(1) $V_1 = 2.30\,L$ $\quad V_2 = 2.21\,L$

$P_1 = 1.88\,atm$ $\quad P_2 = ?$

$P_1V_1 = P_2V_2$

$\frac{P_1V_1}{V_2} = P_2$

$1.96_{atm} = P_2$

(2) $V_1 = 1.23\,L$

$T_1 = 32.0°C + 273 = 305\,K$

$V_2 = ?$

$T_2 = 305 - 20 = 285\,K$

$\frac{V_1}{T_1} = \frac{V_2}{T_2}$ solve for V_2

$1.15\,L = V_2$

(3) $\frac{V_1}{n_1} = \frac{V_2}{n_2}$ $\quad V_1 = 100.\,L$ $\quad V_2 = 10.8\,L$

$n_1 = 4.20\,g \times \frac{1\,mol\,O_2}{32.00\,g} = 0.131\,mol\,O_2$ $\quad n_2 =$

$\frac{n_1V_2}{V_1} = n_2$

$0.0141\,mol = n_2$ O_2

(4) $P_1 = 860\,mmHg$ $\quad P_2 = ?$

$T_1 = -50°C + 273 = 223\,K$ $\quad T_2 = 400°C + 273 = 673\,K$

$\frac{P_1}{T_1} = \frac{P_2}{T_2}$ solve for $P_2 \Rightarrow \frac{P_1T_2}{T_1} = P_2 \rightarrow 2595_{mmHg} = P_2$

↳ S.F. = 2590 mmHg

(5) $P_1 = 1.20\,atm$ $\quad V_1 = 10.0\,L$ $\quad T_1 = 150.0°C + 273 = 423\,K$

$P_2 = 684\,mmHg \times \frac{1\,atm}{760\,mmHg} = 0.90\,atm$ $\quad V_2 = ?$ $\quad T_2 = -10.0°C + 273 = 263\,K$

$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$ solve for $V_2 \Rightarrow \frac{T_2P_1V_1}{P_2T_1} = V_2 \Rightarrow 8.3\,L = V_2$

(6) $P = 2.04\,atm$ $\quad V = ?$ $\quad T = 5.20°C + 273 = 278.20\,K$ $\quad n = 1.24\,g\,O_2 \times \frac{1\,mol\,O_2}{32.00\,g\,O_2} = 0.039$ moles O_2

$PV = nRT$ $\quad R = 0.08205\,L\cdot atm/mol\cdot K$

$V = \frac{nRT}{P} \rightarrow V = 0.44\,L$

(7) $T = 273\ K$ $P = 1\ atm$ $V = 1.75\ L$ $n = ?$ $R = 0.08205 \frac{L \cdot atm}{mol \cdot K}$

$PV = nRT$ solve for n $\Rightarrow$ $n = \frac{PV}{RT}$ $\Rightarrow$ $\boxed{n = 0.078\ mol\ N_2}$

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(8) $P_1 = 0.95\ atm$ $V_1 = 2.0\ L$ $P_2 = 500.\ mmHg \times \frac{1\ atm}{760\ mmHg} = 0.66\ atm$ $V_2 = ?$

$\frac{P_1 V_1}{P_2} = V_2 \Rightarrow \boxed{2.9\ L = V_2}$ * yes the balloon will pop

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(9) $P_1 = 640\ torr$ $V_1 = 5.20\ L$ $T_1 = 27°C + 273 = 300\ K$

$P_2 = ?$ $V_2 = 2.10\ L$ $T_2 = 100°C + 273 = 373\ K$

$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$ solve for P_2 $\Rightarrow$ $\frac{P_1 V_1 T_2}{T_1 V_2} = P_2 \Rightarrow \boxed{1970\ torr = P_2}$

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(10) $P = 1.2\ atm$ $T = 87°C + 273 = 360\ K$ $V = 31.0\ L$ $n = ?$

$R = 0.08205 \frac{L \cdot atm}{mol \cdot K}$

$PV = nRT$ (solve for n) $\Rightarrow$ $n = \frac{PV}{RT}$

$\boxed{n = 1.26 \xrightarrow{SF} 1.3\ moles}$

(11) See Key on review sheet page