The purpose of a transformer is to convert one AC voltage to another AC voltage. (It does NOT change from AC to DC or DC to AC.) If we assume that our transformer is for house service in the U.S., the standard 120 volts comes in on the primary winding. Running down the middle of that winding (as well as around the outside) is an iron core. The AC current in the primary winding creates an alternating magnetic field in the iron just as it would in an electromagnet. The other winding, known as the secondary winding wraps around the same iron core. In the secondary winding the magnetic field in the core creates current. The voltage in the secondary is controlled by the ratio of the number of turns in the two windings. So if the primary and secondary windings have the same number of turns, the primary and secondary voltage will be the same, creating an isolation transformer. If the secondary winding has half as many turns as the primary then the voltage in the secondary will be half that of the voltage in the primary. Generally, a step down transformer (going from a hig voltage to a lower voltage) uses very fine wire while the secondary uses much thicker wire. Doing the math, if we need to drop the voltage from our normal house voltage down to 3 volts, there needs to be 40 times more turns in the primary than in the secondary.