

# Electronics 9/10

## BREADBOARDING ANSWER BOOKLET

\_\_\_\_\_

Name

### Directions:

Go to the GP Vanier Electronics 9/10 Website (<http://teched.gpvanier.ca/elec9.php>) and complete each Beginning Breadboard lab one at a time. Once the breadboarded circuit is working, answer the questions below that pertain to that lab, then take **BOTH** the breadboard **AND** the booklet to the teacher and have it marked!

### Marking:

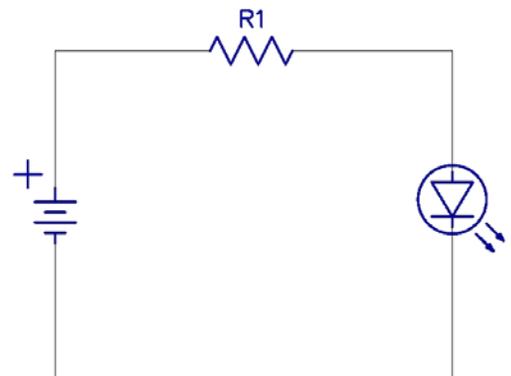
Marks are taken off for;

Messy breadboarding (wires not flat and straight)
Incorrect parts placement (wrong order)
Parts and/or wires not horizontal or vertical
Incorrect answers

### Lab #1 - How a resistor works

Answers:

- The dimmer the LED, the \_\_\_\_\_  
the value of the resistor.
- The brighter the LED, the \_\_\_\_\_  
the value of the resistor.
- The lower the voltage, the \_\_\_\_\_  
the LED.
- The brighter the LED, the \_\_\_\_\_ the current flow.

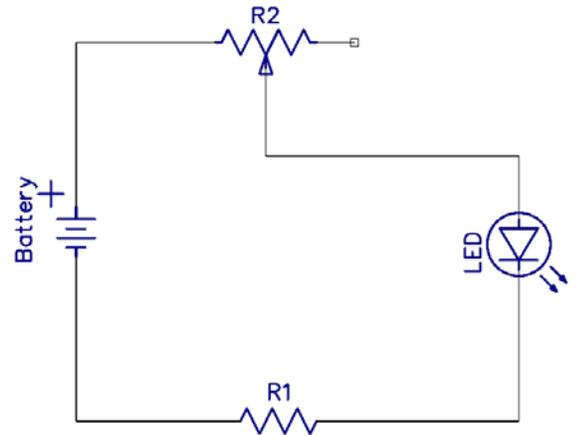


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## Lab #2 - Potentiometer

Answers

- A potentiometer is a variable \_\_\_\_\_.
- By adjusting the potentiometer from one end to another, the brightness of the LED \_\_\_\_\_.
- When the potentiometer is at 0 ohms, the LED is \_\_\_\_\_.
- When the potentiometer is at 100K ohms, the LED is \_\_\_\_\_.
- As you adjust the potentiometer from 0 ohms to 100K ohms, the \_\_\_\_\_ changes causing the LED to get \_\_\_\_\_.

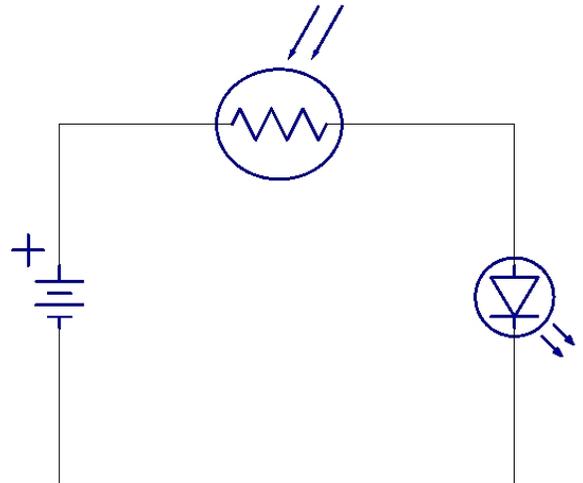


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## Lab #3 - Photocell

Answers

- When you put your hand over the Photocell the LED gets \_\_\_\_\_.
- The more light that strikes the Photocell, the \_\_\_\_\_ the LED gets.
- The less light that strikes the Photocell, the \_\_\_\_\_ the LED gets.
- The less light that strikes the Photocell means the resistance of the Photocell \_\_\_\_\_ which causes the LED to get \_\_\_\_\_.
- The more light that strikes the Photocell means that the resistance in the circuit \_\_\_\_\_ which causes the LED to get \_\_\_\_\_.

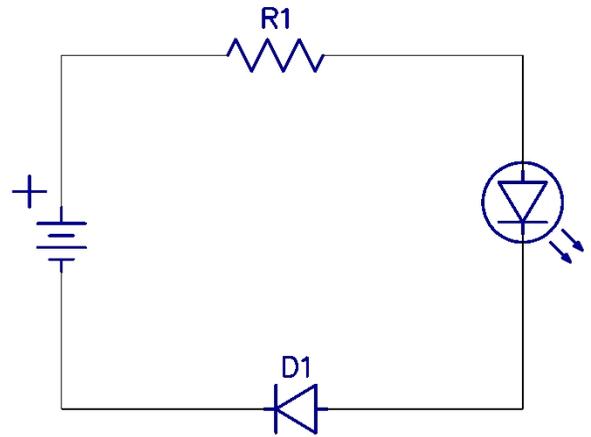


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## Lab #4 - Diode

Answers

- A diode allows current to flow through it in only \_\_\_\_\_ direction.
- A diode has two ends, the \_\_\_\_\_ and the \_\_\_\_\_.
- When the \_\_\_\_\_ is connected to negative, the LED will light up.
- If the \_\_\_\_\_ is connected to negative, the LED will NOT light up.

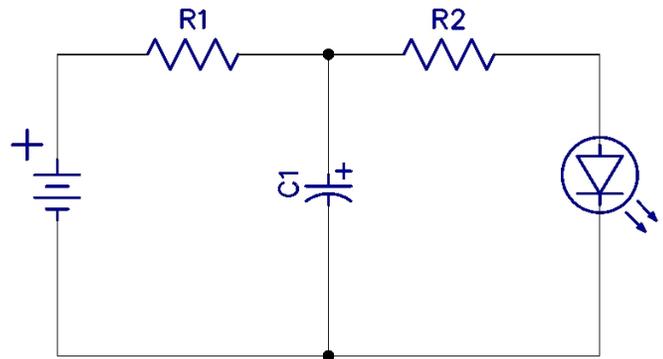


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## Lab #5 - Capacitors

Answers

- A capacitor stores \_\_\_\_\_.
- Once you disconnect the power to the circuit, the LED will \_\_\_\_\_ for a while because of the stored electrical energy in the capacitor.
- The greater the value of the capacitor, the \_\_\_\_\_ the LED will stay on.
- When current flows through the circuit, what is happening to the capacitor?

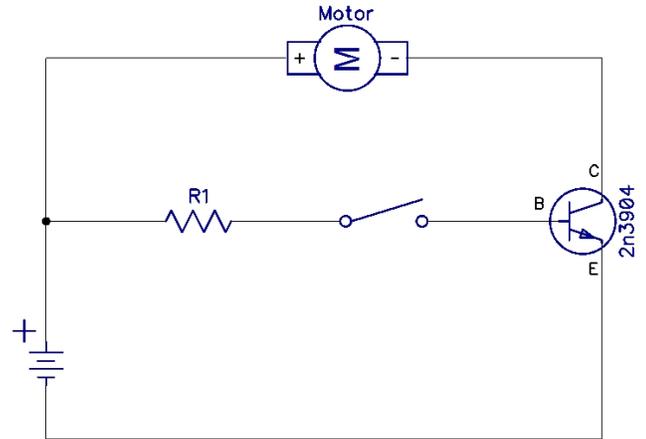


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## Lab #6 - Transistors

Answers

- A transistor has three legs, the \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
- A transistor works as a \_\_\_\_\_ amplifier.
- The transistor uses a small \_\_\_\_\_ current to control a larger \_\_\_\_\_ current.
- The larger the value of R1, the \_\_\_\_\_ the speed of the motor

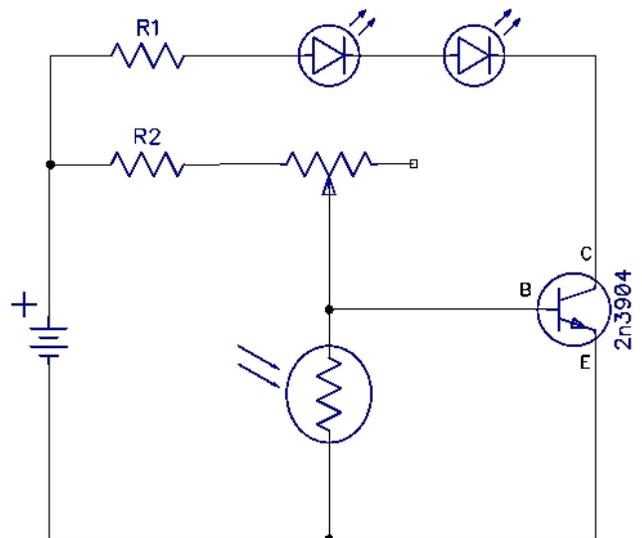


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## Lab #7 – Automatic Nightlight

Answers

- When the light hits the photocell the LED's are \_\_\_\_\_.
- The less light on the photocell, the \_\_\_\_\_ the LED's are.
- The LED's are connected to the \_\_\_\_\_ of the transistor.
- The potentiometer is used to adjust the \_\_\_\_\_ of the device.

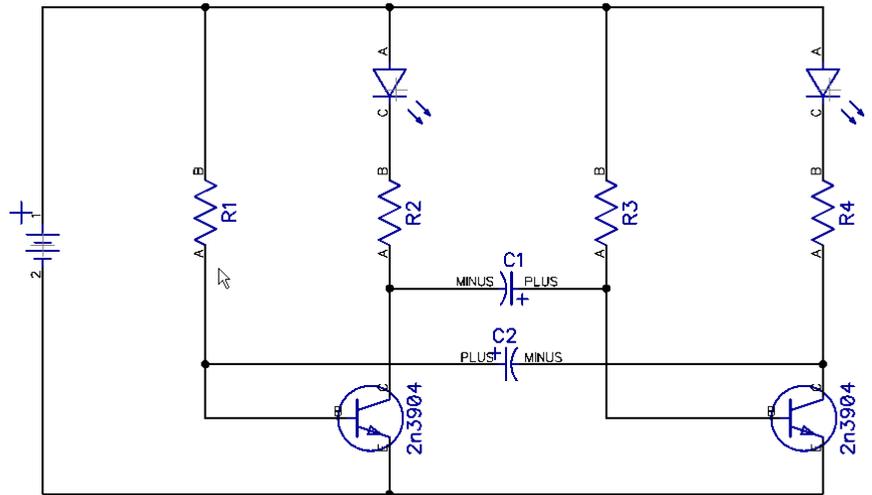


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## Lab #8 – Flashing Lights

Answers

- When a 100uf capacitor is substituted for the 10uf capacitor, the frequency the LEDs flash will \_\_\_\_\_.
- If you substitute the 470 resistors with 6.8K resistors the brightness of the LEDs would \_\_\_\_\_.
- The cathodes of the LEDs are connected to the \_\_\_\_\_.
- The negative leads of the capacitors are connected to the \_\_\_\_\_ and the \_\_\_\_\_.

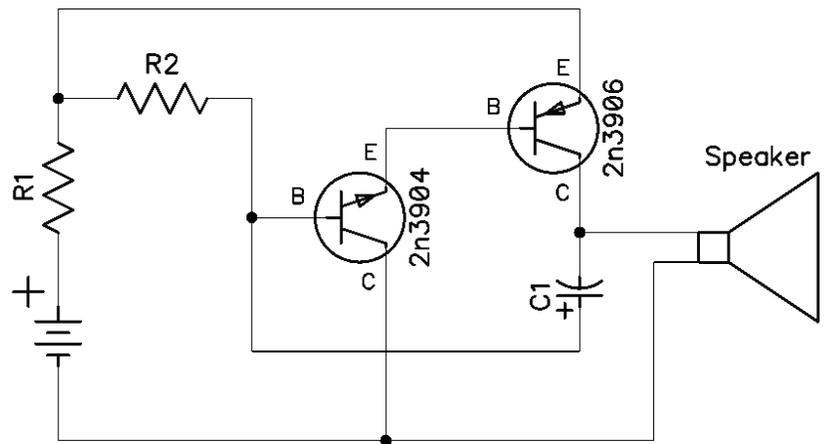


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## Lab #9 – Two Transistor Oscillator

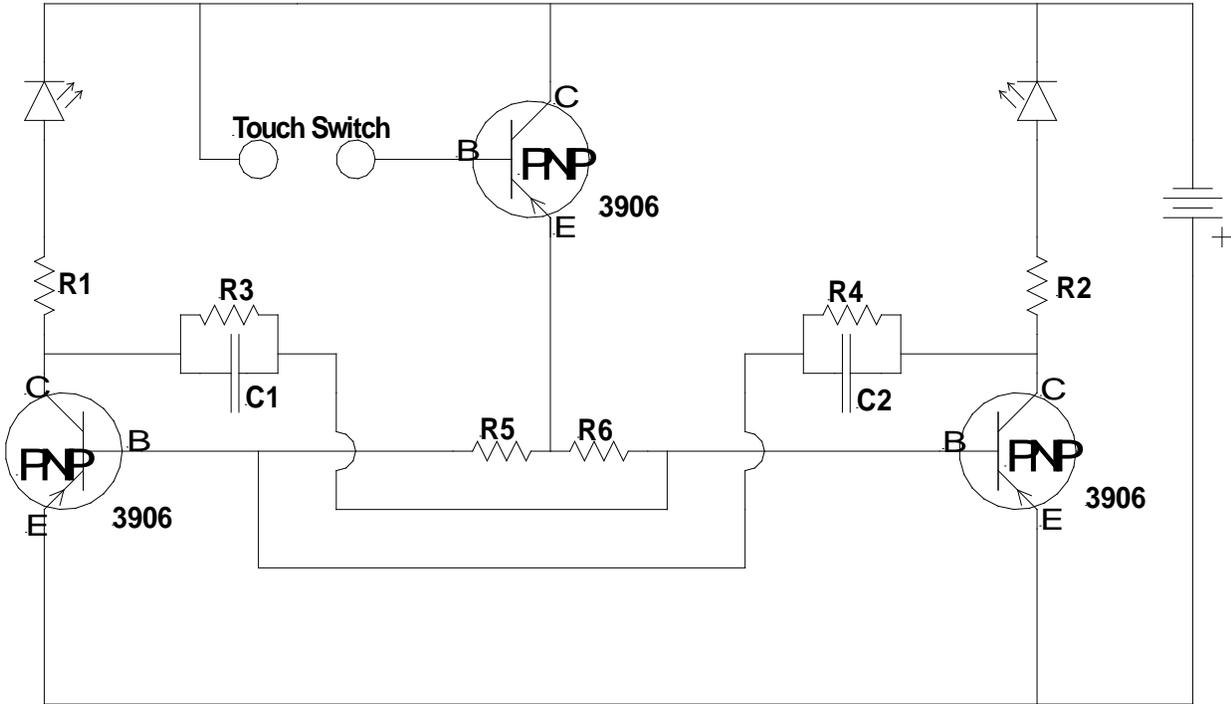
Answers

- When the circuit is working properly, the speaker emits a \_\_\_\_\_ sound.
- When you replace the 10uf capacitor with a 100uf, the frequency of the ticking \_\_\_\_\_.
- When you substitute the speaker for an LED, the LED will \_\_\_\_\_.
- The emitter of the 3904 NPN transistor is connected to the \_\_\_\_\_ of the 3906 PNP transistor.



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# BONUS Lab – Two LED Decision Maker



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