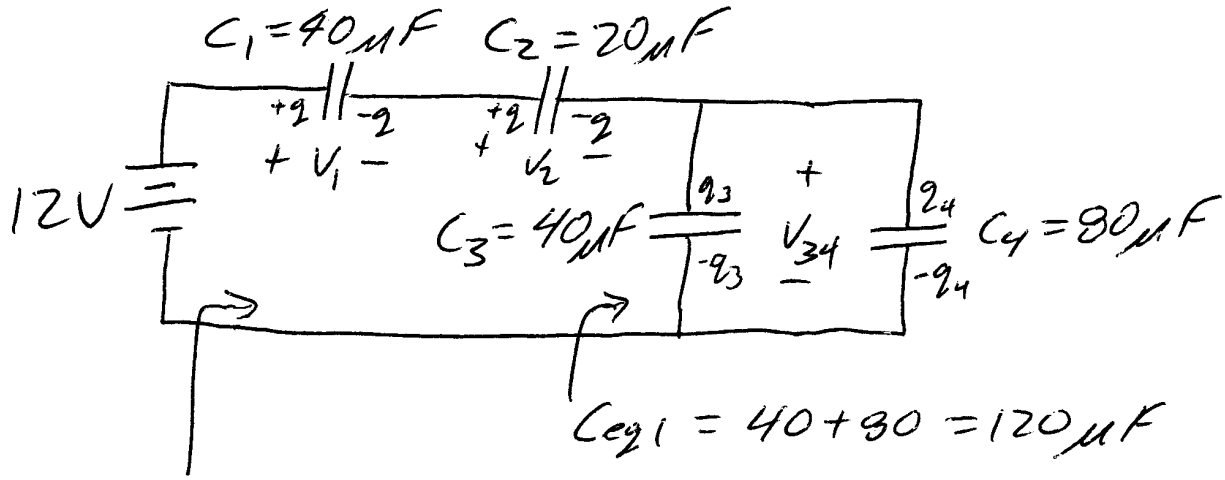
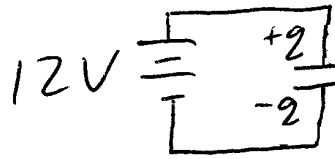
Example- Find the equivalent capacitance, voltage across, and charge stored by each capacitor.



$C_{eq1} = 40 + 80 = 120\ \mu F$

$$C_{eq} = \left\{ \frac{1}{40} + \frac{1}{20} + \frac{1}{120} \right\}^{-1} = 12\ \mu F$$



$C_{eq} = 12\ \mu F \quad q = C_{eq}(12V) = 144\ \mu C$

$$V_1 = V_s \frac{C_{eq,s}}{C_1} = 12 \frac{12\ \mu F}{40\ \mu F} = \underline{3.6V}$$

$$q_1 = C_{eq}(12) = C_1 V_1 = \underline{144\ \mu C}$$

$$V_2 = 12 \frac{12}{20} = \underline{7.2V}$$

$$q_2 = C_{eq}(12) = C_2 V_2 = 20\ \mu F (7.2) = \underline{144\ \mu C}$$

$$V_{34} = 12 \frac{12}{120} = \underline{1.2V}$$

$$q_3 = C_3 V_{34} = (40\ \mu F)(1.2V) = \underline{48\ \mu C}$$

$$q_4 = C_4 V_{34} = (80\ \mu F)(1.2V) = \underline{96\ \mu C}$$

Note: $q_3 + q_4 = 48 + 96 = \underline{144\ \mu C} = q$!