Final Review

Unit 11 – DC circuits

(53) energy source (usually battery), continuous loop, device to use energy (resistor, lightbulb, etc.)

(54) voltage → volts (V)
current → amps (A)
resistance → ohms (Ω)

(55) $I = Q/t = 8.4/10 = \boxed{0.84\ A}$

(56) $I = Q/t \rightarrow Q = I \cdot t = (2.5)(3) = \boxed{7.5\ C}$

(57) $I = \frac{V}{R}$ so as voltage ↑, [current increases]

(58) $I = \frac{V}{R}$ so as R ↑, [current decreases]

(59) $I = V/R = 12/6 = \boxed{2\ A}$

(60) $V = IR \rightarrow 6 = 12 \cdot R \rightarrow \boxed{R = 0.5\ \Omega}$

(61) [current] is the same across each resistor in series

(62) [voltage drop] is the same across resistors in parallel

(63) a) $R_S = 3 + 2 + 7 = \boxed{12\ \Omega}$
b) $I = V/R = 24/12 = \boxed{2\ A}$
c) $I = 2\ A$
d) $V_{3\Omega} = 2(3) = \boxed{6\ V}$
$V_{2\Omega} = 2(2) = \boxed{4\ V}$
$V_{7\Omega} = 2(7) = \boxed{14\ V}$

(64) a) $\frac{1}{R_P} = \frac{1}{4} + \frac{1}{5} + \frac{1}{10} = \frac{11}{20} \rightarrow R_P = \frac{20}{11} = \boxed{1.82\ \Omega}$
b) $I = V/R = 6/1.82 = \boxed{3.3\ A}$
c) V = [6V across each]
d) $I_{4\Omega} = 6/4 = \boxed{1.5\ A}$
$I_{5\Omega} = 6/5 = \boxed{1.2\ A}$
$I_{10\Omega} = 6/10 = \boxed{0.6\ A}$