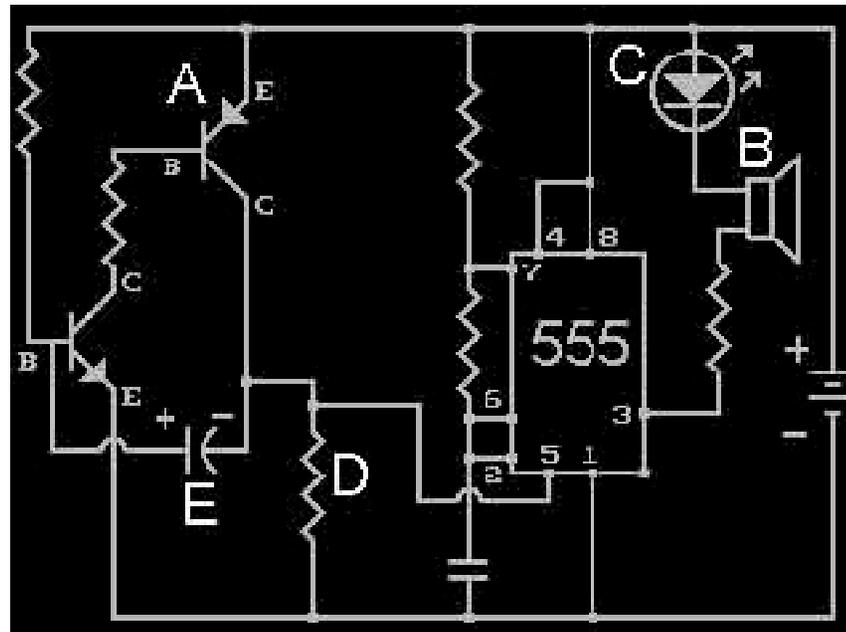




Electronics Review

INSTRUCTIONS: The following screens contain a series of questions and answers you should know about this subject. Read the stem of the question, review your notes, and then write down the answer the question. The correct answer can be found on the next screen. Review and compare your answer with mine. If they match... Great! If they don't... You have some studying to do before you take the module exam.

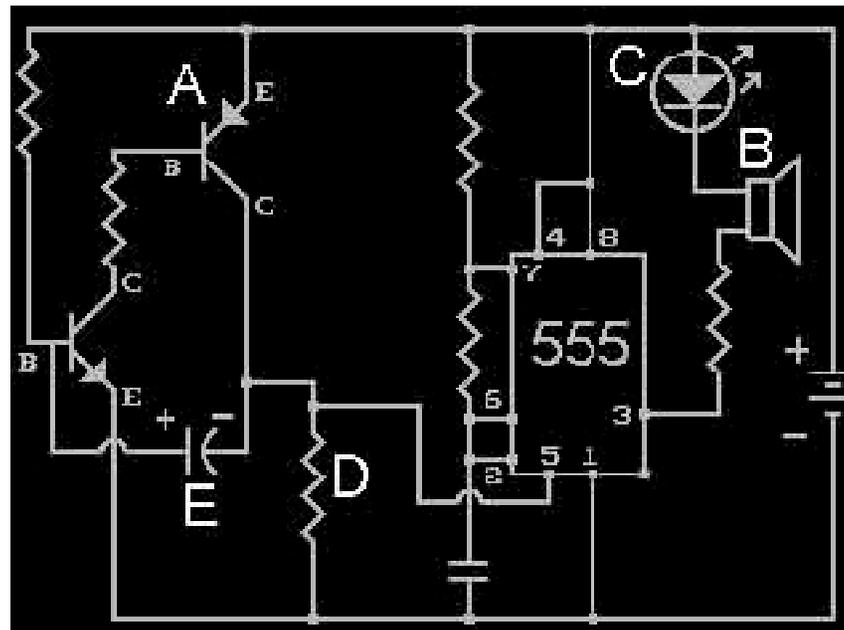
Which of the devices shown in the schematic below is called a resistor?



Resistors are two-terminal electrical devices. They oppose the flow of electrical current through a circuit. Many schematic symbols make a great deal of sense when you think about it. The zig-zag lines in this symbol would oppose current as it tries to go around each bend in the symbol. Which device has only two terminals and is made of zig-zag lines?



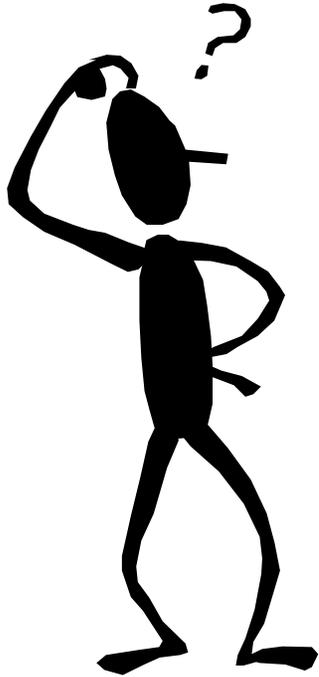
Which schematic symbol in the circuit below is for a Light Emitting Diode (LED)?



Diodes are two-terminal electrical devices that allow current to flow one way through them. It's like a one-way valve for electrons. As electrons move through the LED it gives off light. Which symbol above has two terminals and includes arrows pointing out to simulate the emission of light?

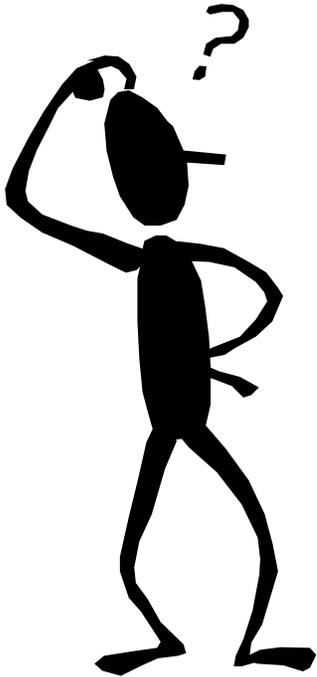


What component part of an atom has the largest mass and is positively charged? It stays within the bounds of the nucleus and holds the negatively charged particles in orbit using electrostatic charges.



This is a sixth grade general science question. I hope you got it because it's very important in determining how electricity works. Electrons are negatively charged that orbit the nucleus of an atom. They're held in orbit by the positive charge of the proton in the nucleus (electrostatic charge). Although the electron can be easily pulled away from the atom, the proton cannot. Well, there is the nuclear bomb. Pulling the protons from the nucleus of an atom is what makes the big noise. Splitting atoms is not a completely safe thing to do in this class so remember... Protons don't leave the atom. However, electrons do.

Which of these elements is the best conductor of electricity?



All conductors of electricity have only one electron in the outermost orbit around the atom. The outermost orbit is called the valence shell or valence for short. Silver, Gold, Copper, and Aluminum all have a valence of one but each has a different level of conductivity. The next determining factor is the distance the valence orbit is away from the nucleus. The further the valence is away from the nucleus the easier it is to knock electrons from them loose. Loose electrons is current flow by the way.

The more electrons an atom has... the further away the valence shell has to be. So... Aluminum has 13 electrons, Gold has 79, Copper has 29, and Silver has 47. The winner is Gold! Gold is the best conductor by 32 electrons!

How do electrons flow in a closed circuit?



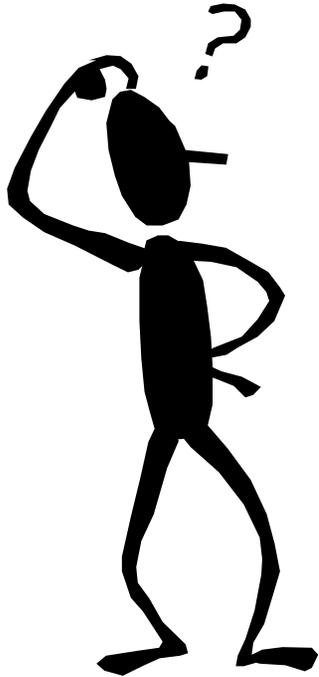
Holy Ohm's Law!!! I hope you didn't answer, "Electrons don't flow, protons do." We just went over the structure of an atom. It's simple - Electrons have a negative charge and opposite charges attract. Electrons are



mobile because their teeny-tiny and they're held loosely to atoms. Add the slightest bit of energy and they'll break free of their orbits and current will flow. Here's the kicker... Since electrons are negatively charged... and they do all the moving... and they gotta move to an opposite charge (that's positive) - Wouldn't it be reasonable to say that if they're going somewhere they would

go from negative to positive?

The resistance of a fixed resistor with a color code of Red, Red, Orange is _____ Ohms.



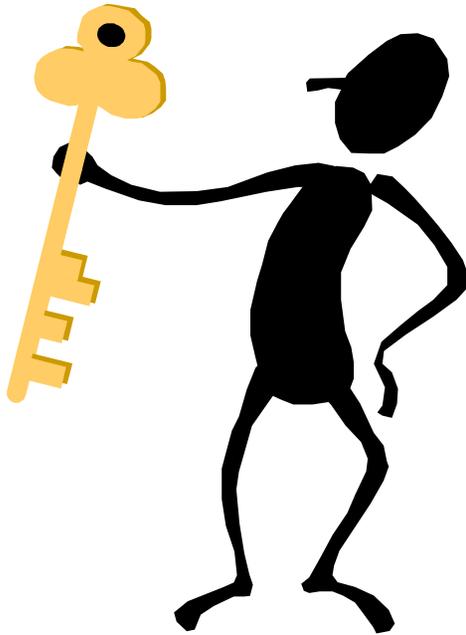
Color codes are used to indicate the ohmic value of resistors... That's how much opposition to current flow they cause. Resistor manufactures don't print numbers on the components because they'd be too hard to see. Especially if the numbers are underneath the resistor when it's soldered to a circuit board. The long and short of it is... a Red, Red, Orange resistor is 22,000 ohms.



I am a flat disc-like component with two leads. My function is to temporarily store voltage. What am I?



Capacitors block DC voltage by storing it like a battery. DC cannot pass through a capacitor (AC can without a problem). A capacitor is made by making an insulator sandwich. That's two conductors separated by an insulator called the dielectric. The dielectric can be paper, tantalum, Mylar, or ceramic because paper, tantalum, Mylar, and ceramic are all insulators - That is they don't conduct electricity. The disc capacitor is sometimes called a ceramic disc capacitor because it uses ceramic as the dielectric.



Which of the devices listed below is used from converting electrical oscillations into mechanical vibrations?



OK... You're at a "Skinny Puppy" concert right up front. Surrounding the stage are towers of speakers thumping and pounding so hard you can see them shaking in the stage rigging. Your chest is vibrating down to your spine and your head is about to explode. Just before your eardrums split you realize that the speakers are converting electrical oscillations from the amplifiers into mechanical vibrations that were sent the air to your ears. Suddenly... all you hear is a high pitched whine.



A diode is a semiconductor device that permits current to flow through it in only one direction. The cathode of the diode is marked with a color band. Current in a diode flows from _____ to anode.



There are two parts of an diode... The cathode and the anode. In order for a diode to be forward biased (conduct electricity) it has to have a positive on the



anode terminal and negative on the cathode terminal. If a diode is reversed biased (negative on the anode and positive on the cathode) the diode will not conduct electricity unless there's allot of it. Unfortunately... Doing that will destroy the diode.

On a transistor, which lead on the schematic symbol is marked with an arrow?



The schematic symbol for the transistor can be figured out if you look at it closely. First of all... It's a three-terminal device. The three connections are called the Emitter, Base, and Collector. The Emitter emits the majority carrier (holes or electrons) and the Collector collects them. The



only purpose of the Base connection is to control the flow of the majority carrier from the Emitter to the Collector. Since the arrow in most schematic symbols indicates emission... Which lead has the arrow on it? Emitter, Base, or Collector