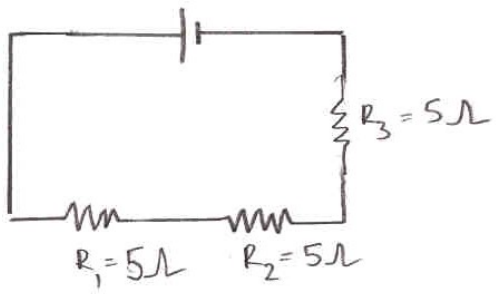
Resistance in Series and Parallel Worksheet

 $R_{equivalent} = R_1 + R_2 + R_3 =$	Resistors in **parallel** $\frac{1}{R_{equivalent}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} =$

1. Find the equivalent resistance of these <u>series</u> circuits (in Ω) :

a) $R_1 = 100\ \Omega$ $R_2 = 20\ \Omega$ $R_3 = 55\ \Omega$	b) $R_1 = 7500\ \Omega$ $R_2 = 1.5\ k\Omega$ $R_3 = 25\ \Omega$	c) $R_1 = 0.1\ \Omega$ $R_2 = 0.2\ \Omega$ $R_3 = 50\ m\Omega$

2. Find the equivalent resistance of these <u>parallel</u> circuits (in Ω) :

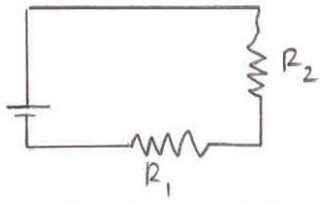
a) $R_1 = 100\ \Omega$ $R_2 = 20\ \Omega$ $R_3 = 55\ \Omega$	b) $R_1 = 7500\ \Omega$ $R_2 = 1.5\ k\Omega$ $R_3 = 25\ \Omega$	c) $R_1 = 0.1\ \Omega$ $R_2 = 0.2\ \Omega$ $R_3 = 50\ m\Omega$

3. The same two equations above work for any number of resistors in a circuit. If a fourth resistor is added ($R_4 = 85\ \Omega$), find the equivalent resistance in 1a) and 2a).

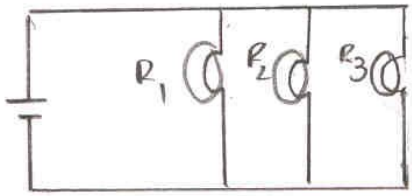
1a)	2a)

4. Calculate the equivalent resistance of the following circuits:

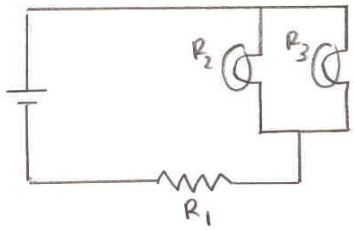
a) $R_1 = 5\ \Omega$ $R_2 = 10\ \Omega$



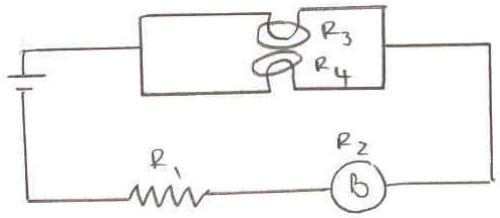
b) $R_1 = R_2 = R_3 = 1.5\ \Omega$



c) $R_1 = 12\ \Omega$ $R_2 = 5\ \Omega$ $R_3 = 8\ \Omega$



d) $R_1 = 1\ \Omega$ $R_2 = 2\ \Omega$ $R_3 = 3\ \Omega$ $R_4 = 4\ \Omega$



5. Three light bulbs of 4 Ω resistance each are in a parallel with a 9V power supply. Draw the circuit, and find the current.

6. Three identical buzzers are in parallel with a 110 V power supply. The circuit has a current of 1.5 A. Draw the circuit. Find the resistance of one buzzer.