

## Resistor Color Code Worksheet

Most of the resistors we will be working with in this course look like this:



There are four stripes or BANDS of various colors on these resistors. For the resistors we will be using, the fourth band will always be gold.

The different colors represent different numbers. The first band, on the end opposite the gold, is the tens digit for the resistance. The second band is the ones digit. The third band, often called the multiplier band, is the power of ten that the first two digits are multiplied by to give the manufacturer's value for the resistance of the resistor. The fourth band is the tolerance band. It gives the manufacturer's range of tolerance for the resistance. Gold represents a tolerance within 5% of the labeled resistance. A silver tolerance band represents a 10% tolerance range. No fourth band indicates that the tolerance is 20% of the resistor value.

Band Color	Number
black	0
brown	1
red	2
orange	3
yellow	4
green	5
blue	6
violet	7
gray	8
white	9

Occasionally, you will see a resistor with gold or silver as the third band. Gold in the third band represents a power of  $10^{-1}$ , so that the multiplier is  $10^{-1}$  or 0.1.

(When you are building circuits later and have several different resistors, I suggest that you sort them by the third band first. It is a quick way to get the idea of the resistance of the resistor.)

Example:



First, we will write down the colors:

\_\_\_\_\_

Next, we fill in the numbers that correspond to the colors.

\_\_\_\_\_ x 10<sup>\_\_\_\_\_</sup> +/- \_\_\_\_\_ %

Now multiply the value by the tolerance percentage and round this so that it has one significant digit.

Finally, write down your final value with uncertainty.

We can also find the range of values between which we expect to find the resistance of the resistor. It is not necessary to do this in general, but you will need to do this in your Ohm's Law lab.

Determine the resistance of each of the following resistors, including the uncertainty.

1.



Colors:

\_\_\_\_\_

\_\_\_\_\_ x 10<sup>—</sup> +/- \_\_\_\_\_

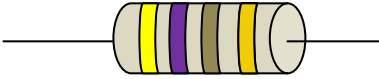
2.



3.



4.



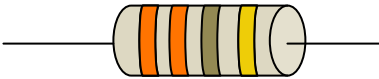
5.



6.



7.



8.

