(6)(f) Ideal gas law: $PV = nRT$

$(300.0\ kPa)(25.0\ L) = n(8.31)(300)$

$n = 3.01\ mol$

$3.01\ mol = 96.0\ g$

$1\ mol = 32.0\ g$

(7) $101.3\ kPa = P_{He} + P_{CO_2} + P_{O_2}$

$= 84\ kPa + 0.1\ kPa + P_{O_2}$

$P_{O_2} = 17.2\ kPa$

(8) It is also reduced by one half (the composition of the gas mixture hasn't changed)

(9) Smaller gases diffuse faster:

$C_4H_{10} < CO_2 < CO < NH_3 < H_2$

slowest ... fastest

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(1) Polar substances dissolve in polar solvents, while non-polare substances dissolve in nonpolar solvents. If two substances are not "like", they will not form a solution.

(2) Hydrogen bonding is responsible for most of water's unique properties, since it creates an extra force between water molecules that must be overcome.

(3) The high specific heat of water keeps it (and the air above it) cooler than the adjacent land; this generates a sea breeze and moderates coastal temperatures.