lighting for under cupboards and task specific lighting, such as over a sink or island.
	* install a separate 20 amp circuit for washing machines.
	* make sure that wiring is in place if there are built ins, such as microwaves, exhaust hoods, garburators, etc. .
	* Use [GFCI receptacles](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elec08abc/gfci/gfci.html) for all receptacles, except for freezers or dryers.
	* There should be a separate 110/220 circuit for a furnace, depending if it us gas or electric.
	* there should be a separate 110/220 circuit for a water heater, depending if it us gas or electric
	* there should be at least 1 [duplex](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#duplex) receptacle every 12 feet although they can be as close as every 6 feet.
	* Every counter should have a [receptacle](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#receptacle).
	* use split receptacles so that you can have more than 1 item plugged into a receptacle, and they will be on separate circuits.
	* There should be at least two 15 amp circuits.
	* Refrigerator get there own 15 [amp](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#Ampere) dedicated [circuit](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#circuit).
	* there should be a dedicated 40 or 50 amp, 240 [volt](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#volt) service for a range, or 2 circuits if there are separate oven and stovetop units.
	* make sure that you use cable that is rated for out doors.
	* Receptacles should be 18" above the counter top, or half way between the lower and upper cupboards.
	* Install a dedicated circuit for permanent appliances, such as window air conditioners, base board heaters, computers, etc.
	* Make sure that there are [cable TV](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elec08abc/extra/coax/coax.html) and [telephone jacks](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elec08abc/extra/phone/phone.html) on all walls, so that you won't have cords on the floor in front of door ways, etc.
	* You should have at least 2 circuits (preferably 4) for small appliances in a kitchen.
	* always dial before you dig, checking for telephones, cable TV, natural gas, water and sewer lines.
	* All receptacles should be protected by [GFCI circuits](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elec08abc/gfci/gfci.html).
	* use three way switches in hallways or stairwells.
	* Make sure that you have [receptacles](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#receptacle) in hallways, for vacuum cleaners, etc.
	* make sure that there is sufficient lighting in stairwells, and that the lighting comes from more than one [source](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#source).

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| **ELECTRICAL A** | **ACTIVITY 05** |
| **Wire Colors and Gauges** |

Student Name:\_\_\_\_\_\_\_\_\_\_\_\_ Term: 1 2 3 4 Mark: / %



**Instructions:**

Please answer the following questions using the Electrical House Wiring Information Package.

1) Please match the wire with the correct purpose.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Wire** |  | **Purpose** |
|  | White | 1 | Light Fixtures and 120Volts |
|  | Black | 2 | 40 amp circuits such as a stove |
|  | Red | 3 | neutral wire carrying [current](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#current) at zero [voltage](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#voltage) |
|  | White with black markings | 4 | Central Air conditioners |
|  | Green | 5 | [hot](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#hotwire) wire carrying [current](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#current) at full [voltage](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#voltage) |
|  | Bare copper | 6 | [hot](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#hotwire) wire carrying [current](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#current) at full [voltage](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#voltage) |
|  | # 6 Gauge | 7 | serves as a pathway to [ground](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#ground) |
|  | # 8 Gauge | 8 | [hot](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#hotwire) wire carrying [current](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#current) at full [voltage](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#voltage) |
|  | #14 Gauge | 9 | serves as a pathway to [ground](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elecgloss.html#ground) |

1. Please match the picture with the correct name.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Picture** |  | **Name** |
|  | *lampsm* | 1 | Octagon Box |
|  | *switch3sm* | 2 | Stud Box |
|  | [*octboxsm*](http://www.saskschools.ca//curr_content/paasurveyb/elecmod/elec08abc/images/octbox.jpg) | 3 | Common duplex outlet |
|  | *yelmarsm* | 4 | Common switch |
|  | *staplessm* | 5 | 3 way switch |
|  | *3waysm* | 6 | Lamp holder |
|  | *ganged2sm* | 7 | Marrettes |
|  | *duplex4sm* | 8 | Wire staples |

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| **ELECTRICAL A** | **ACTIVITY 06** |
| **Fire Extinguishers** |

Student Name:\_\_\_\_\_\_\_\_\_\_\_\_ Term: 1 2 3 4 Mark: / %



**Instructions:**

Please answer the following questions using the Electrical House Wiring Information Package. - **All You Ever Wanted to Know About Fire Extinguishers**

1. List and explain the 4 **classes** of fire extinguishers.

a.

b.

c.

d.

1. List and explain the 4 **types** of fire extinguishers.

a.

b.

c.

d.

3) Please explain what **PASS** stands for.

**P-**

**A-**

**S-**

**S-**

**Teacher Check Point Teacher Signature\_\_\_\_\_\_\_\_\_\_\_**

- Once you have completed this activity, please hand in Activities 02 to 05 for **correction.**

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| --- | --- |
| **ELECTRICAL A** | **ACTIVITY 07** |
| **Circuit Layout** |

**Student Name:\_\_\_\_\_\_\_\_\_\_\_\_ Term: 1 2 3 4 Mark: / %**

**Teacher Check Point #1 Teacher Signature\_\_\_\_\_\_**

- At this point you will need to have your **teacher help** you answer the following statements and complete the first few wiring circuits.

1) The black wire is always \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2) The white wire is always\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and is called the \_\_\_\_\_\_\_\_\_\_\_wire?

3) The black wire goes to the \_\_\_\_\_\_\_\_\_\_colored screws, the white wire goes to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_colored screws and the ground wire goes to the \_\_\_\_\_\_\_\_\_\_\_\_\_colored screws.

4) You can only have \_\_\_\_\_\_\_\_\_\_\_number of wires per screw.

5) When wiring light switches, the power always goes to the \_\_\_\_\_\_\_\_\_\_\_\_\_ first.

6) For a circuit to work, you need to have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_path.



**Instructions:**

Please complete each of the following wiring exercises by connecting all the components. After completing the first two, have your teacher check your wiring diagrams.

1) Circuit – Single Receptacle

#





2) Circuit – Double Receptacle

#









#

3) Power in at switch – Switch controlling receptacle









4) Power in at Switch – Switch controls light









5) Power in at Light – Switch controls light









6) Power in at Light – Switch controls both Lights













7) Power in at receptacle – Switch controls the two lights

















8) Power in at Switch – Switch controls light and receptacle













9) One switch controls light and other switch controls receptacle

















10) Power in at switch -Three way switches control light













**Teacher Check Point #2 Teacher Signature\_\_\_\_\_\_**

- Once you have completed this activity, please hand it in for **correction.**

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| --- | --- |
| **ELECTRICAL A** | **ACTIVITY 08** |
| **Wiring A Plug End** |

**Student Name:\_\_\_\_\_\_\_\_\_\_\_\_ Term: 1 2 3 4 Mark: / %**

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| --- | --- |
| j0279226**Instructions:** | j0319756 **Materials and Equipment:** |
| Please follow the instructions bellow to attach a male plug onto a length of wire. | 24 to 36 inches of 14/2 cable* Male plug end

Cable ripper* Wire Strippers
* Screw driver
 |

|  |  |
| --- | --- |
| elexcd13 | The male plug came apart by removing three screws near the prongs. |
| The back side of the plug has a clamping mechanism that prevents the wires from being pulled out of their connections. | elexcd14 |

|  |  |
| --- | --- |
| elexcd16 | I loosened the three screws and removed the back section. |

Note: This is a "heavy-duty" plug, which has the screw-on back section and uses better connection methods, which I'll explain later.

|  |  |
| --- | --- |
| First, I slid the back section over the cord end. | elexcd17 |
|  I removed about **1 inch** of jacket material from the end.  I always check to make sure that I have not cut the insulation on any wires. | elexcd19 |
|  elexcd21 | After the paper filling material was cut off I spread the wires out too see if they would reach their respective connection terminals. |
|  Using **wire strippers**, I stripped the insulation back about 1/2 inch on each of the three wires. | elexcd22 |
|  On cheaper replacement plugs the wire is wrapped ***around*** a screw, but this heavy duty plug uses a clamping device to hold the bare wire. Much better and worth the extra money. | elexcd24 |

|  |  |
| --- | --- |
| elexcd25 | I tightened each screw firmly. Then I tugged on each wire to test the connection. |
|  There is a standard practice here, just like on receptacles (outlets):* **White** wire goes on the **silver** terminal.
* **Black** wire goes on the **gold** terminal.
* **Green** (or bare **ground**) wire goes on the **green** terminal.

Failure to follow this practice would be utterly stupid and possibly harmful.  | elexcd26 |

|  |  |
| --- | --- |
| elexcd27 | The back section has a notch next to one (and only one) of the screw holes. This forces the installer to align the back section properly. |
|  Similarly, there is a tab behind one of the screws. | elexcd29 |

 **Teacher Check Point #1 Teacher Signature\_\_\_\_\_**

- Before putting the two parts of the plug together you must have your instructor check your **progress.**

|  |  |
| --- | --- |
| elexcd30 | I tightened each screw until it was snug, and then tightened each one again. |

|  |  |
| --- | --- |
| For the final step, I tightened the clamp screws on the back section. The cable has to be firmly held, not crushed ! | elexcd31 |
|  elexcd32 | The finished product after being tested. |

**Teacher Check Point #2 Teacher Signature\_\_\_\_\_\_**

- Once you have completed this activity, please have your instructor check your **progress.**

|  |  |
| --- | --- |
| **ELECTRICAL A** | **ACTIVITY 09** |
| **Wiring Circuits** |

# Student Name:\_\_\_\_\_\_\_\_\_\_\_\_ Term: 1 2 3 4 Mark: / %

|  |  |
| --- | --- |
| j0279226**Instructions:** | j0319756 **Materials and Equipment:** |
| Using your wiring diagrams from **Activity 07**, complete each wiring diagrams on your electrical boards. | Various lengths of 14/2 cable* Cord with end from Activity 08

Cable ripper* Wire Strippers
* Screw driver

Electrical board with boxes* Receptacles, switches, lights
 |

**Teacher Check Point**

After completing each circuit, have your teacher check your wiring and test the circuit. **DO NOT TEST THE CIRCUITS ON YOUR OWN.**

1. Circuit – Single Receptacle **Teacher Signature\_\_\_\_\_\_\_\_\_\_\_**

**Marking Rubric: (-1 for each mistake)**

Wires are connected correctly as per wiring diagram /4

Wires are wrapped the correct direction around the screws /1

Wires are striped to the correct length with no nicks /2

Wires are correctly installed in the boxes /2

Circuit works when tested /1

1. Circuit – Double Receptacle **Teacher Signature\_\_\_\_\_\_\_\_\_\_\_**

**Marking Rubric: (-1 for each mistake)**

Wires are connected correctly as per wiring diagram /4

Wires are wrapped the correct direction around the screws /1

Wires are striped to the correct length with no nicks /2

Wires are correctly installed in the boxes /2

Circuit works when tested /1

1. Power in at Switch – Switch controlling receptacle **Teacher Signature\_\_\_\_\_\_\_\_\_**

**Marking Rubric: (-1 for each mistake)**

Wires are connected correctly as per wiring diagram /4

Wires are wrapped the correct direction around the screws /1

Wires are striped to the correct length with no nicks /2

Wires are correctly installed in the boxes /2

Circuit works when tested /1

1. Power in at Switch – Switch controls light **Teacher Signature\_\_\_**\_\_\_\_\_\_

**Marking Rubric: (-1 for each mistake)**

Wires are connected correctly as per wiring diagram /4

Wires are wrapped the correct direction around the screws /1

Wires are striped to the correct length with no nicks /2

Wires are correctly installed in the boxes /2

#  Circuit works when tested /1

1. Power in at Light – Switch controls light **Teacher Signature\_\_\_** \_\_\_\_\_\_

**Marking Rubric: (-1 for each mistake)**

Wires are connected correctly as per wiring diagram /4

Wires are wrapped the correct direction around the screws /1

Wires are striped to the correct length with no nicks /2

Wires are correctly installed in the boxes /2

#  Circuit works when tested /1

1. Power in at Light – Switch controls both Lights **Teacher Signature\_\_\_**\_\_\_\_\_\_

**Marking Rubric: (-1 for each mistake)**

Wires are connected correctly as per wiring diagram /4

Wires are wrapped the correct direction around the screws /1

Wires are striped to the correct length with no nicks /2

Wires are correctly installed in the boxes /2

#  Circuit works when tested /1

1. Power in at Receptacle – Switch controls the two lights **Teacher Signature\_\_\_**\_\_

**Marking Rubric: (-1 for each mistake)**

Wires are connected correctly as per wiring diagram /4

Wires are wrapped the correct direction around the screws /1

Wires are striped to the correct length with no nicks /2

Wires are correctly installed in the boxes /2

#  Circuit works when tested /1

1. Power in at Switch – Switch controls light and receptacle **Teacher Signature\_\_\_**\_

**Marking Rubric: (-1 for each mistake)**

Wires are connected correctly as per wiring diagram /4

Wires are wrapped the correct direction around the screws /1

Wires are striped to the correct length with no nicks /2

Wires are correctly installed in the boxes /2

#  Circuit works when tested /1

1. One switch controls light and other switch controls receptacle **Teacher Signature**

**Marking Rubric: (-1 for each mistake)**

Wires are connected correctly as per wiring diagram /4

Wires are wrapped the correct direction around the screws /1

Wires are striped to the correct length with no nicks /2

Wires are correctly installed in the boxes /2

#  Circuit works when tested /1

1. Power in at switch -Three way switches control light **Teacher Signature\_\_\_**\_\_\_

**Marking Rubric: (-1 for each mistake)**

Wires are connected correctly as per wiring diagram /4

Wires are wrapped the correct direction around the screws /1

Wires are striped to the correct length with no nicks /2

Wires are correctly installed in the boxes /2

Circuit works when tested /1

|  |  |
| --- | --- |
| **ELECTRICAL A** | **ACTIVITY 10** |
| **Major Project** |

# Student Name:\_\_\_\_\_\_\_\_\_\_\_\_ Term: 1 2 3 4 Mark: / 20 %

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| j0279226**Instructions:** | j0319756 **Materials:** |
| For this Activity, you will be designing a wiring diagram for a bedroom of a house. You will need to include 3 receptacles, one switch and one light. The switch will only control the light. Please draw the wiring diagram and make sure to indicate the types of wires that will be needed for each run.  | Various lengths of 14/2 cable* Cord with end from Activity 08

Cable ripper* Wire Strippers
* Screw drivers

Wall Section * 4 Stud Boxes and 1 Octagon box
* 3Receptacles, 1 switch, 1 light
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**Teacher Check Point #1** **Teacher Signature\_\_\_\_\_\_**

After completing the circuit diagram, have your teacher **correct** it before moving on.



**Instructions:**

Please answer the following questions. You will find the answers in the Electrical Information booklet.

1) How high of the floor is a receptacle?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# 2) How high of the floor is a light switch?\_\_\_\_\_\_\_\_\_

**Teacher Check Point #2** **Teacher Signature\_\_\_\_\_\_**

At this point you will need to have some **Teacher Help** before you can move on and wire the circuit onto the wall. You will need to find out the following information from your teacher.

1) How to mount electrical boxes.

2) The correct location to drill holes for running wire.

3) The correct direction to run wire.

4) How to staple wires into place.

5) The correct sequence for wiring the wall.

**Marking Rubric: (-1 for each mistake)**

Wiring diagram completed correctly /1

Boxes are located at the correct height and mounted properly /2

Wires are run correctly through wall (Placement and Neatness) /3

Wires are stapled in the correct locations /3

Wires are connected correctly as per wiring diagram /4

Wires are wrapped the correct direction around the screws /2

Wires are striped to the correct length with no nicks /2

Wires are correctly installed in the boxes /2

Circuit works when tested /1

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| **ELECTRICAL A** | **ACTIVITY 11** |
| **CONS H – Package Exam** |

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| j0279226**Instructions:** |
| This exam will be given at the end of the 20 periods. It will consist of a both a practical exercise where you will need to demonstrate skills you have developed and a written portion based on what you have learned over the last 20 periods. |