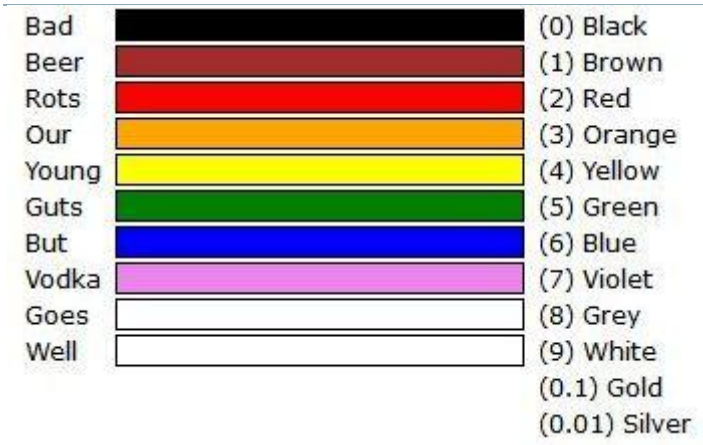
Beer and Vodka Can Help You Select a Terminating Resistor

Thanks to [Chipkin Automation Systems]

Try this mnemonic if you are trying to remember the resistor color codes:



Note: If you're missing a tolerance band that implies that the tolerance is 20%.

Which end do you start reading the color bands?

There are usually two ways:

1) If one of the bands at the end of the sequence is further apart then that is the tolerance band – start from the opposite end.
2) If all the bands are closer to one side of the resistor then start from that end – the tolerance band is the last one your read.

What should you carry with you to site? (for communication networks purposes)

For Terminations

Value	*Tolerance*
75 Ohms	5%
100 Ohms	5%
120 Ohms	5%

For Biasing

Value
10k Ohms
4k7 Ohms
2k4 Ohms
1k Ohms
560 Ohms
30 Ohms

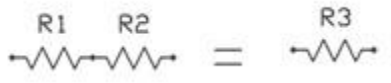
How to buy resistors

Buy a series – E12 or E24 (they come in packs and provide a comprehensive range of resistors).

How to make a resistance value even if you don't have the correct resistor in your toolbox.

By placing resistors in series or parallel you can create new values.

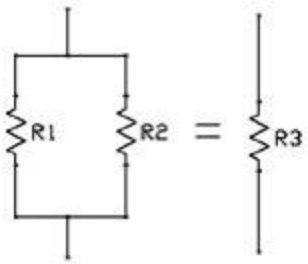
Series



$$R_3 = R_1 + R_2$$

- R1 and R2 connected in series could be replaced with one resistor of resistance R3.
- Using 2 or more resistors instead of one allows you to achieve custom resistances.
- Less resistors are required when used in series to achieve greater resistance than when used in parallel

Parallel



$$\frac{1}{R_3} = \frac{1}{R_1} + \frac{1}{R_2}$$

- R1 and R2 connected in parallel act as one resistor with a custom resistance of R3.
- This method allows you to get custom resistances using the formula.
- R3 will always be smaller than R1 and R2, so more resistors are required to achieve higher custom resistances.

Find Tollerance Band (Usually Separated) and work from other side