

10.43 g $\frac{0.08 \text{ Km}}{\text{hr}}$, $\frac{0.8 \text{ ml O}_2}{\text{hr-guest weight}}$, 1 atm 24°C
 297K

$\frac{\text{Moles O}_2}{\text{hr}}$ for 5.2g cockroach

0.8 ml O ₂	5.2g Roach	= 4.16 ml O ₂ Consumed / hr
1g Roach		

$PV = nRT$

(1) $(4.16 \times 10^{-3} \text{ l}) = n(0.08206)(297)$

$n = 1.706 \text{ moles O}_2 / \text{hr} \times 10^{-4}$

Dec 6-7:38 AM

10.43 1 qt jar , same O₂ used. $> 20\% \text{ O}_2$ in 48 hrs?

1 qt	1 l	= 0.946 l AIR
	1.0567 qt	

$\times 0.21 \text{ O}_2$

have \Rightarrow 0.19 l O₂

4.16×10^{-3}	48 hr	= 0.19968 l O ₂ needed
hr		

DEAD ROACH!

Dec 6-8:04 AM

10.62 $V = 10L, T = 19^\circ C$ $P_{O_2} + P_{He}$

$\frac{51.2g O_2}{32g O_2} \times \frac{1 \text{ mole } O_2}{1} = 1.6 \text{ mole } O_2$

$\frac{32.6g He}{4g He} \times \frac{1 \text{ mole } He}{1} = 8.15 \text{ mole } He$

① $PV = nRT$
 $P(10) = 1.6(0.08206)(292)$
 $P_{O_2} = 3.84 \text{ atm}$

② $PV = nRT$
 $P(10) = 8.15(0.08206)(292)$
 $P_{He} = 19.54 \text{ atm}$

$P_{O_2} = X_{O_2} P_T$
 $3.84 = X_{O_2} (23.38)$
 $X_{O_2} = 0.164$

$P_T = P_{O_2} + P_{He}$
 $= 3.84 + 19.54$
 $P_T = 23.38 \text{ atm}$

$P_{He} = X_{He} P_T$
 $19.54 = X_{He} (23.38)$
 $X_{He} = 0.836$

Dec 6-8:11 AM

Collecting a Gas "over water" Air-in Water-out

VERDE

Water displacement

Damp

Verde air + H_2O vapor

Dec 6-8:22 AM

Calc. $P_{\text{Verde air}}$

constant at each Temp

$$P_{\text{dry Verde air}} = P_{\text{TOTAL}} - P_{\text{H}_2\text{O vapor}}$$

Dec 6-8:50 AM

①

Gas collector collect
 $V = 0.25 \text{ L } \text{O}_2(\text{g})$
 $T = 26^\circ \text{C}$
 $P_T = 765 \text{ torr}$
 — mols O_2 collected?

②

$$2 \text{KClO}_3(\text{s}) \rightarrow 2 \text{KCl}(\text{s}) + 3 \text{O}_2(\text{g})$$

9.92 x 10⁻³ mols

Dec 6-8:55 AM

$$P_{O_2} V_{O_2} = n_{O_2} R T_{O_2}$$

$$(0.973)(0.252) = n_{O_2} (0.08206)(299)$$

$$n_{O_2} = 9.92 \times 10^{-3} \text{ mole } O_2$$

$$2KClO_3 \Rightarrow 2KCl + 3O_2$$

$9.92 \times 10^{-3} \text{ mole } O_2$	$2 \text{ mole } KClO_3$	$122g KClO_3$	= $0.8g KClO_3$
	$3 \text{ mole } O_2$	$1 \text{ mole } KClO_3$	

$P_T = 765 \text{ torr}$
 $P_{H_2O} = 25.21 \text{ torr}$
 $26^\circ C$

 $P_{O_2} = 739.79 \text{ torr}$
 $739.79 \text{ torr} / 1 \text{ atm} = 760 \text{ torr}$

Dec 6-9:00 AM

$$10 / 54 + 58$$

Dec 6-9:16 AM