Name _____ Date _____ Period ____

Engineering Technology Department

How to read a Resistor

You can figure out the resistance of a resistor from the pattern of colored bands.

1. On most resistors, you'll see there are three rainbow-colored bands, then a space, then a fourth band colored brown, red, gold, or silver.

2. Turn the resistor so the three rainbow bands are on the left.

3. The first two of the rainbow bands tell you the first two digits of the resistance. Suppose you have a resistor like the one shown here, with colored bands that are **brown, black, and red and a fourth golden band.** You can see from the color chart below that brown means 1 and black means 0, so the resistance is going to start with "10". The third band is a decimal multiplier: it tells you how many powers of ten to multiply the first two numbers by (or how many zeros to add on the end, if you prefer to think of it that way). Red means 2, so we multiply the 10 we've got already by 10 × 10 = 100 and get 1000. Our resistor is 1000 ohms.

4. The final band is called the tolerance and it tells you how accurate the resistance value you've just figured

out is likely to be. If you have a final band colored gold, it means the resistance is accurate to within plus or minus 5 percent. So while the officially stated resistance is 1000 ohms, in practice, the real resistance is likely to be anywhere between 950 and 1050 ohms.

If there are five bands instead of four, the first three bands give the value of the resistance, the fourth band is the decimal multiplier, and the final band is the tolerance. Five-band resistors quoted with three digits and a multiplier, like this, are necessarily more accurate than four-band resistors, so they have a lower tolerance value.