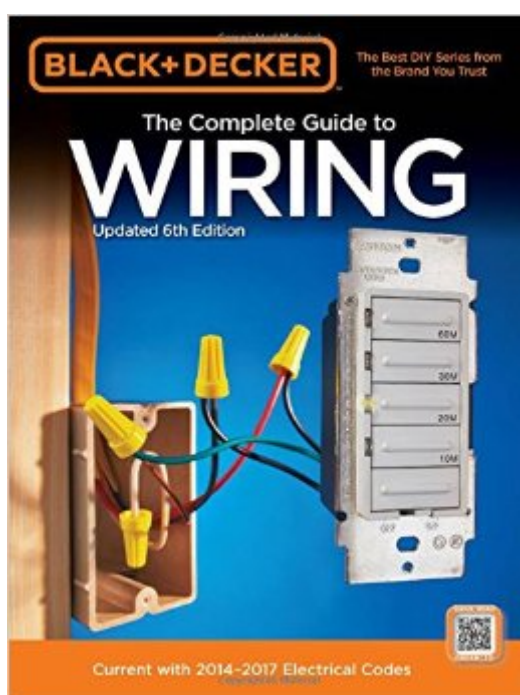


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# Black & Decker The Complete Guide To Wiring, Updated 6th Edition: Current With 2014-2017 Electrical Codes (Black & Decker Complete Guide)



## Synopsis

Vanity lights on the sides of the mirror provide good lighting. Vanity Lights Many bathrooms have a single fixture positioned above the vanity, but a light source in this position casts shadows on the face and makes grooming more difficult. Light fixtures on either side of the mirror is a better arrangement. For a remodel, mark the mirror location, run cable, and position boxes before drywall installation. You can also retrofit by installing new boxes and drawing power from the existing fixture. The light sources should be at eye level; 66" is typical. The size of your mirror and its location on the wall may affect how far apart you can place the sconces, but 36" to 40" apart is a good guideline.

### How to Replace Vanity Lights in a Finished Bathroom

#### Tools & Materials

Drywall saw, drill, combination tool, circuit tester, screwdrivers, hammer, electrical boxes and braces, vanity light fixtures, NM cable, wire connectors, eye protection

**Step 1** Turn off the power at the service panel. Remove the old fixture from the wall, and test to make sure that the power is off. Then remove a strip of drywall from around the old fixture to the first studs beyond the approximate location of the new fixtures. Make the opening large enough that you have room to route cable from the existing fixture to the boxes.

**Step 2** Mark the location for the fixtures, and install new boxes. Install the boxes about 66" above the floor and 18" to 20" from the centerline of the mirror (the mounting base of some fixtures is above or below the bulb, so adjust the height of the bracing accordingly). If the correct location is on or next to a stud, you can attach the box directly to the stud; otherwise you'll need to install blocking or use boxes with adjustable braces (shown).

**Step 3** Open the side knockouts on the electrical box above the vanity. Then drill 5/8" holes in the centers of any studs between the old fixture and the new ones. Run two NM cables from the new boxes for the fixtures to the box above the vanity. Protect the cable with metal protector plates. Secure the cables with cable clamps, leaving 11" of extra cable for making the connection to the new fixtures. Remove sheathing, and strip insulation from the ends of the wires.

**Step 4** Connect the white wires from the new cables to the white wire from the old cable, and connect the black wires from the new cables to the black wire from the old cable. Connect the ground wires. Cover all open boxes, and then replace the drywall, leaving openings for the fixture and the old box. (Cover the old box with a solid junction box cover plate.)

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Install the fixture mounting braces on the boxes. Attach the fixtures by connecting the black circuit wire to the black fixture wire and connecting the white circuit wire to the white fixture wire. Connect the ground wires. Position each fixture over each box, and attach with the mounting screws. Restore power, and test the circuit.

## Book Information

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## Customer Reviews

Five stars for the detailed photos and concise text which provide foolproof guidance. But this book is typical of electrical DIY books in that it provides a confusing version of the underlying science, IMHO. So I will use my review to provide my own. Hopefully some will find it useful. It was written for the previous edition but I'm guessing applies to this one as well. There are three wires entering the home. They originate from the top, middle and bottom of a coil inside the utility pole transformer. This coil is immersed in a 60 Hertz oscillating electromagnetic field created by a surrounding coil attached to the power company wires. The voltage between the top and middle wires is 120 V; that between the middle and bottom wires is also 120 V so connecting top to bottom gives their sum, 240 V. The middle wire is called "neutral" and the top and bottom wires "hot". "Neutral" refers to the fact when two loads from different hot wires are in simultaneous use, current (thus heating) in the neutral wire is minimized, thus neutralized, as the sine waves from each hot wire cancel each other out. To protect against dangerously high voltages entering the home, such as from nearby lightning strikes, the neutral wire is connected to the earth via the home plumbing or a rod driven into the soil. This provides protection by creating a parallel circuit which includes only 1) the earth and sky, not 2) the earth, your household wiring, and the sky. Thus the neutral wire is "grounded". (Since the three wires are connected inside the transformer, in principle any of them could have been chosen for grounding. Neutral was chosen because it limits "ground faults" to 120 V, not 240 V. See below.

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