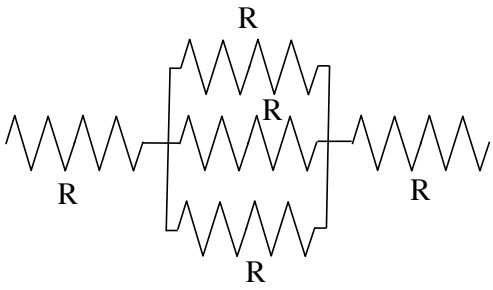
Problem 28.5

This circuit has two single resistors in series with a combination of three resistors in parallel, all of the same value. As resistors in series combinations add, we can write:



$$R_{eq} = R + R/3 + R$$
$$= \frac{7R}{3}$$

In the off-chance you don't see where the second term came from, if you have "n" resistors in parallel, the equivalent resistance will be:

$$\frac{1}{R_{eq}} = \frac{1}{R} + \frac{1}{R} + \frac{1}{R} + \ldots \text{ (n times)}$$
$$= n\left(\frac{1}{R}\right)$$
$$\Rightarrow \quad R_{eq} = \frac{R}{n}$$

THIS ONLY WORKS IF ALL THE RESISTORS ARE OF THE SAME SIZE. In any case, a parallel combination of 3 resistors each of resistance "R" will have an equivalent resistance of:

$$R_{eq,parallel} = \frac{R}{3}$$