1. $T_1 = 30°C$ $\quad \frac{V_1}{T_1} = \frac{V_2}{T_2} \quad \frac{T_1}{V_1} = \frac{T_2}{V_2} \quad \frac{T_1 V_2}{V_1}$

$V_1 = 100\,mL$ $\quad \frac{(303)(200)}{100} = 606 - 273$ $\quad \boxed{T_2 = 333°C}$

$V_2 = 200\,mL$

$T_2 = ?$

2. $V_1 = 200\,mL$ $\quad P_1V_1 = P_2V_2 \quad \frac{P_1V_1}{V_2} = P_2$

$P_1 = 1\,atm.$ $\quad \frac{(200)(1)}{400} = \boxed{0.5000\,atm}$

$V_2 = 400\,mL$

$P_2 = ?$

3. $V_1 = 56L$ $\quad \frac{(56)(273)}{546}$ $\quad \boxed{V_2 = 28L}$

$T_1 = 273°C + 273 = 546$

$T_2 = 0°C + 273 = 273$

$V_2 = ?$

4. $P_1 = 1\,atm$ $\quad \frac{(1)(2)}{(.05)} = \boxed{4\,atm}$

$V_1 = 2.0L$

$V_2 = 0.50L$

$P_2 = ?$

5. $T_1 = 37°C + 273 = 300K$ $\quad (200)($

$P_1 = 40\,torr$

$V_1 = 3.40L$

$P_2 = 200.0\,torr$

$T_2 = ?$

6. $V_1 = 600\,mL$ $\quad \frac{(380)(60)(273)}{(760)(380)}$

$T_1 = -245.7°C + 273K = 27.3$

$P_1 = 380\,torr$

$T_2 = 273K$ $\quad \boxed{V_2 = 289\,mL}$

$P_2 = 760\,torr$

$V_2 = ?$

7. $V_1 = 48L$
$T_1 = 273°C + 273 = 546K$
$P_1 = 380$ torr
$T_2 = 273K$
$P_2 = 760$ torr
$V_2 = ?$

$$\frac{(380)(48)(273)}{(760)(546)}$$

$\boxed{V_2 = 19L}$

8. $T_1 = 27°C + 273 = 300K$
$V_1 = 150L$
$P_1 = 500$ torr
$V_2 = 200L$
$P_2 = 400$ torr
$T_2 = ?$

$$\frac{(400)(200)(300)}{(500)(150)}$$

$\boxed{47°C}$

9. $P_1 = 300$ torr
$V_1 = 240$ cuft
$T_1 = 87°C + 273 = 360K$
$V_2 = 150$ cuft
$T_2 = -33 + 273 = 240$
$P_2 = ?$

$$\frac{(300)(240)(240)}{(150)(360)}$$

$\boxed{P_2 = 320 \text{ torr}}$

10. $V_1 = 350$ mL
$P_1 = 400$ torr
$V_2 = 176$ mL
$P_2 = ?$

$$\frac{(400)(350)}{175} = \boxed{800 \text{ torr}}$$

11. $V_1 = 350$ mL
$P_1 = 400$ torr
$V_2 = 175$ mL
$P_2 = ?$

$$\frac{(400)(350)}{175} = \boxed{800 \text{ torr}}$$

12. $V_1 = 300\ mL$
$P_1 = 560\ torr$
$T_1 = 7.0°C + 273 = 280K$
$P_2 = 800\ torr$
$T_2 = -33°C + 273 = 240K$
$V_2 = ?$

$$\frac{(560)(300)(240)}{(280)(800)} = \boxed{180L}$$

13. $V_1 = 24L$
$P_1 = 350\ torr$
$T_1 = 27°C + 273 = 300K$
$P_2 = 700\ torr$
$T_2 = -73°C + 273 = 200K$
$V_2 = ?$

$$\frac{(350)(24)(200)}{(300)(700)} = \boxed{8L}$$

14. $V_1 = 600mL$
$P_1 = 620\ torr$
$T_1 = 37°C + 273 = 310K$
$P_2 = 800\ torr$
$V_2 = 840\ mL$
$T_2 = ?$

$$\frac{(800)(840)(310)}{(620)(600)} = 560K$$

$560K - 273 = \boxed{287°C}$

15. $V_1 = 400\ mL$
$P_1 = 750\ torr$
$V_2 = 200\ mL$
$P_2 = 500\ torr$

$$\frac{(750)(400)}{(200)} = \boxed{500\ torr}$$