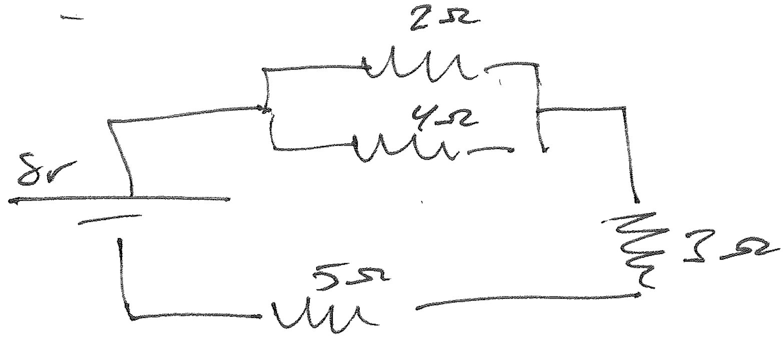
(1)



① $\frac{1}{2} + \frac{1}{4} = \frac{1}{R_{net}}$ ∴ $R_{net\,(2,4)} = 1.33\,\Omega$

② $R_{total} = 1.33\,\Omega + 3\,\Omega + 5\,\Omega = 9.33\,\Omega$

③ total current $I = \frac{V}{R} = \frac{8v}{9.33\,\Omega} = .857$ amps

④ $(.857a)(5\,\Omega) = 4.28$ volts

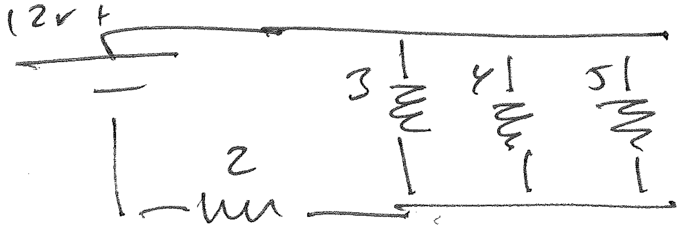
$(.857a)(3\,\Omega) = 2.57$ volts

⑤ $8v - 4.28v - 2.57$ volts $= 1.15$ volts across $2\,\Omega + 4\,\Omega$ resistors

voltage across $4\,\Omega = 1.15$ volts

current through $4\,\Omega = \frac{1.15v}{4\,\Omega} = .287$ amps

(2)



(1) $\frac{1}{3} + \frac{1}{4} + \frac{1}{5} = \frac{1}{R_{net}} = \frac{20}{60} + \frac{15}{60} + \frac{12}{60} = \boxed{\frac{47}{60} = \frac{1}{R_{net}}}$

(2) $\therefore R_{net} = \frac{60}{47} \simeq 1.3\,\Omega$ total

(3) $\frac{12v}{(1.3\,\Omega + 2\,\Omega)} = \frac{12v}{3.3\,\Omega} = 3.64$ amps total

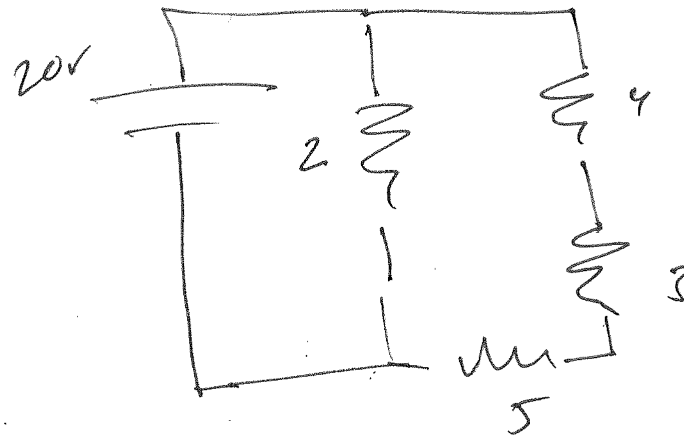
(4) voltage across $2\,\Omega$ resistor is $(3.64\,\Omega)(2\,\Omega)$
$= 7.2$ volts

$\therefore$ therefor, $12v - 7.2$ volts $=$ $\boxed{4.8 \text{ volts across}}$

the 3, 4 and 5 Ω resistors

so... $V = IR$ $\quad \frac{V}{R} = I \quad \frac{4.7v}{4\,\Omega} = \boxed{1.17 \text{ amps}}$

(3)



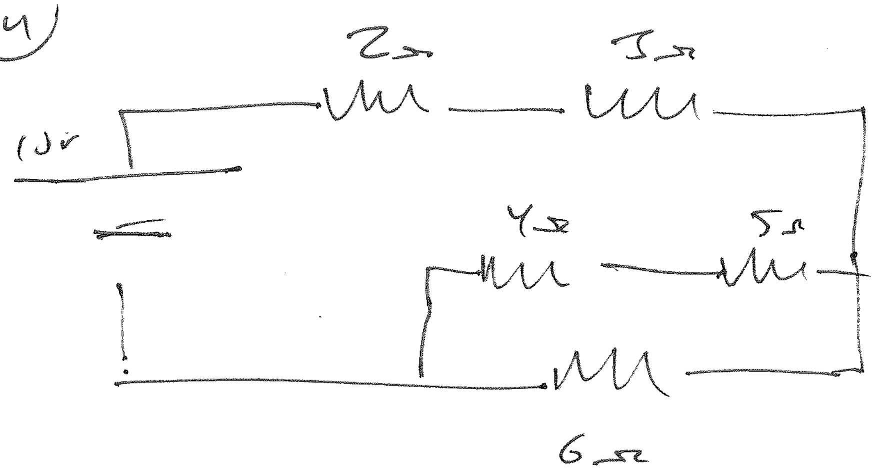
note: the 4, 3 and 5 Ω resistors are all in series, and that entire branch "see's" 20 volts

(1) $4 + 3 + 5 = 12\,\Omega$ total

$\therefore \dfrac{20v}{12\,\Omega} = $ **1.66 amps**

(2) $V = IR = (1.66a)(4\,\Omega) =$ **6.67 volts**

(4)



(1) $2\Omega + 3\Omega = 5\Omega$

$4\Omega + 5\Omega = 9\Omega$

$\frac{1}{9} + \frac{1}{6} = \frac{2}{18} + \frac{3}{18} = \frac{5}{18} = \frac{1}{R_{net}}$ ∴ $R_{net} = 3.6\Omega$

(2) $2\Omega + 3\Omega + 3.6\Omega = 8.6\Omega$ total.

(3) $V = IR$ $\frac{V}{R} = I = \frac{10v}{8.6\Omega} = 1.16$ amps total

(4) $(1.16a)(2\Omega) = 2.32$ volts

$(1.16a)(3\Omega) = 3.48$ volts

5.8 volts across $2\Omega + 3\Omega$

so .. $10v - 5.8v = $ 4.2 volts

across the $4\Omega + 5\Omega$ in series.

$V = IR$ $\frac{V}{R} = I$ $\frac{4.2v}{9\Omega} = $ .46 amps through 4Ω

∴ ∆v. $V = IR = (.46a)(4\Omega) = 1.8v.$