Lab Work: Resistor Color Guide

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How to read the value of a resistor by reading the color bands?

- Small resistors are labeled with a color code to show their value.

Step 1:

At first identify the color bands in each resistor.

- To identify each color in a resistor you must first memorize the color codes.
- Some resistors have 4 band color codes and some resistors have 5 band color codes and some 6.
- Memorize them for the mean time, because you are about to calculate the color codes on step 3.

- **Ba**d **Bo**ys **R**avage **O**ur **Y**oung **G**irls **B**ehind **V**ictory **G**arden **W**alls
- **B B ROY** of **G**reat **B**ritain had a **V**ery **G**ood **W**ife wearing with **G**old and **S**ilver **N**ecklace.
- Bad Beer Rots Our Young Guts But Vodka Goes Well

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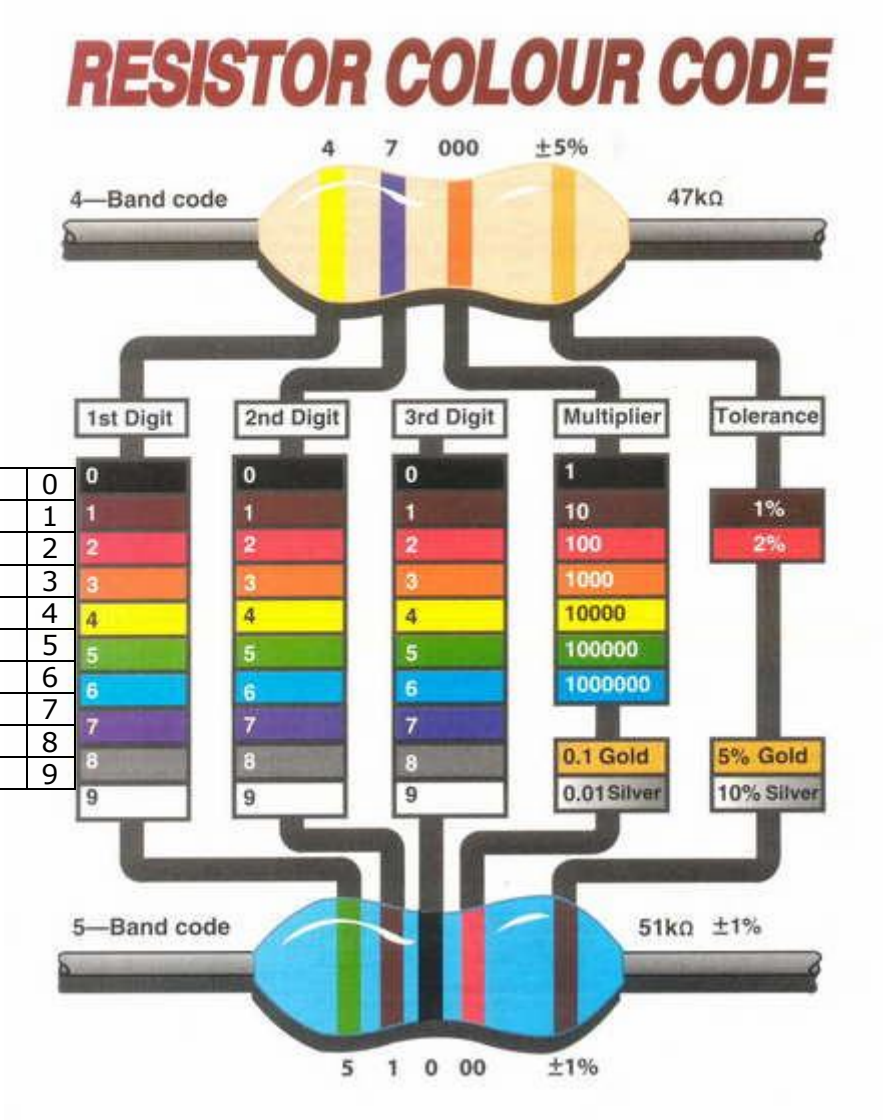

B= Black	0
B= Brown	1
R= Red	2
O=Orange	3
Y= Yellow	4
G= Green	5
B= Blue	6
V= Violet	7
G= Gray	8
W= White	9

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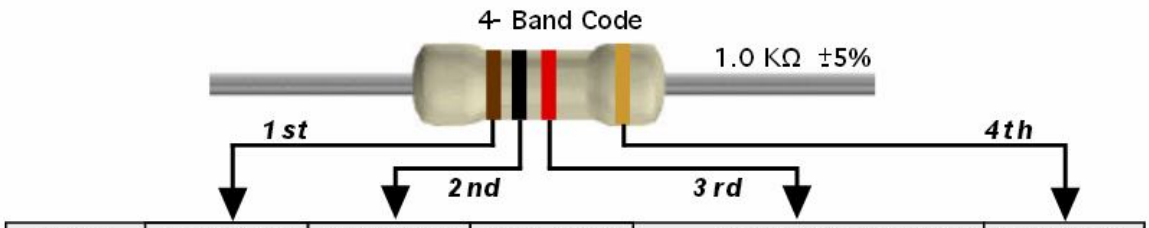
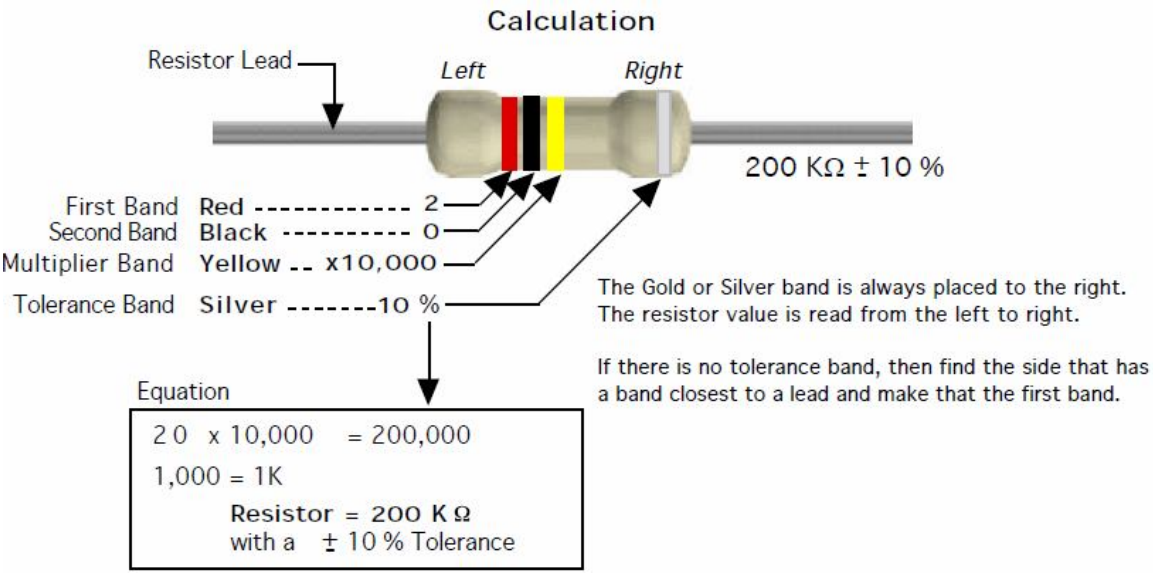
Step 2:

Read the color codes by starting from the first band to the last



Color	1st Band	2nd Band	3rd Band	Decimal Multiplier	Tolerance
Black	0	0	0	1	1	
Brown	1	1	1	10	10	± 1 %
Red	2	2	2	100	100	± 2 %
Orange	3	3	3	1K	1,000	
Yellow	4	4	4	10K	10,000	
Green	5	5	5	100K	100,000	
Blue	6	6	6	1M	1,000,000	
Violet	7	7	7	10M	10,000,000	
Gray	8	8	8		100,000,000	
White	9	9	9		1,000,000,000	
Gold					0.1	± 5 %
Silver					0.01	± 10 %
None						± 20 %



Another Calculation:

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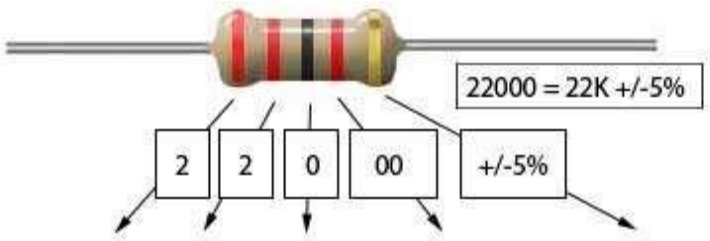
- To read the bands you start from the color not the color of the tolerance
- Now, here is a 4 band resistor. As you can see, the first band starts with a color not the color of the tolerance
- To calculate, you can see that the first band is Yellow, where the code is 4 (you can see the color codes on step 1).
- The second band is Violet where the code is 7
- Finally the third band is Green where the code is 5, (now read carefully, remember that every color that come before the color of the tolerance is the number of zeros with codes) so now we have green color where the code is 5, so there are five zeros (00000)
- So, the value of this resistor when you calculate will be: 4700000 ohms where the tolerance is 10% because the color is silver. You can see the color of every tolerances on step 1

Note:

- The Gold or Silver band is always placed to the right. The resistor value is read from the left to right.
- If there is no tolerance band, then find the side that has a band closest to a lead and make that the first band.

Example: Fifth brand of a resistor



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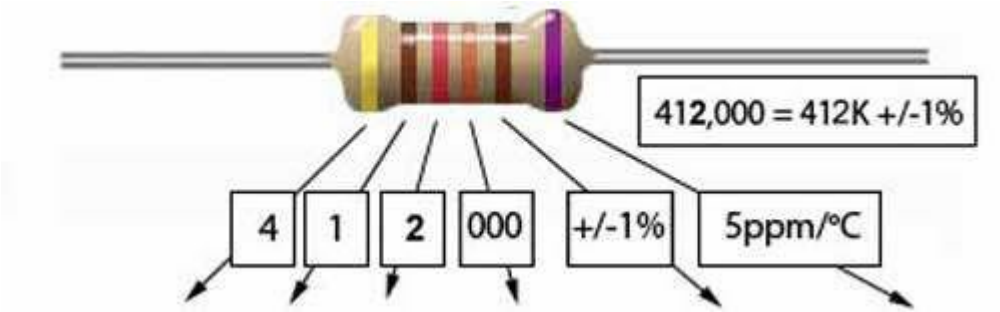
- Here is a fifth brand resistor
- Now lets start a bit manually

First color red = 2
Second, red= 2
Third, black = 0
Fourth one is red where the number of zeros of its value = two zeros (00)
Calculate total= 22000 ohms

Example: Sixth band of a resistor



- Here is a sixth band resistor (remember, do not include the tolerance)