

Rules for combining resistors

$$R_{\text{total_in_series}} = R_1 + R_2 + R_3$$

In terms of the analogy, 100 feet of pipe offers 100 times the resistance of one foot.

$$R_{\text{total_in_parallel}} = 1 / (1/R_1 + 1/R_2 + 1/R_3)$$

In terms of the analogy, two pipes of equal bore size offer $\frac{1}{2}$ the resistance of one.

