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Analysis:

A. 3.07g/63.546 amu =0.0483 mol <-1.

0.0483 mol *$6.022*10^{23}$=$2.91*10^{22}$ atoms Cu. <-2.

B. 0.72g/20=0.036g 0.036g/(1.00794+15.9994)=0.0021 mol <-1.

0.0021 mol *$6.022*10^{23}$=$1.26*10^{21}$ molecules <-2.

C. 6.49/[2(12.0107)+3(1.00794)]=0.104 mol PVC <-1.

0.104*$6.022*10^{23}$=$6.26*10^{22}$ molecules <-2.

$6.26*10^{22}$*2=$1.25*10^{23}$ carbon atoms <-3.

$6.26*10^{22}$*3=$1.88*10^{23}$ hydrogen atoms <-4.

D. 3.61g/(8*12.0107+8*1.00794)=0.0347 mol <-1.

0.0347*$6.022*10^{23}$=2.090 molecules

2.090*(8+8)=3.34 atoms

Conclusion:

Avogadro's number links the amount of atoms or molecules in a substance to the mole. the molar mass is used to convert between mass of a substance and the mole. {mole}={number of atoms or molecules}/{Avogadro's number} {mole}={mass(g)}/{molar mass(amu)} {atoms}={molecules}*{atoms per molecules} {molecule}={moles}*{Avogadro's number}. Molecules are made of atoms.

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