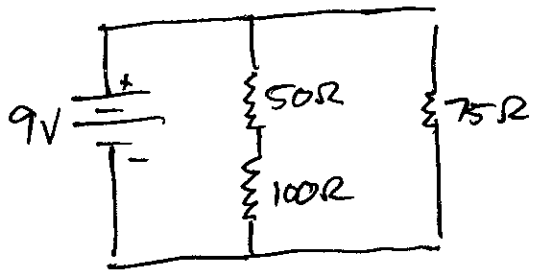
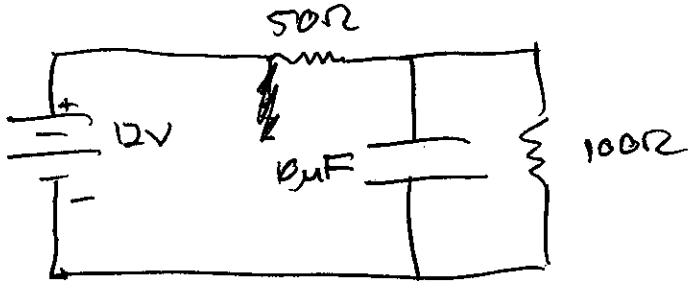
3/18/09

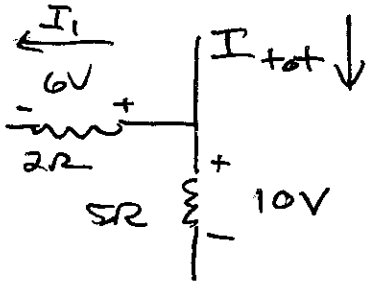
WORKSHOP 9.1

32-1 Circuit diagrams **32-2**





323 use $V=IR$



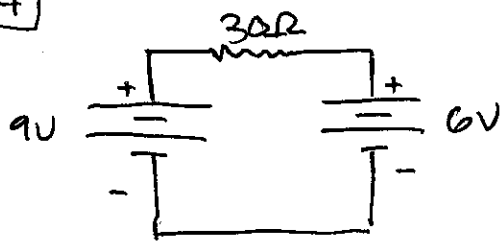
$$I_1 = \frac{6V}{2\Omega} = 3A$$

$$I_2 = \frac{10V}{5\Omega} = 2A$$

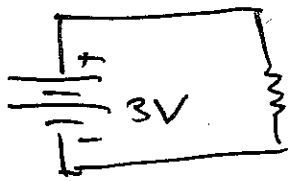
$I_{tot} = I_1 + I_2 = 5A$ downwards

32-4

a)



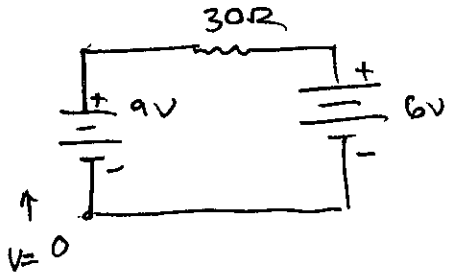
~~Kirchhoff~~ 9V equivalent circuit:

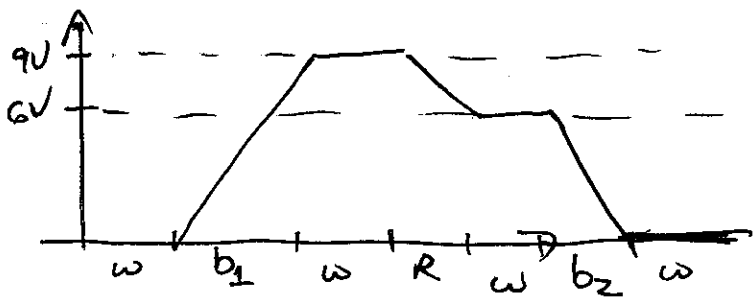


$V=IR$

$I = \frac{3V}{30\Omega} = 0.1A$ clockwise

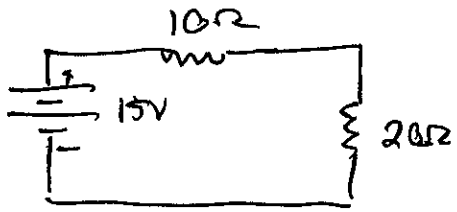
b)



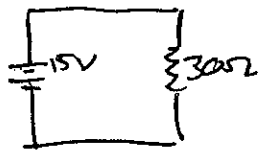


32-6

a)



eq. circuit

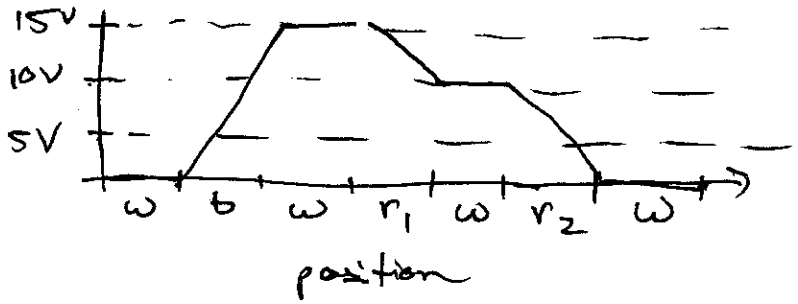


$V = IR \Rightarrow I = 0.5\,A$

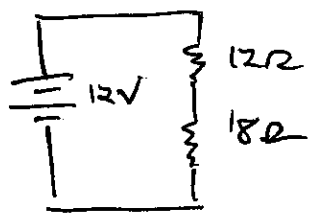
$$V_{(10\Omega)} = (0.5\,A)(10\Omega) = 5\,V$$

$$V_{(20\Omega)} = (0.5\,A)(20\Omega) = 10\,V$$

b)



32-8



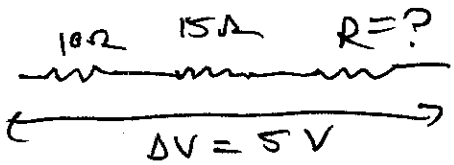
$R_{tot} = 30\Omega$, $I = \frac{12V}{30\Omega}$

$P = I^2 R$

$$P_1 = I^2 R_1 = \left(\frac{12V}{30\Omega}\right)^2 12\Omega = 1.92W$$

$$P_2 = I^2 R_2 = \left(\frac{12V}{30\Omega}\right)^2 18\Omega = 2.88W$$

32-14



$I = 10^{-1}\,A$

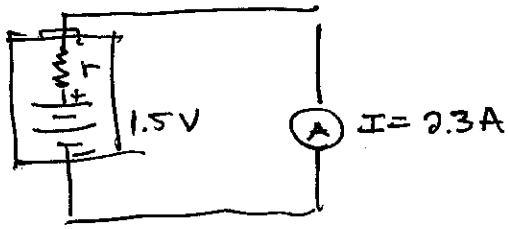
$R_{tot} = R + 10\Omega + 15\Omega = R + 25\Omega$

and $\Delta V = I R_{tot}$

$5V = (10^{-1}\,A)(R + 25\Omega)$

$\Rightarrow \boxed{R = 25\Omega}$

32.17



$V = IR$

$r = \frac{1.5V}{2.3A} = .65\Omega$

$P = I^2R$

$= (2.3A)^2(.65\Omega)$

$P = 3.4W$

32-21

resistors in parallel:

$R_{tot} = \left[\frac{1}{R} + \frac{1}{R} + \frac{1}{200\Omega}\right]^{-1} = 75\Omega$

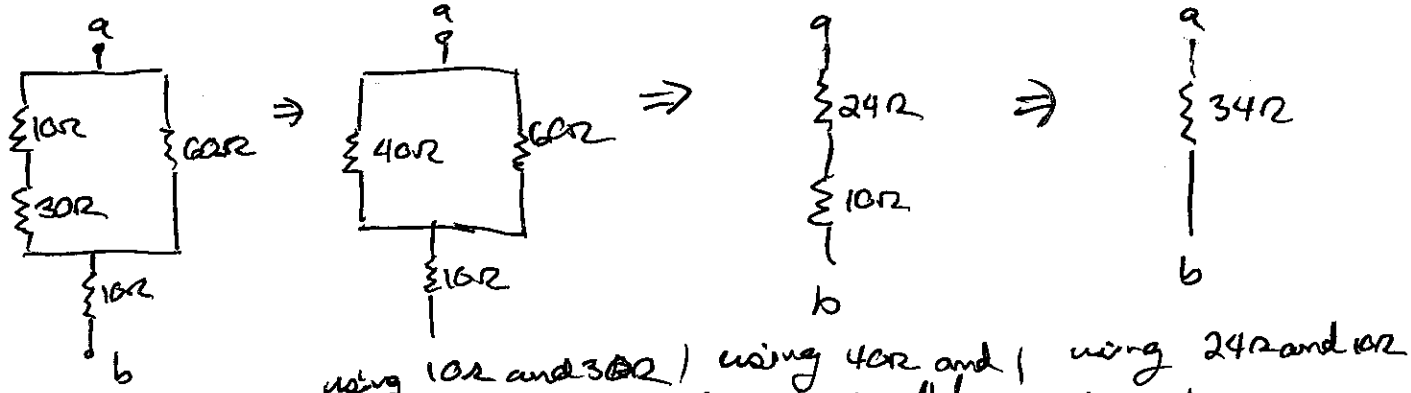
$\frac{(200\Omega)R}{2(200\Omega) + R} = 75\Omega$

solve for R:

$(125\Omega)R = 2(200\Omega)(75\Omega)$

$R = 240\Omega$

32-23



using 10Ω and 30Ω in series $(R_1 + R_2)$

using 40Ω and 60Ω in parallel $\left(\frac{1}{R_1} + \frac{1}{R_2}\right)^{-1}$

using 24Ω and 10Ω in series $R_1 + R_2$

$R_{ab} = 34\Omega$